June 17, 2021

Proposal for Advanced Broadband and Smart City Systems

RFP NO. 1193

Submitted to: City of New Orleans

Submitted by: Smart+Connected NOLA

Qualcomm Jacobs JLC | MJE-Loop Capital Partners Zyter

Cover Sheet

RFP Number: 1193
Subject: Advanced Broadband and Smart City Systems
Date: June 17, 2021
Respondent: Smart+Connected NOLA

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Tab 1 –
Consultant's Profile and Submittal Letter

Consultant's Profile and Submittal Letter

Smart+Connected NOLA

Qualcomm Jacobs JLC | MJE-Loop Capital Partners Zyter

Smart+Connected NOLA
1555 Poydras Street, Suite 1625
New Orleans, LA 70112

June 17, 2021

Attn: Ms. Kai Wells
City of New Orleans, Bureau of Purchasing
1300 Perdido Street, Suite 4W07
New Orleans, LA 70112

Subject: Proposal for Advanced Broadband and Smart City Systems; RFP No. 1193

Dear Members of the Selection Committee:

With the RFP for Advanced Broadband and Smart City Systems (Smart City Program), the City of New Orleans (City) seeks to eliminate the digital divide and to deploy smart technology solutions that enable all citizens and businesses to have access to connected services. By achieving this objective, the City of New Orleans will secure an improved quality of life for all New Orleans' citizens, businesses, and visitors. To realize your vision, several challenges must be addressed. The Smart+Connected NOLA team brings a multitude of capabilities to meet these challenges and to help you plan, design, construct, and operate the first true Smart City in Louisiana.

To achieve your goals, we have brought to you a consortium of world-class firms with the technical expertise, local presence, and extensive public-private partnership delivery experience to provide a best-in-class solution. Our consortium comprises Qualcomm, Jacobs, MJE-Loop Capital Partners dba JLC Infrastructure (JLC), and Zyter. This team will work together seamlessly to successfully deliver a turnkey solution for the City and your citizens. A special purpose vehicle (SPV) known as Smart+Connected NOLA will be created to secure the private equity needed to reach your goals and achieve an innovative and cost-neutral solution. Hereinafter the entire consortium is referred to as the Smart+Connected NOLA team.

City of New Orleans faces a unique set of challenges, which the Smart+Connected NOLA team will help address through the Smart City program.

In this letter, we provide a brief summary of our understanding of your specific challenges, our team's technology and delivery leaders, and the approaches we will take to complete the contractual requirements laid out in the RFP. Our plan is to work with you collaboratively to determine your criteria for success, an implementation scope and schedule, and the metrics by which goal achievement will be measured.

City of New Orleans—**CONNECTED.** A Smart City is an innovative and future-ready city that uses **connectivity as its foundation to eliminate the digital divide** between those with access to the Internet of Things (IoT) and those without. Through connectivity, the City will improve quality of life, provide digital equity, empower economic growth, and improve efficiency of urban operation and services, while ensuring the ability to meet the information needs of present and future generations.

City of New Orleans—**SECURE.** While municipalities and cities across the globe strive to become more connected, they also face cybersecurity threats that exploit the complexity and connectivity of critical infrastructure systems. Protecting this data from the threats to cybersecurity, and using it to improve safety and mobility, will lead to a more vibrant and safer city.

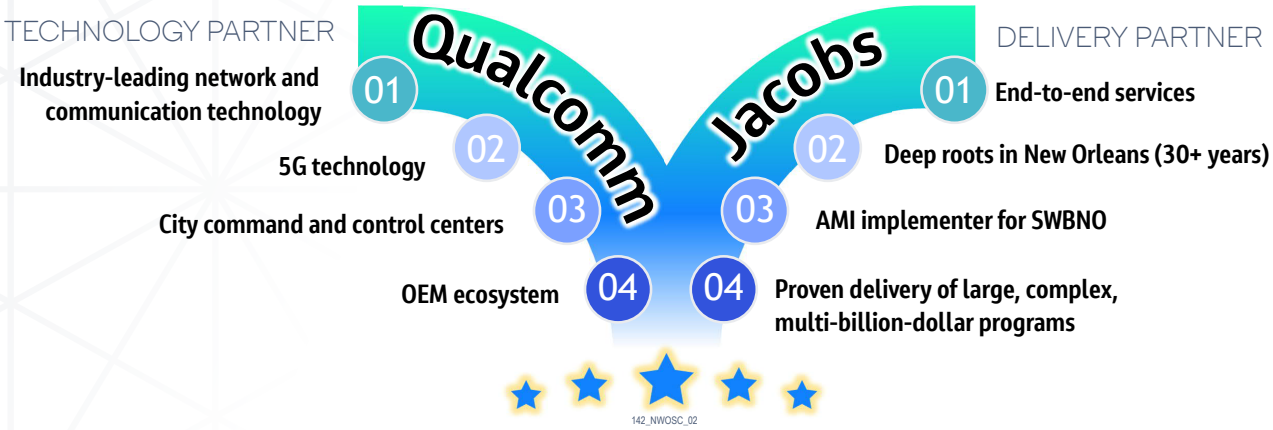
City of New Orleans—**SMART.** While continually improving City infrastructure will go a long way toward improving quality of life, Smart City solutions will have an exponential effect on livability by attracting new business; increasing the openness, availability, and transparency of information; and creating public-private partnerships (P3s) to spur innovation in managing city services.

The Smart+Connected NOLA team understands your vision and the challenges of implementing a smart program across the City of New Orleans.

Industry Leaders in Technology Implementation and Program Delivery Offer a Proven Track Record of Success

Qualcomm Qualcomm is the world's leading wireless technology innovator and the driving force behind the development, launch, and expansion of 5G. Our solutions include cloud-delivered wireless edge solutions for branch, mobile, and IoT networks. More than 18,000 active enterprise and government organizations around the world, including 75 percent of the world's top retailers, 50 percent of the *Fortune* 100, and first responder agencies in 25 of the largest U.S. cities, rely on this architecture to keep critical branches, points of commerce, field forces, vehicles, and IoT devices always connected and protected. Major service providers use these wireless solutions as the foundation for innovative managed network services.

Synergies of Qualcomm and Jacobs for Innovation and Delivery



A **best-in-class** team with a **holistic, complementary,** and **valuable** solution to deliver a successful Smart City transformation to the **City of New Orleans**

Jacobs Tasked with overall delivery responsibility, Jacobs brings one of the largest and most diverse portfolios of scientific, technical, professional, construction, and program management solutions for infrastructure and government sectors locally and across the globe. We're an industry leader in Smart Cities and urban infrastructure planning, design, construction, asset management, cybersecurity, and operations and maintenance (O&M) for all core city systems. We bring industry leading expertise in the full gamut of Smart City systems envisioned in this program, all with demanding schedule and budget requirements and extensive inter-departmental, inter-agency, and utility coordination.

Proven Approaches to Deliver the Outcomes NOLA Needs

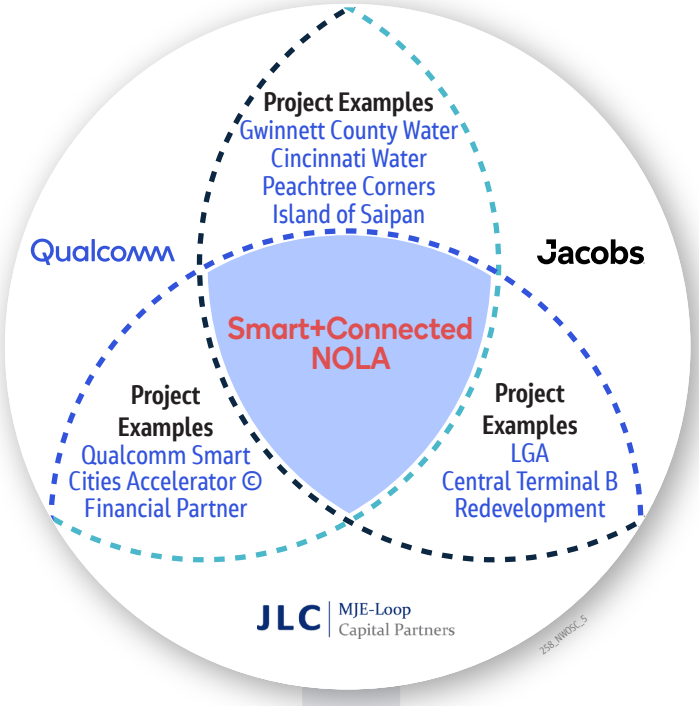
An outcome-based, full-service approach and holistic solution that leaves control of the communications network with the City—Our partnership will help prioritize implementation to achieve smart mobility, digital equality, citizen engagement, and economic prosperity through both the technology and the workforce development that will be key to delivering your Smart City program. Our approach includes a pioneering enterprise LTE network that will be deployed in 2 years to rapidly address the City's connectivity and digital equity dilemma.

A cost-neutral solution and timely implementation plan delivered to the City of New Orleans through an innovative public-private partnership—This self-sustaining, cost-neutral approach allows the City to quickly implement a solution without investing up-front capital or allocating bonding capacity. Moreover, the City, through the proposed revenue sharing mechanism, may recognize additional annual income from third-party revenue streams not currently realized through the current infrastructure. Long-term affordability and sustainable operations and maintenance—essential to the viability of the system and its overall feasibility and success—are built into our implementation plan.

Commitment to digital inclusion with a focus on digital equity and inclusion to alleviate the digital divide in New Orleans—We understand that this project is more than just providing broadband connectivity. It is an opportunity to recover, reimagine, and rebuild how New Orleanians connect through equitable deployment of infrastructure. **Achieving these Smart City capabilities is the organizing principle for our partnership as we design and construct new infrastructure and move toward long-term operations.**

Decades of success working in partnership with the City and local DBE firms to improve our built and natural infrastructure—Facilitating faster, better, and more efficient ramp up, collaboration, innovation, integration, and operation of a connected, secure, and sustainable Smart City. **We understand how to work with the City to secure timely decisions, necessary infrastructure permits, and support of stakeholders to make this program a success.** The Smart+Connected NOLA team brings a 30-year history of working in the City of New Orleans, during which time we have grown a substantial resource base of local staff, local knowledge, and local pride. In directly serving

Experience Working Together Demonstrates Successful Track Record of Collaboration



City of New Orleans

the City of New Orleans over the past 30 years, Jacobs has successfully delivered projects for a range of City agencies, including Sewerage and Water Board and Department of Public Works, as well as Orleans Parish School District.

Our team provides end-to-end services that will enable the City to meet today's challenges, while nimbly adapting to the ever-changing landscape of technological innovation and disruption—We are pioneers in fiber optic and 5G networks, predictive analytics, cybersecurity, IoT, automation, artificial intelligence, integrative solutions, and smart technology funding and monetization. **Our holistic services provide for a technically sound solution that fully integrates and interconnects hardware and software, is interoperable across multiple platforms, prioritizes privacy and data security, and will be future proof and future ready for reliable, resilient, and sustainable operations—even as technology continues to evolve and new applications are integrated into the initial system.**

A well-structured, well-governed delivery team with proven ability to implement all facets of a Smart City program—From planning to long-term operations within our in-house team capabilities, the Smart+Connected NOLA team provides the City of New Orleans a single point of accountability and transparency. We will work as your trusted partner, fully dedicated to your success. **Our longevity in the market and corporate financial strength contribute to the team's confidence that we can be the partner the City needs to meet the program's objectives, maintain stakeholder confidence, and drive on-time, high-quality performance with exceptional safety and security.**

We Are Leading Today's Innovations... **And Tomorrow's Discoveries.** Our team brings expertise in the full range of Smart City systems and hardware needed to plan, design, build, and operate each of your priority initiatives.

- Award-winning systems integration and end-to-end cybersecurity expertise to unlock the power of big-data analytics, predictive operating intelligence, and national cybersecurity standards to **safeguard the City and citizen data at all times.**
- Extensive LED lighting conversion, asset management, and O&M capabilities to expedite **reliable and cost-effective street lighting, monitoring, and control solutions** that are easily scaled and adapted to your evolving Smart City ambitions and future innovations.
- End-to-end 5G and fiber optic capabilities to streamline the City's 5G revolution, **accelerate your neutral host network,** and deliver powerful fiber-connected infrastructure across priority corridors.
- Arterial management expertise and leadership in the full IoT value chain to support **safer, more efficient mobility options and Smart City synergies that improve commerce, job growth, tourism, public safety, leisure, and a wide range of City operations.**
- Three decades of pioneering ITS and Smart Mobility experience—with in-depth understanding of local traffic patterns, congestion, and safety issues—to elevate City of New Orleans as the national model for **safe, efficient, and sustainable transportation and mobility.**
- Award-winning architectural lighting design and 3D projection capabilities to create a significant night presence in our vibrant skyline—and **brand the City of New Orleans as a one-of-a-kind destination.**

As **innovators in smart technologies,** we'll guide your **Smart City transformation** with speed, efficiency, impact, and creativity.

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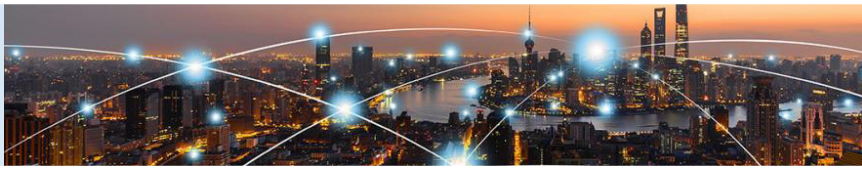


Phase 1 Smart+Connected NOLA **Solution Highlights**

Our delivery strategy results in Citywide digital equity within 2 years – significantly faster than other alternatives – through our cost-neutral funding plan enabled by an innovative P3 model. A summary of our solution is provided below with additional details in Tab 2, Adequacy of Solutions and Soundness of Approach Qualifications.

Accelerated Citywide Connectivity

- Wireless LTE/5G network | 90% broadband coverage across 75-square-mile area, 70% coverage across SWBNO's 430 sites, and 120 City buildings

Smart Street Lighting

- 3,000 Smart LED light fixtures for initial public Wi-Fi and smart lighting

Smart Traffic Management

- Plug and Play Virtual Traffic Management Center including traffic monitoring cameras and IoT sensors for 500 intersections

Smart Kiosks

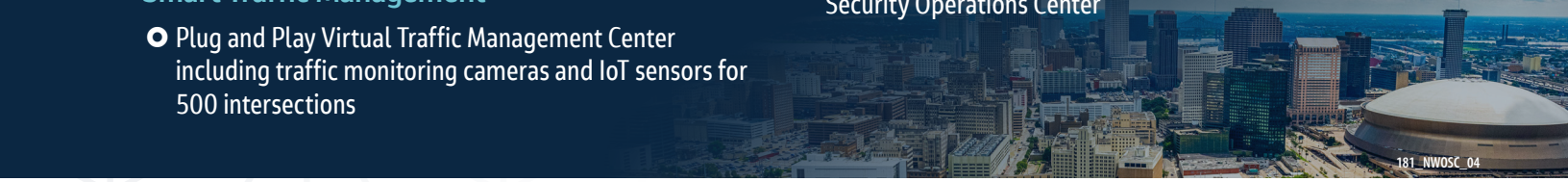
- 30 interactive and connected kiosks

Real-Time City Command and Control Center

- Smart City Platform that monitors and controls the program's smart lighting, traffic, kiosks, and IoT sensors

Data and Cybersecurity

- Cybersecurity Plan to protect network, IoT devices, and Security Operations Center



As requested in the RFP, our proposal meets the proposal requirements and evaluation factors, as demonstrated in the Table of Contents (proposal requirements) and Exhibit 1-1 (evaluation factors), which immediately follows this submittal letter. Andrew Kim from JLC is authorized to sign on behalf of Smart+Connected NOLA.

Sincerely,

Smart+Connected NOLA

Kevin Ferguson
Program Manager

Sanjeet Pandit
Smart City Senior Advisor

Andrew Kim
Smart City Senior Advisor

Evaluation Factors

As illustrated in our proposal, we have assembled a high-caliber team that meets all your RFP requirements (as noted in the Table of Contents), as well as technical criteria, as noted in Exhibit 1-1 below. To facilitate your review of our material to fulfilling each of these items, we've included the tab where the information can be found in the following directory.

EXHIBIT 1-1. *Evaluation Factors*

Technical Criteria, RFP Item 6.2	Addressed	Tab(s)
1. Adequacy of Solutions and Soundness of Approach		
Overall, the proposal addresses key requirements for the City of New Orleans, including establishing a broadband City infrastructure (fiber and private 5G) and smart services through a secure, reliable, and financially sustainable plan.	✓	Tab 2
2. Digital Inclusion Proposal		
The proposal includes data driven and locally relevant approach to outreach and adoption of digital literacy services to residents where needed, equitable deployment of infrastructure across different income areas of the city, and sufficient bandwidth/capacity to support the smart applications and make the most effective use of the technology.	✓	Tab 3
3. Capabilities of Organization and Personnel		
Proposal details the organization(s)' financial viability and professional capacity to deliver smart city solutions.	✓	Tabs 4, 7, and 10
4. Implementation Plan		
Proposal includes tasks and timelines to deliver project within the defined timeframe.	✓	Tab 5
5. DBE		
DBE Goal: Proposal complies with contract DBE participation goal or will conduct good faith efforts to do so.	✓	Tabs 6 and 14
Quality of Proposal: Proposal submitted a quality DBE Participation Plan that includes innovative strategies and approaches to achieve and maintain compliance over the contract term and that builds capacity in the DBE community.	✓	Tabs 6 and 14
Past Performance Issues: Includes firm's past performance on meeting DBE goals, technical assistance and supportive services designed to increase participation and build capacity in the DBE community.	✓	Tabs 6 and 14

Tab 1 Roadmap

Submittal Letter 1-1

RFP requirements addressed: Submittal Letter Signed by Authorized Agent; Proposal Statement ..... √

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Smart+Connected NOLA Consortium 1-7

RFP requirement addressed: Organizational Structure and Locations ..... √

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Organizational Structure

Smart+Connected NOLA Consortium

The City has asked for a cost-neutral, innovative solution to address equitable access to digital infrastructure, deployment of advanced Smart City digital communications, and a fully integrated suite of streetlights, sensors, networks, and data analytics platforms to catapult the City as a leader in improving mobility, accessibility, and safety.

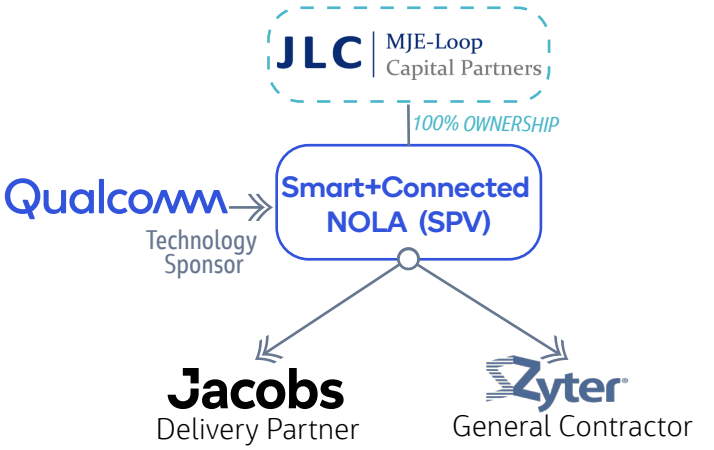
To achieve this goal, we have brought to you a consortium of world-class firms with the technical expertise, local presence, and extensive public-private partnership delivery experience to provide a best-in-class solution. Our consortium comprises Qualcomm, Jacobs, JLC Infrastructure, and Zyter. This team will work together seamlessly to successfully deliver a turnkey solution for the City and your citizens.

To secure the private equity needed to reach this goal and achieve an innovative and cost-neutral solution, JLC will create a special purpose vehicle (SPV) known as Smart+Connected NOLA. This type of arrangement has been used across the country and around the world in other public-private partnership (P3) projects and provides a proven structure with the flexibility for both direct access of private dollars for cities and governments to build infrastructure with outside funds and the ability to transfer assets back to the City at the end of the project concession.

Qualcomm, Jacobs, JLC Infrastructure, and Zyter will work collaboratively and seamlessly as a consortium through Smart+Connected NOLA to plan, build, and operate a world-class solution that meets and exceeds your vision for a connected city of the future.

As shown in Exhibit 1-2, Smart+Connected NOLA will be the contracting entity with the City to provide direct funding of this Smart City project, including all assets, revenue sharing, and asset transfer throughout the project life cycle. **Jacobs will serve as the delivery partner and through our New Orleans-based Program Manager, Kevin Ferguson, will be the City's day-to-day contact and provide a single point of accountability for project delivery.** We will leverage Jacobs' program management framework and decades of experience working with the City and your citizens on the Recovery Schools District (RSD) and Sewerage and Water Board of New Orleans (SWBNO) programs to execute our turnkey solution. **Jacobs has delivered more than 150 mega projects around the world valued at nearly $700 billion, with $2.5 billion here in New Orleans.**

EXHIBIT 1-2. *SPV Structure*



Smart City Teaming Partners

Bright Moments (DBE)	HLB (DBE)
Celona	IKE Smart Cities
Gaea (DBE)	ILSI (DBE)
Grady Crawford Construction	Juganu
HD and Associates (DBE)	Malone Electrical (DBE)
	NoTraffic

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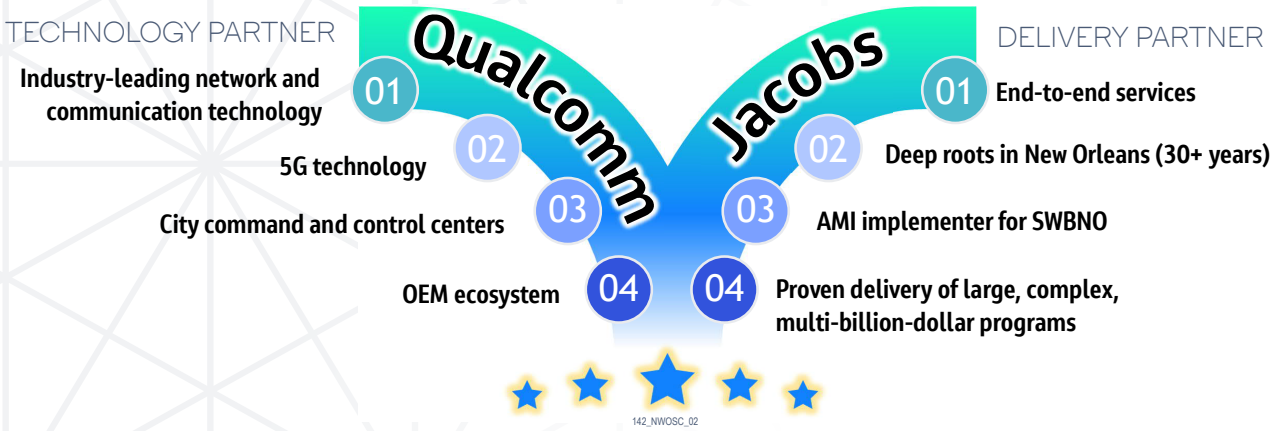
Synergies of Qualcomm and Jacobs for Innovation and Delivery



A **best-in-class** team with a **holistic, complementary,** and **valuable** solution to deliver a successful Smart City transformation to the **City of New Orleans**

Hereinafter the entire consortium is referred to as the Smart+Connected NOLA team. We are uniquely qualified to deliver every facet of this program with future proof technology, to provide exceptional quality, value, and focus on optimizing the City's connectivity and Smart City solutions. As required in the RFP, our organizational structure is depicted in Exhibit 1-2 and JLC has office locations in New York, NY, Chicago, IL, and Los Angeles, CA.

History of Working Together

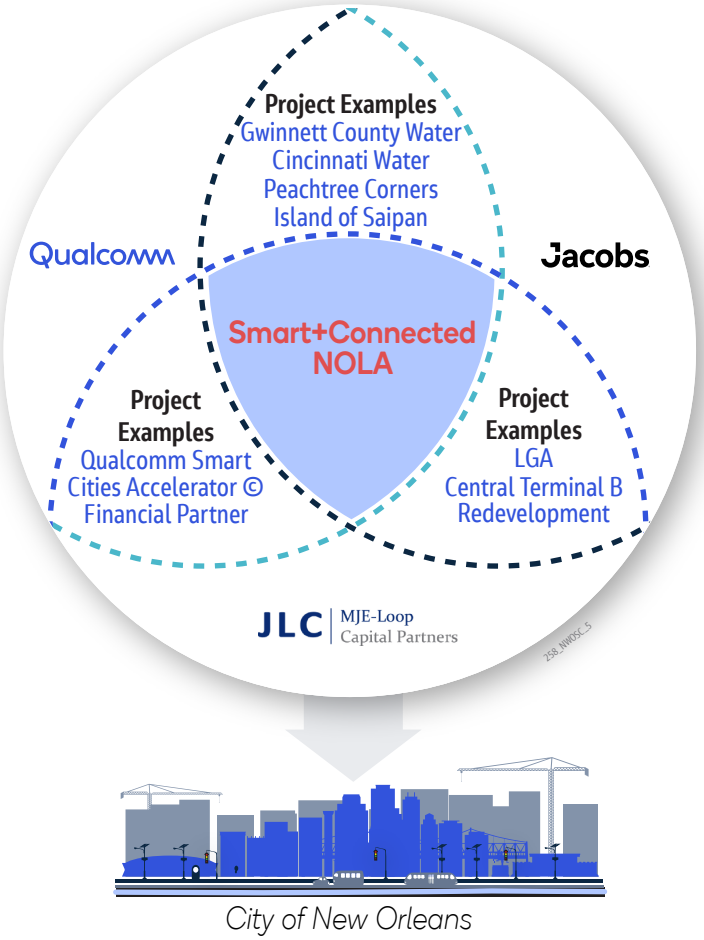
The principal partners in our consortium have worked together to imagine and deliver similar smart technology and funding solutions, as well as large, complex infrastructure projects, for other clients around the world (Exhibit 1-3). Through this experience, we have developed strong working relationships, proving our capacity for collaborative, streamlined, and effective delivery, communications, and teamwork.

Smart+Connected NOLA will work closely with the City to drive and deliver world-class funding, planning, implementation, and long-term operations of a solution tailored to your vision.

- Qualcomm will be the key technology partner, bringing best-in-class IoT solutions to Smart+Connected NOLA and the City.
- Jacobs, as the delivery partner for Smart+Connected NOLA, will be your primary point of contact and will be accountable for program delivery.
- JLC will arrange and coordinate all aspects of program funding and lead Smart+Connected NOLA project financing, monetization, and revenue generation and sharing of the program.
- Zyter will serve as our integrated Smart City platform provider and general contractor, and will be responsible for operations.

EXHIBIT 1-3.

Experience Working Together Demonstrates Successful Track Record of Collaboration



City of New Orleans

For example, Qualcomm and Jacobs collaborated and continue to work with the City of Peachtree Corners, GA, to provide Smart City solutions. Project elements include LED lighting, parking, cameras, digital signage, internet access (Wi-Fi gateways), command and control center analytics platform, smart asset management, and cellular vehicle to everything platform (CV2X).

> They **[Jacobs]** were selected again for their experience and expertise in operating and maintaining traffic signals with integrated technology. As most of this technology is still in its infancy stage, it was paramount that we had a company who had a complete understanding of the technology and its applications to an ITS system. Through this relationship, we also partnered with **Qualcomm** to deploy the latest CV2X technology in the city, with Jacobs handling the installation, configuration, and commissioning of the units. We have been very pleased with the experience and ability of Jacobs to perform these integrations of new technology, that have helped solve real issues for our community, and we look forward to continuing our relationship with Jacobs into the future."
>
> *—Brandon Branham, Assistant City Manager, City of Peachtree Corners*

Our firms' history of working together with one another assures the City of a well-defined team and culture fit, as well as provides valuable knowledge and proven leadership for delivering design, construction, and operations.

Company Profiles

We have assembled a high-caliber program delivery team with expertise integrating all facets of this program. Our team includes world-leading smart technology innovators and seasoned local partners that bring an exceptional portfolio of success to deliver best-for-New Orleans solutions. Our complete team encompasses the following firms:

- Qualcomm – Technology provider
- Jacobs – Delivery partner
- JLC – Financial sponsor
- Zyter – Smart City platform provider, general contractor, and operations
- Bright Moments (DBE) – Public outreach
- Celona – Private LTE technology provider/5G technology provider
- Gaea (DBE) – Flood mitigation/modeling
- Grady Crawford – Fiber installation
- HD and Associates (DBE) – Field services
- HLB (DBE) – Lighting solutions
- IKE Smart City – Smart City kiosks
- ILSI (DBE) – Civil engineering and field inspection
- Juganu – LED and smart lighting and controls
- Malone Electric (DBE) – Installation services
- NoTraffic – Traffic management technology provider

Corporate profiles for the primary consortium partners are provided on the following pages, followed by summaries of our best-in-class teaming partners.

Consortium Partners

Qualcomm

Qualcomm Technologies (Qualcomm), founded in 1985, is a global leader in the development and commercialization of foundational communication technologies that help power the modern mobile experience starting with 3G, 4G, and now emerging 5G technology. From network equipment and broadband gateway equipment to Internet of Things (IoT), automotive, and consumer electronic devices, Qualcomm helps billions of people around the world connect, compute, and communicate.

Qualcomm products **are revolutionizing industries, including Smart Cities technologies,** driving the digital transformation in IoT. They're enabling connections between millions of devices in ways never imagined. The firm's inventions are helping create a renewed livelihood for many people and allowing us the honor of enriching lives.

Qualcomm is the world's leading wireless technology innovator and the driving force behind the development, launch, and expansion of 5G. Solutions

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Qualcomm's **Breakthrough Technologies** and Unmatched Patent Portfolio Transform How the World Connects

Qualcomm's engineers, scientists, and business strategists invent breakthrough technologies that transform how the world connects, computes, and communicates. Our contributions to technology standards drive future industries by enabling system interoperability while enabling product differentiation, creating new markets and expanding existing markets, allowing for better cost efficiency, reduced market risk and improved reliability for consumers, system vendors, and inventors.

We also bring our industry-leading patent portfolio, representing the collective efforts of our world-class engineers, to the City's program. Our portfolio includes foundational cellular essential patents that led 3G, 4G, and 5G, respectively, and valuable implementation inventions that make cellular commercialization viable. We have also developed valuable leading IP across a number of areas foundational to mobile experiences—including radio frequency, position location, processing platform, video compression, imaging, computer vision, voice and audio technologies, Wi-Fi, and artificial intelligence. Our unmatched portfolio of inventions includes over 140,000 granted and pending patents.

include cloud-delivered wireless edge solutions for branch, mobile, and IoT networks. The service based on the elastic architecture delivers an agile, pervasive, and software-defined wireless edge that connects people, places, and things everywhere over LTE and 5G cellular networks with resiliency, security, and control. More than 18,000 active enterprise and government organizations around the world, including 75 percent of the world's top retailers, 50 percent of the *Fortune* 100, and first responder agencies in 25 of the largest U.S. cities, rely on this architecture to keep critical branches, points of commerce, field forces, vehicles, and IoT devices always connected and protected. Major service providers use these wireless solutions as the foundation for innovative managed network services.

Qualcomm offers the broadest set of wireless technologies today including a comprehensive chipset portfolio of solutions designed for connectivity, edge computing, and AI – all supported with hardware-based security. Qualcomm's solution provides internet connectivity across a city, connecting everyone, providing digital equity, advancing public safety, scaling infrastructure, and creating new city efficiencies and services.

Technology Leadership

Many of the world's leading mobile operators and network manufacturers turn to Qualcomm's processors and modems to power the advanced on-board systems that meet consumer demand for connectivity. As the leading semiconductor company in communications, we bring more than 30 years of wireless technology to the Smart City space and can use that expertise to deliver industry firsts like Private LTE/Private 5G to the City of New Orleans.

The main purpose of private LTE expandable to Private 5G is to provide a superior performing alternative to other existing technologies. It is a modern alternative with superior performance and a clear evolution path that can benefit from the introduction of 5G technologies and the cellular ecosystem as a whole. Qualcomm's offering is 3GPP standard compliant and contributes to and follows the standardization timeline closely. The implementation aims to be a solution focused on supporting high-speed, high-frequency, and ultra-low-latency communications enabling IoT across the board.

IoT is fueling the digital transformation of the enterprise. Qualcomm is collaborating with companies that are pioneering this digital transformation as a trusted partner and driving engine with the system design expertise, leading technology portfolio, end-to-end solutions, and industry relations to make innovative visions reality.

Jacobs

Founded in 1947, Jacobs is one of the largest and most diverse providers of scientific, technical, professional, and construction and program management solutions for infrastructure, government, business, commercial, and industrial sectors across the globe. With a talent force 55,000+ strong, we're an industry leader in Smart Cities and urban infrastructure planning, design, construction, asset management, and operations and maintenance (O&M) for all core city systems – transportation, information and communications networks, telecommunications, security, environment, energy, water, wastewater, waste management, and advanced facilities.

We live in the communities where we work, such as New Orleans, where we've had an office for more than 30 years — so we're personally invested in doing what is right for New Orleans. **Locally, we have successfully delivered more than $2.5 billion of complex infrastructure in New Orleans over the past decade.** Our local experience is further enhanced by 30 staff in New Orleans who are part of the Louisiana team of 120, including Program Manager Kevin Ferguson, Local Principal Amanda Gaze, and Infrastructure Senior Advisor Mark Jernigan, among others.

We're also an award-winning systems integrator, with expertise linking regional, city, enterprise, and facility-wide assets using real-time data collection, predictive analytics, and visualization – including geospatial analytics, end-to-end cybersecurity, telecommunications services, cloud technologies, and automation – to transform our clients' operations. Importantly, our approach to vendor neutrality allows us to evaluate technology solutions based on merit without conflict of interest.

Our *Engineering News-Record* (ENR) rankings illustrate our vast, integrated market and delivery portfolio and industry leadership in key program areas:

» **No. 1 ranked telecommunications firm,** bringing an extensive small cell, fiber optic, and 5G portfolio

Working and Living in New Orleans Provides **Local Insight**

Jacobs offers a long history of commitment to New Orleans – we live, work, and play here. Our first client in Louisiana was the City of New Orleans through the Sewerage and Water Board of New Orleans (SWBNO) more than 30 years ago. And we've been working with the Louisiana Recovery School District in New Orleans since 2007 to deliver critical infrastructure, which was led by proposed Program Manager Kevin Ferguson. We also bring insight from Mark Jernigan, former Director of Public Works at the City of New Orleans. **Our combined experience with the City offers you the following to ensure this Smart City program is successfully executed with community buy-in:**

- Established working relationships with City staff in multiple departments
- Sound knowledge of the Neighborhood Participation Program and its process
- Solid connectivity with various neighborhood associations throughout the City
- Thorough understanding of the multiple agencies involved in permit review

In addition, our technical expertise reflects a rich combination of local subject matter experts who have done in-depth work on City systems with City leaders, as well as industry-leading professionals with global expertise. This dual perspective captures historical knowledge about the City and the New Orleans community combined with the best practices worldwide when developing innovative solutions related to your Smart City program.

Invested in New Orleans

Recently, **Amanda Gaze** and **Monica Stochl** from our New Orleans office spent their Saturday in support of **Water Wise NOLA**, building **rain garden planter boxes** and finalizing a **French Drain** at key **community locations** in the **7th Ward.**

across North America and around the world. Our expertise includes radio frequency (RF) design, engineering, site acquisition, construction, network integration, optimization services, and O&M for a broad range of network architectures – LTE, centralized radio access networks (C-RAN), first responder networks (FirstNet), IoT, fiber fronthaul and backhaul, in-building distributed antenna systems, and Smart Cities.

- **No. 1 ranked design firm** and premier provider of innovative IT solutions, bringing some of the world's foremost experts in cybersecurity, network O&M, IT planning, system integration, technical testing and evaluation, analysis and guidance, software management, systems administration, hardware and software purchasing, hardware repair and enhancements, software configuration, service desk, end-user devices support, architecture and infrastructure management, and systems management.
- **No. 1 ranked firm in combined design and program/construction management,** bringing industry best practices and leadership in life-cycle program delivery. We are the only firm with the in-house technical and delivery capabilities to plan, design, permit, construct, commission, and provide full-time asset management and O&M services for lighting, transportation, and communications networks. This experience enables us to work seamlessly with the City to manage and guide this program step-by-step through every detail, with a focus on cost estimating, schedule compliance, financial performance, change management, and safety and risk management.
- **No. 2 ranked transportation firm** and leader in some of the industry's pioneering developments in arterial management, ITS, real-time data and sharing apps, and autonomous and connected vehicles. Jacobs is leading the way in enhancing the safety, resiliency, quality, and efficiency of multimodal transport around the world and right here at home.

Our diverse in-house capabilities, in traditional engineering and digital solutions, bring in-depth understanding of the challenges and opportunities ahead. We are not an engineering company trying to figure out how to implement technology, nor are we a technology company trying to enter the engineering field. **We are a fully integrated, connected enterprise that will focus all our resources and capabilities on providing a holistic solution for your Smart City program.**

Jacobs' industry best practices in program management, construction management, O&M, and alternative delivery will play a crucial role in helping you realize your Smart City transformation – with a high degree of transparency, quality, and efficiency.

JLC Infrastructure

MJE-Loop Capital Partners LLC D/B/A JLC Infrastructure (JLC) is a 100% minority-owned and controlled investment management company focused on the transportation, energy, utilities, communications, and social infrastructure sectors in North America. The firm is a joint venture founded in 2015 by Jim Reynolds of Loop Capital and Earvin ("Magic") Johnson of Magic Johnson Enterprises (MJE) and maintains offices in New York, Chicago, and Los Angeles. JLC's founders and investment team have built tenured professional careers in the infrastructure, investment banking, communications, and investments sectors. P3 projects and public infrastructure assets are core components of JLC's investment strategy. To date, JLC has developed a strong track record of successfully pursuing and investing in several P3 opportunities, including the Denver International Airport Great Hall, LaGuardia Airport Central Terminal B, and JFK International Airport Terminal One redevelopment projects. JLC has also made several public infrastructure investments in the State of Louisiana, as described in Exhibit 1-4.

Loop Capital is a full-service investment bank, brokerage and advisory firm that provides creative capital solutions for corporate, governmental, and institutional entities across the globe. Founded in 1997, Loop Capital has grown its employee base from six to 200 financial services professionals. The firm is at the forefront of the infrastructure market as one of the most active investment banks in the public finance capital markets, as well as advisor to public and private sector clients on many prominent transactions in the transportation, power, and utilities sectors. Since its founding, Loop Capital has participated in transactions with more than 2,500 state and local governments, higher education institutions, transportation and housing agencies and public power and utility clients across 49 states, Puerto Rico, and Washington, D.C.

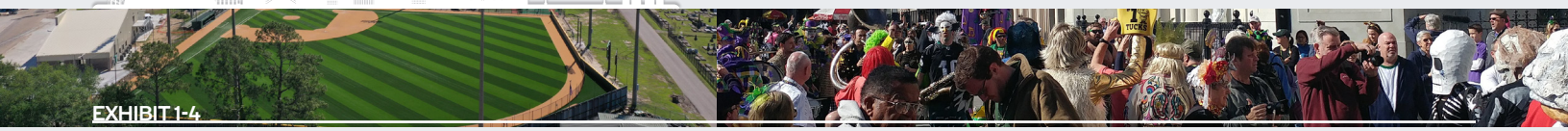

EXHIBIT 1-4

JLC's History of **Investing** in **New Orleans and Louisiana**, including **Smart City** Systems

Helping governmental agencies in Louisiana finance their much-needed infrastructure projects is not new to JLC, as the firm brings experience investing in Smart City systems, social infrastructure, and public finance projects throughout the state, including New Orleans.

- **Smart City Upgrades involving Water Infrastructure.** JLC partnered with the municipalities of Baldwin, Cotton Valley, and Simmesport to upgrade critical water utility infrastructure with more accurate and efficient solutions, resulting in increased revenues and lower overall maintenance costs. During 2020, the smart meter solutions enhanced meter reading accuracy and more efficient billing processes, which led to monthly water utility revenue increases of upwards of 50%.
- **Social Infrastructure Investment.** JLC collaborated with the City of Crowley to replace their athletic facilities and upgrade electrical infrastructure. This project is expected to act as a catalyst for increased tourism as the City hosts numerous regional sporting tournaments at the new fields, as well as a boost to the local economy and jobs.
- **Public Financing in New Orleans and Louisiana.** Loop Capital served as an underwriter on $14.7 billion of negotiated municipal bond issuances for Louisiana-domiciled issuers, of which $2.5 billion have been issued by the City of New Orleans and New Orleans Aviation Board. The firm holds strong relationships with the City of New Orleans, having served as underwriter for multiple credits involving general obligation bonds, limited tax bonds, sewerage service revenue bonds, water revenue bonds and airport revenue bonds for projects including the Audubon Commission Aquarium and Louis Armstrong New Orleans International Airport.

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JLC's experience with delivering complex P3 projects, significant available capital to invest in your project, and strong relationships with key City of New Orleans stakeholders will be critical to successfully deploying the program and achieving the City's goals.

MJE serves as a catalyst for fostering community and economic empowerment by providing access to high-quality entertainment, products, and services that answer the demands of multicultural communities. Founded in 1987, MJE strategically invests in varied businesses across multiple industries that support the development of a community. MJE has developed a strong track record in creating opportunities for investment in urban communities. Several of these innovative, urban-focused investments include the Canyon-Johnson Urban Funds and the Yucaipa Johnson Fund. MJE's largest investment is a controlling stake in EquiTrust Life Insurance Company, a life and annuity business with $17 billion in assets under management.

As a 100% minority-owned and controlled firm, JLC is committed to diversity and inclusion and supporting the growth of DBE firms by maximizing opportunities for DBE firms to participate in our projects. **To date, JLC portfolio companies have awarded more than $680 million in contracts to DBEs.**

Zyter

Zyter, founded in 2017 by serial entrepreneur Sanjay Govil, provides a cloud-agnostic, universally deployable 5G-ready digital platform that enables secure, scalable, end-to-end IoT and Smart Cities solutions, encompassing devices, connectivity, cloud, platform and custom applications for citizens, administrations, and governments. The platform's open architecture, military-grade security, and compliance with multiple industry standards enable departments across cities, including government, emergency services, education, infrastructure, and transportation, to connect, communicate, collaborate, and engage easily and effectively.

The Zyter Smart City Platform will enable New Orleans to better manage the city ecosystem and unlock the full potential of the connected IoT devices and services provide by the City so you can:

- Improve operational efficiencies
- Make smarter, faster decisions
- Provide intuitive experiences for stakeholders
- Improve safety
- Secure your enterprise

City Platform has the ability to connect to and control any IoT device from any vendor deployed anywhere through its flexible adapter framework. Additionally, the Zyter Smart City Platform comes with a command and control center that creates a complete view of everything that is happening in a city in real time across all verticals (parking, lighting, security, energy management, and more) with high-level and detailed dashboards with live alerts, real-time analytics and historical analytics as well, allowing the users to look at the big picture and also dive into the deeper aspects of the city they are managing.

Along with a command and control center, Zyter also provides mobile apps for citizens and trusted application program interfaces (APIs) and services for third parties to build applications for citizen engagement, communication, and information. Zyter's Adapter framework enables connectivity to get data from and send commands to not just IoT devices deployed on the field, but also applications, services, and third-party APIs available through any ecosystem, enabling integration and digitalization across disparate system. The Zyter platform covers multiple verticals such as transportation, federal, education, healthcare, and events and media.

Zyter has received more than 50 awards for IoT and healthcare solutions, including Innovation Company of the Year (One Planet Awards, Silver). The firm was the winner of the 2019 IT World Award in the "Hot Technology & Solution of the Year, Information Technology Cloud/SaaS" Category. Other Zyter credentials include:

- 7M+ active users, 45M+ expected by 2022
- 250+ integrated devices
- 100+ integrated partners
- DoD's chosen platform for HIPAA/FedRAMP compliant secure collaboration and Tele-ICU across 16 military health systems

Best-in-Class Teaming Partners

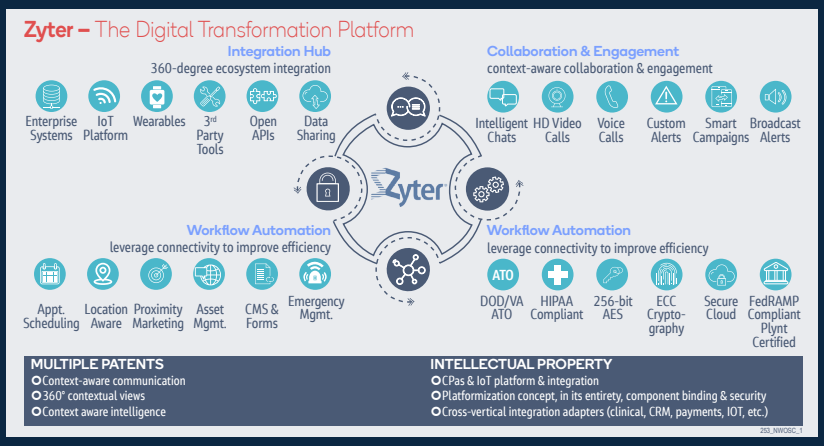
Our team features additional teaming partners to bring highly experienced personnel, technology expertise and know-how, history with the City, and a spirit of commitment to the New Orleans community, as demonstrated in Exhibit 1-5 on the following pages.

Zyter – Qualcomm's Strategic Partner for IoT-as-a-Service

Qualcomm and Zyter (through parent company Infinite) have developed a strategic collaboration to create end-to-end, fully managed solution that facilitates digital transformation for smart connected spaces. Trusted by Qualcomm to be the foundation of its Smart Cities Accelerator Program, Zyter SmartSpaces delivers actionable insights from IoT devices and sensors and fosters the rapid development, deployment, and lower cost of maintenance of Smart City applications. Using Zyter's proven integrated platform for turnkey implementation of smart connected spaces, we are leading the industry to facilitate powerful digital transformation in Smart Cities for plug and play deployment.

Most recently in late 2020, Qualcomm and Zyter worked together to successfully implement and deploy the Qualcomm Smart Campus solution that connects multiple IoT devices and services from siloed applications to create an end-to-end solution with a Command-and-Control Center for administration teams and mobile apps for users and admins. Aspects similar to the New Orleans Smart City Program include smart parking, smart lighting, smart security and surveillance, building energy management, smart waste management, and digital twin and asset tracking, which are provided together to enable intelligent and informed decisions faster using real-time data streams, comprehensive dashboards, incident reports, and prescriptive actions.

City Command and Control Center



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Bright Moments (DBE): Public Outreach

Company Profile

- Respected local DBE firm with 37 years of community outreach experience with public and private sector clients in New Orleans
- Services include full capabilities for strategic planning, community outreach and engagement, grassroots marketing, including canvassing, social media development, focus group strategies and assessments, and data analysis and interpretation, as well as virtual outreach strategies
- Led community outreach and engagement on key citywide initiatives such as the City's Master Plan and Comprehensive Zoning Ordinance, Urban Water Plan, and $2.2B Recovery School District infrastructure program

bright moments
Celebrating 35 Years of Service!

Value to City of New Orleans Smart City Program

- Bringing nearly 4 decades of public outreach and stakeholder management in New Orleans, Bright Moments **offers deep and enduring knowledge and understanding of the neighborhoods and people of New Orleans.**
- Proven delivery partner with Jacobs on multiple projects for and in the City, including Sewerage and Water Board of New Orleans Advanced Metering Infrastructure (SWBNO AMI) project – providing an established relationship for efficient delivery.
- Proven ability to engage communities in New Orleans – Bright Moments has organized and produced more than 2,000 community meetings attended by thousands of residents.

Celona: Private LTE Technology Provider / 5G Technology Provider

Company Profile

- Deploys the world's largest optical, IP, and private LTE networks—including **communications networks**
- World's **only provider of end-to-end 5G enabled solutions**
- Founding team members come from companies including Qualcomm, Aruba, Cisco, and have built products spanning technologies from chipsets to systems to cloud-based software

celona

Value to City of New Orleans Smart City Program

- **Enterprise network provides data privacy, more capacity, and serves as Neutral Host.**
- Single network deployment and single solution architecture to support both high density Smart City IoT, high speed mobility, and fixed wireless outdoor coverage use cases, eliminating the need to develop and deploy separate radio infrastructure components for each scenario and operational expense for design, installation, and ongoing management.
- Security architecture powered with SIM card authentication on connected devices, which seamlessly integrates with existing security policy infrastructure across the Smart City.
- Network architecture powered by Celona MicroSlicing™ designed to integrate cellular wireless with any IP network backbone, simplifying adoption across multiple sites at scale and guaranteeing specific throughput, latency, packet error rate metrics on a per application basis.
- Distribution, configuration, and monitoring of mobile core network services via the same operations console and API libraries as the one used for radio and SIM management, simplifying end-to-end visibility to quality, reliability, accessibility, and other **5-9s requirements.**
- Enable zero-touch installation and full remote management of radios, SIM cards, mobile core services via cloud-hosted operations console and application programming interface (API) libraries to accelerate service delivery and problem resolution.
- Integrate with third-party management interfaces and software applications via developer-friendly API libraries, to help simplify operations across all Smart City technologies.

Gaea Consultants (DBE): Flood Mitigation/Modeling

Company Profile

- A recognized **women business enterprise (WBE), DBE, and small business**
- New Orleans-based hydrologic and hydraulic (H&H) modeling expert
- More than 20 years of experience working with Louisiana-based governmental agencies, including the City of New Orleans and SWBNO
- Blue-green infrastructure leaders supporting the innovative New Orleans-based Gentilly Resilience District design

CONSULTANTS Gaea AND ENGINEERS

Value to City of New Orleans Smart City Program

- Longstanding and successful relationship with the City of New Orleans for civil infrastructure projects that demonstrates **a successful performance history with the City,** including competency, responsiveness, cost control, work quality, and ability to meet schedules and deadlines.
- Demonstrated, proven, and **acknowledged technical competence related to smart water and flood risk reduction.**
- A more than 20-year history of working with Jacobs and currently working together on the SWBNO AMI project, offering a proven track record of collaboration.
- A team of exceptional experts up to date with DPW and SWBNO guidelines, tools, policies, and expectations with proven abilities to manage multiple, concurrent task assignments under challenging schedule constraints.

Grady Crawford: Fiber Installation

Company Profile

- Respected local firm with 45 years of experience working in New Orleans, including the French Quarter, Central Business District, and Warehouse District
- First contractor in Louisiana to install fiber, dating to late 1980s
- Specializes in permitting, installation, and maintenance of advanced fiber optic and wireless networks, deploying 1.5 million feet of telecommunication fiber in 2020 alone

Value to City of New Orleans Smart City Program

- Familiar with SWBNO parish-wide underground ductbanks, DOTD, and City of New Orleans traffic fiber-optic cable. Has installed multiple fiber systems within Orleans Parish for AT&T, LUMEN, Qwest, Level 3, and Entergy.
- Wealth of experience in every type of communication discipline, including **wireless, Wi-Fi, point-to-point, and cellular services.**
- Experience with work in right-of-way, directional drilling, and maintenance.

HD and Associates (DBE): Field Services

Company Profile

- New Orleans-based telecommunications contractor
- Brings five decades of experience in wireless engineering, project management and implementation, computer engineering, and staff augmentation
- **Delivery partner with Jacobs** providing construction management on the Recovery School District (RSD) program in New Orleans

Value to City of New Orleans Smart City Program

- Dedicated team with specific experience in deploying fiber and wireless communication networks.
- **Local market knowledge** related to fiber installation, small cell installations, DAS systems, and stealth antenna applications.
- Experience with A/P installation, work in right-of-way, system integration, site survey, and testing.
- Purchasing/procurement and warehouse support.

HLB (DBE): Lighting Solutions

Company Profile

- Largest independent **WBE architectural lighting firm in North America**; has led and supported inspirational LED lighting designs for iconic infrastructure in U.S. and abroad
- More than 40 years of sustainable lighting design for streets, architectural, and bridges with expertise in new technologies and integrated lighting controls
- Specializes in creating compelling holistic lighting experiences that transform the way people interact with the built environment
- Supports major public outreach programs to create vibrant yet allied lighting designs and solutions for various user groups

Value to City of New Orleans Smart City Program

- With energy codes and standards always evolving, the firm's **lighting designers are skilled in deciphering new technologies that maximize savings and long-term operational costs** and collaborate closely with teams on light pollution issues, energy reduction, use of lighting controls, future maintenance issues, and daylight optimization.
- History of collaboration with Jacobs, including the Miami Beach Smart City lighting project.
- Integrates electric lighting design, daylighting design, sustainable solutions, 3-D visualization, digital media services, and control system integration into a holistic architectural lighting solution for the City's program.
- Demonstrated successful history of transforming New Orleans public spaces, including the Ernest N. Morial Convention Center and Louis Armstrong New Orleans International Airport – North Terminal

IKE Smart City: Smart City Kiosks

Company Profile

- IKE was created to help cities and business improvement districts (BIDs) connect citizens and visitors with information and resources in dynamic new ways
- IKE (Interactive Kiosk Experience) is a breakthrough citizen engagement platform that helps cities, BIDs, and destination marketing organizations (DMOs) communicate with the public, encourage a pedestrian-oriented environment, and tell the story of their city
- Vision is to partner with the smartest cities, helping to improve transportation, communication, economic development, and analytics, leading to improvement in quality of life for their citizens
- More than 170 kiosks installed and operating in eight major urban cities across the U.S. and under deployment in a dozen more

Value to City of New Orleans Smart City Program

- Through an ever-expanding series of applications, IKE drives discovery, enables navigation, **delivers social equity, encourages economic development,** enhances public safety, and **generates revenue.**
- Install, maintain, and operate our digital wayfinding kiosk networks at **no cost to the City.** IKE and **advertisements revenue generated from advertising sales shared back to the City.**
- Features and benefits of IKE:
  - Delivers essential and emergency communications
  - Provides city and community content at no cost, such as PSAs, art, etc.
  - Develops the local economy by driving traffic to local establishments at no cost to business owners
  - Integrates city systems and APIs
  - Complements smartphone functionality through use of SMS or QR codes to easily transmit information
  - Captures valuable information and data through multiple points

ILSI Engineering (DBE): Field Inspection and Civil Engineering

Company Profile

- Based in New Orleans, one of Louisiana's most reputable civil engineering and construction services firms
- **Female and minority-owned small business**
- With more than 27 years of continuous experience with the City of New Orleans, ILSI has completed more than 200 City projects
- Delivery partner on multiple Louisiana mega-projects, including working with Jacobs on the $1.6B infrastructure program in Baton Rouge and SWBNO AMI project

Value to City of New Orleans Smart City Program

- **Demonstrated track record with the City of New Orleans over nearly 3 decades** offers familiarity with many of the partner agencies and regulatory bodies that are key to your Smart City program.
- No learning curve – completely knowledgeable and up to date on the DPW's latest design standards and requirements.
- Proven history of collaboration with Jacobs; in fact, we received an award from the governor in the inaugural Louisiana Economic Development Small Business Mentor-Protégé Program – the first of its kind in the state.
- **Familiar with Smart City systems in New Orleans** – currently working on SWBNO AMI project and was part of the Entergy energy smart program for 4 years where identified energy efficiency and demand reduction opportunities.

Juganu: LED and Smart Lighting and Controls

Company Profile

- Technology company founded in 2011 to provide game-changing, sustainable, and intelligent solutions for the professional lighting and communication markets
- Smart lighting firm that offers a digital platform, FOAM, that uses existing public lighting infrastructure and covers entire spaces with lighting, sensors, communication, and AI, all in an end-to-end holistic solution

Value to City of New Orleans Smart City Program

- FOAM, Juganu's integrated hardware and software platform, combines smart lighting, sensors, communication, access and backhaul connectivity, and AI edge computing to provide unmatched energy efficiency and long-lasting lighting quality. Other key attributes of FOAM include:
  - Flexible configuration of services and data-sources
  - 10X better coverage as there is a Wi-Fi access point and video cameras and all embedded hardware every 100 feet
  - **10X lower CAPEX for Smart City** as fixtures are connected by wireless backhaul network, decreasing cabling and simplifying the installation of streetlight fixtures
  - Fully interoperable open standards for field networks including Wi-Fi, LORA, ZigBee, etc.; future protocols are easily updated OTA
- Established relationship with Qualcomm, having collaborated to utilize their chipsets within its smart network technology to provide an AI engine, edge processing architecture, and fast connectivity.

Malone Electric (DBE): Installation Services

Company Profile

- More than 30 years of experience as a contractor in the New Orleans marketplace
- Second generation, **minority- and female-owned DBE electrical firm**
- Delivery partner for numerous New Orleans-based projects
- Extensive experience in the supply, installation, and service of electrical and mechanical systems for public and private clients

Value to City of New Orleans Smart City Program

- Track record of serving the City of New Orleans, including Parks and Parkway locations and the Jackson Square holiday light display, demonstrating **a successful history with the City** by meeting performance and participation targets.
- Commitment to **mentorship, education, and employment opportunities for underrepresented minorities** in the electrical industry.
- Long-term strategic collaboration with All Star Electric with track record of successful project completion.

NoTraffic: Traffic Management Technology Provider

Company Profile

- Founded in 2017, NoTraffic is a traffic management technology provider that delivered the **world's first cloud-based fully autonomous traffic management platform** that manages and optimizes traffic and improves safety
- Backed by a team of worldwide experts with various backgrounds in traffic engineering, AI, cybersecurity, automotive, academic, and urban, NoTraffic is a company harnessing next-generation technology to bridge the innovation gap and make the roads intelligent and safe
- Future-proof platform digitizes, modernizes, and connects all types of traffic signal infrastructure to support all current and future traffic applications

Value to City of New Orleans Smart City Program

- NoTraffic's ground-breaking solution **reduces traffic congestion and improves road safety** in real time.
- Platform digitizes and transforms legacy traffic signal infrastructure, **eliminating the need for major capital investment**, extensive construction and long project delivery timelines typically associated with legacy traffic signal technology projects.
- Platform will enable the City to understand safety challenges at and near intersections to develop and deploy effective countermeasures.
- Managed services include 24/7/365 monitoring and support to maximize system uptime and support.
- Only traffic platform delivered as a managed service using a hardware-enabled, software-as-a-service architecture that enables agencies to select additional applications from App store.

Tab 2 -
Adequacy of Solutions and Soundness of Approach Qualifications

2 Adequacy of **Solutions and Soundness** of Approach Qualifications

Executive Summary: Overview of Solutions and Approach

The City of New Orleans is embarking on a bold transformation that will be watched the world over. Though powered by technology, improving lives is the heart of a Smart+Connected New Orleans. Our team has invested thousands of hours working collaboratively to develop a holistic, integrated, and connected solution tailored to our city's unique challenges and bold vision for the future – ensuring that the citizens, communities, and soul of New Orleans remain at the center of our solutions. From this work, we're proud to present our proposal to accelerate your technological transformation, achieve early wins for the people of New Orleans and provide you a long-term trusted partner for delivering an inclusive, safe, prosperous, vibrant, and resilient New Orleans.

The Smart+Connected NOLA team proposes a win-win public-private partnership (P3) model comprising world-class organizations to provide full accountability for the design, build, installation, financing, operations, and maintenance of all the innovative solutions described herein for a proposed 15-year concession period. Our proposed P3 model offers the City an opportunity to upgrade vital communications infrastructure with no upfront cost to the City, and on a cost neutral basis over the 15-year concession period. Furthermore, our proposed revenue-sharing mechanism with the City is expected to generate additional funds from private sector revenue sources not currently realized by the City, which the City can re-invest in additional infrastructure improvements or other critical social programs.

To accelerate digital equity and connectivity, our approach focuses on delivering tangible and measurable results within 2 years of the program, with significant opportunities to expand on the infrastructure foundations laid during this initial period. More specifically, our Phase 1 activities prioritize the installation, startup, and operations of a Citywide connectivity, smart lighting, smart traffic, Smart City management platform, and smart kiosk network, all while meeting the City's key objectives of addressing digital equity, workforce inclusion, and citizen engagement, and meeting your disadvantaged business enterprise (DBE) requirement. At the end of Phase 1, we will work with the City and other stakeholders to prioritize incremental Phase 2 Smart City opportunities that align with City goals and anticipated future funding streams, fully leveraging the infrastructure we have already invested in. Based on the performance of our Phase 1 business model, our Smart+Connected NOLA team will develop a detailed scope of work and funding model for Phase 2 and subsequent phases that builds on lessons learned; accelerates the integration of new and evolving technologies; and aligns with changing City priorities, challenges, and conditions.

As detailed in this section, our Phase 1 priorities provide the City with immediately functional and visible improvements to excite and inspire stakeholders about long-term solutions to fundamentally transform how the City operates; reimagine how people live, work, and play; and promote economic vitality, quality of life, and digital equity for all New Orleanians. Key elements of our Phase 1 approach are summarized in Exhibit 2-1 and include:

- **Citywide connectivity to accelerate digital inclusion and economic revitalization.** Our solution delivers an innovative, wireless enterprise long-term evolution **(LTE)/5G network** that achieves 90% broadband coverage across the City's 75-square-mile area, 70% coverages of Sewerage and Water Board of New Orleans' (SWBNO's) 430 sites. Phase 1 includes both the immediate implementation of a 4G LTE network, as well as migration upgrade to 5G. This accelerated LTE/5G

plan will embolden socio-economic opportunities, enhance livability for all citizens, and support infinite opportunities to connect the City's places, assets, mobility infrastructure, and smart systems.

- **A smart lighting solution to keep the public safe, save millions of dollars in energy and operation and maintenance (O&M) costs, and create a significant night presence in our vibrant skyline.** Our smart lighting master plan and state-of-the-art technology platform provide a robust framework for new and upgraded smart, connected LED lighting in key City corridors that goes above and beyond the current LED specifications. Phase 1 includes the replacement of 3,000 inefficient sodium light fixtures with smart fixtures equipped with highly efficient LED lamps, Wi-Fi connectivity, and a suite of additional sensors and artificial intelligent (AI) capabilities, including the detection of water level flooding, which may be used in a Phase 2 implementation of further smart capabilities.
- **A groundbreaking traffic management platform to transform and modernize New Orleans' traffic signal infrastructure.** Leveraging the latest developments in AI, edge processing and cloud-computing enables rapid deployment of smart mobility services, minimizes construction requirements, and **future proofs the City's traffic signal systems.** We'll also leverage our team's arterial management and intelligent transportation system (ITS) leadership to support safer, more efficient mobility options and Smart City synergies that improve commerce, job growth, tourism, public safety, leisure, and a wide range of City operations. Phase 1 includes the installation of smart traffic equipment at all 500 traffic light intersections, providing immediate operating cost savings to the City that will be redirected to Smart+Connected NOLA for system operations during the concession.
- **Innovative kiosks to drive breakthrough citizen engagement, encourage a pedestrian-oriented environment, and tell the story of our great city.** Equipped with Wi-Fi hot spots and call access to emergency services, our multi-faceted kiosks will help the City and businesses connect citizens and visitors with information and resources in dynamic new ways, promote local economic growth, and enrich the user's experience. Phase 1 includes the roll-out of 30 kiosks strategically located to maximize the distribution of information to and engagement with citizens and visitors.
- **A real-time City Command and Control Center for powerful monitoring and control of all connected City services, enhanced operational efficiencies, and reduced maintenance costs.** Our advanced platform connects to and controls all the smart devices connected across verticals (lighting, traffic, security, parking, energy management and more), and provides a complete, real-time view of Smart City solutions. This platform's dynamic dashboards, live alerts, and predictive analytics greatly enhance situational awareness, monitoring and control, flexibility, scalability, and unified asset management.
- **A Cybersecurity Plan to protect network, Internet of Things (IoT) devices, and data privacy and security.** The deployment of IoT devices to monitor and manage streetlights, mobility, kiosks, and supporting communication network expands the cybersecurity threat landscape as the vast deployment introduces an extensive and potentially highly penetrable physical network. Our proposed solution embeds cybersecurity into the design of the network and IoT devices and provides recommendations for configuration and validation testing.
- **A true cost-neutral solution that requires no capital outlay by the City and leaves control of the system in your hands with minimal risk.** Our financial plan also includes numerous revenue and cost-saving sharing opportunities to deliver long-term affordability and sustainable O&M of City assets, and provides the City additional annual income from new third-party revenue streams.
- **Ubiquitous inclusion to promote equitable access for all.** As discussed in Tab 3, our approach provides more than just access for New Orleanians. We've incorporated a plan for a **comprehensive Digital Inclusion Program** to advance technology adoption, application, and economic mobility by engaging local STEM leaders, educational organizations, jobseekers, and non-profits to receive and advance the program's training and its widespread benefits. We've also developed a plan to **achieve** your **35%** DBE participation goal while embedding our partners with **meaningful** positions and functions as we help you transform New Orleans into a world-leading, all-inclusive Smart City.

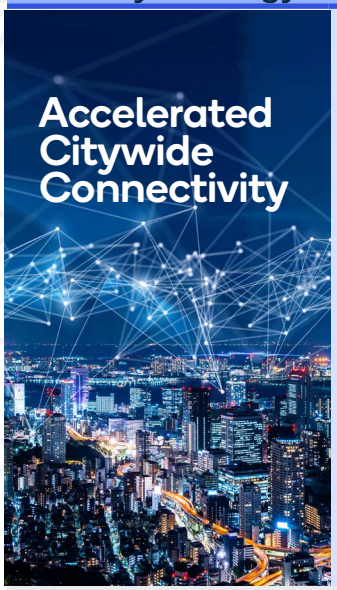
» **A program management delivery approach—from planning to long-term operations—that provides the City a single point of accountability, transparency, and a proven, trusted partner fully dedicated to your success.** As discussed in Tab 5, our vast success delivering complex, world-class programs globally and here at home provides a powerful suite of management and technical tools and processes to manage thousands of ongoing, simultaneous activities effectively with quality, safety, and sustainability embedded in all we do.

We are confident that these infrastructure, funding, and delivery solutions will quickly achieve the City's key objectives for this program and provide the foundation to readily expand and replicate these and other solutions throughout the City and the entire 350-square-mile Parish. As requested in the RFP, the remainder of this section details our approach to delivering these solutions according to your Statement of Needs. **Tab 3** details our Digital Inclusion Proposal and **Tab 5** overviews our comprehensive implementation plan using a programmatic approach.

EXHIBIT 2-1

Phase 1 Smart+Connected NOLA Solution Highlights

Delivery Strategy



Features

- Wireless LTE/5G network dedicated to achieving City connectivity goals
- 90% broadband coverage across 75-square-mile area, 70% coverage across SWBNO's 430 sites, and 120 City buildings
- Estimated completion 6 months after permitting is approved
- Uses all available communication technologies for network interconnectivity – fiber optic, 4G LTE, 5G, Wi-Fi, and ethernet
- Wi-Fi for parks and community centers, 3,000 streetlights, 30 kiosks, traffic monitoring cameras and IoT sensors at 500 intersections, and additional LTE/5G network access points
- Comprehensive cybersecurity strategy leveraging big data analytics, predictive operating intelligence, and national cybersecurity standards

Benefits to the City

- Targets Citywide digital equity within 2 years – significantly faster than other alternatives
- Future-ready, scalable network is easily adaptable to future technologies
- Enables Smart City applications and transformational socio-economic benefits
- Maximizes commercial coverage and vastly minimizes physical infrastructure
- Supports a world-class resident and tourist experience
- Significant financial upside from City share of incremental private-sector revenues generated by use of the LTE/5G network

Features

- Plan, design, install, and maintain 3,000 Smart LED light fixtures for initial public Wi-Fi and smart lighting (ON/OFF/DIMMING) benefits

Benefits to the City

- LED lighting energy efficiency savings
- Improves wireless network integration, security, reliability, and resilience
- Future protocols easily updated over-the-air
- Light fixtures are already equipped to easily deliver additional Phase 2 smart capabilities, including security, monitoring, and other smart sensory functions

Smart Traffic Management

Features

- Plan, design, install, and maintain Plug and Play Mobility Platform including traffic monitoring cameras and IoT sensors for 500 intersections throughout the City
- Fully autonomous traffic management platform that manages traffic, reduces congestion and emissions, and improves safety according to simple policy settings defined by agencies
- Predictive analytics and AI autonomously optimize traffic signals and reduce delay time

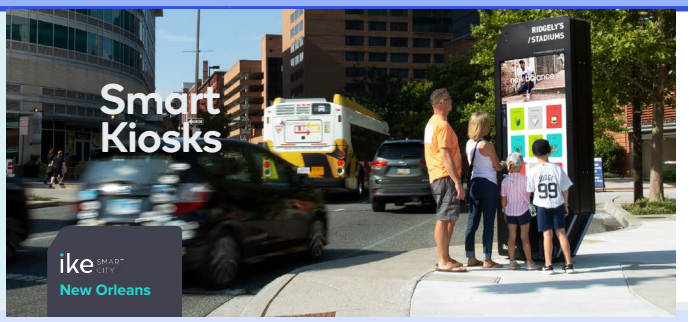
Benefits to the City

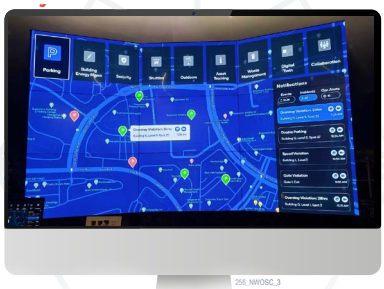
- Quickly transitions City from existing analog service contracts to a smart-enabled and connected traffic control system
- Reduces traffic congestion, greenhouse gas emissions and travel times for all citizens
- Automated emergency response enhancement
- Significant financial upside from City share of incremental revenues generated from private-sector monetization of connected traffic cameras and sensors
- Low cost over-the-air software updates, application downloads, and other platform maintenance

Delivery Strategy

Features
» Plan, design, install, and maintain 30 interactive and connected kiosks

Benefits to the City
» Reinforces City's brand as a progressive innovator
» Connects residents and tourists to local businesses
» Improves multi-modal wayfinding
» Enhances access to information
» Increases safety and Wi-Fi connectivity
» Revenue from advertising sales will be shared with the City





Real-Time City Command and Control Center

Features
» Install and maintain Smart City Platform at the NOC (Network Operations Center)
» Includes high-level and detailed dashboards, live alerts, real-time analytics, and historical analytics
» For Phase 1, will monitor and control the program's smart lighting, traffic, kiosks and IoT sensors, with new platforms easily added through plug and play as program evolves

Benefits to the City
» Provides complete, real-time view of everything happening in the City across all connected verticals
» Connects to and controls any Smart City devices
» Allows users to look at the big picture and dive into the deeper aspects of City elements they're managing
» Interfaces with City subsystems
» Significant operational efficiencies and O&M cost reductions

Features
» Cybersecurity Plan to protect network, IoT devices, and Security Operations Center

Benefits to the City
» Cybersecurity to ensure security of network and IoT devices
» Data governance, privacy, and security
» OT security
» Personally identifiable information (PII) protection

Cost-Neutral Funding Plan

Features
» Self-sustaining monetization plan enabled by innovative P3 model
» Planning, design, installation, and O&M of all Phase 1 solutions
» Smart+Connected NOLA owns and operates the solution during the concession, but directed by the City pursuant to the P3 agreement
» Option for the City to own/purchase the smart network at the end of the concession

Benefits to the City
» Future proof state-of-the-art smart network with no upfront capital outlay by the City or incremental costs to operate over the concession period
» Sharing of significant private sector revenue opportunity with City
» De-risks delivery and operations of entire program for the City

Features
» Multifaceted workforce development and capacity building strategies to advance the program's training and its widespread social and economic benefits
» 35% DBE participation with partners we know and trust
» Local training of programmatic delivery for DBE partners

Benefits to the City
» Advances technology adoption, application, and economic mobility for all New Orleanians
» Improves digital literacy and consumer safety
» Enhances DBE economic vitality

Delivery Strategy

Features

- As delivery lead, Jacobs provides a proven delivery approach, full accountability, transparency, and a trusted delivery partner
- Team members bring extensive experience working together
- Unified and robust communications and stakeholder outreach, change management, risk management, schedule and cost control, quality control, safety, security, and other delivery processes across projects

Benefits to the City

- Ensures integrated delivery of all projects for all program phases
- Focuses delivery on City drivers, vision, and desired outcomes
- Achieves schedule and cost goals by aggressively managing risks
- Expedites permitting, design, and project delivery

To facilitate your review of the approach, we've included a roadmap where information can be found in this tab.

Tab 2 Roadmap

Tab 2 Heading/RFP Requirement Addressed	Applicable Statement of Needs Cross-References	Page(s)
Executive Summary: Overview of Solutions and Approach	N/A	2-1
Technical Approach—Introduction	N/A	2-6
Does the solution establish a City Institutional Fiber Network with connectivity to 430 City of New Orleans and Sewerage and Water Board Sites?	Section 8.a; pages 27-29 Section 8.d; page 33-35, page 38	2-8
Does the solution establish a 350-square-mile City-Wide private 5G network?	Section 8.b; pages 29-33 Section 8.d; page 38	2-11
Does the solution establish a consolidated Smart City service plan including Smart Kiosks, Smart Lighting (including Architectural Lighting), Intelligent Traffic, Smart Metering, Water Level Sensing, and Smart Mobility?	Section 8.c; pages 33-35	2-13
i. Does the solution have an open API for simple integration of CAD, AVL, Advanced Traffic Management and a real-time public information portal?	Section 8.c; pages 34-35	2-31
ii. Is a Lighting Master Plan included?	Section 8.c; page 36	2-33
iii. What is the maintenance, management, and upgrade plan?	Section 8.c; pages 36-37	2-34
How will the fiber, wireless, and smart city networks be designed as mission critical "5 nines" systems?	Sections 8.d, 8.e; page 38	2-9
What is the cybersecurity plan?	Section 8.f; pages 38-40	2-37
How is the project financed and who bears the capital and ownership risk?	Section 7; page 27	2-46
i. Have detailed financials been provided that should [sic] the best utilization of capital resources and long-term operational stability?	Section 4; page 25	2-47
ii. How is performance guaranteed as well as long-term operating, maintenance, and recapitalization?	Section 1; page 23	2-47
Are the proposed project components "Net Neutral?"	Section 6; page 27	2-11
The Proposer shall provide a program to educate, train, and teach City personnel in all details of the equipment and the System that shall enable the personnel to monitor the System.	Section 8.g; page 40: Educate, train, and teach City personnel to monitor the System	2-50
Closeout Submittals	Section 9; pages 40-41: Closeout Submittals	2-50
As-Built Set	N/A	2-51
Hardware and Software Updating	N/A	2-52
Summary and Conclusion	N/A	2-52

Technical Approach—Introduction

An outcome-based, full-service approach and holistic solution that leaves control of the communications network with the City—Our partnership will help prioritize implementation to achieve smart mobility, digital equality, citizen engagement, and economic prosperity through both the technology and the workforce development that will be key to delivering your Smart City program. Our approach includes a pioneering enterprise LTE network that will be deployed in 2 years to rapidly address the City's connectivity and digital equity dilemma.

The City of New Orleans' Smart City program provides profound opportunities to transform complex urban spaces by achieving outcomes in the following five areas:

- ***Connected city*** **that enhances mobility, enriches learning, and provides digital equity.**
- ***Inclusive city*** **that respects the equity, needs, concerns, and aspirations of all who call it home.**
- ***Safe city*** **that protects our children, cares for our neighbors, and shields us from disasters.**
- ***Resourceful city*** **that conserves resources, preserves and protects the environment, and improves services while saving taxpayers' money.**
- ***Competitive city*** **that supports vulnerable populations, creates jobs, and attracts investments.**

To capture these opportunities, the Smart+Connected NOLA team has developed a comprehensive approach to the City's Statement of Needs that integrates leading-edge technology, innovative approaches to urban transportation, and Smart City solutions into a unified whole.

Understanding that Smart City applications are always changing, our team will monitor the components initially provided for technology updates and implement periodic technology refreshes. This will be warranted over the 15-year program.

As indicated in Exhibit 2-2, our solution is based on three principles: Connected, Secure, and Smart. Key values of our approach are presented in Exhibit 2-3. Our programmatic approach to delivery that integrates individual components into a holistic system can be found in Tab 5, Implementation Plan.

EXHIBIT 2-3.

Benefits of OUR APPROACH

- Providing **Wireline & Wireless** connectivity to New Orleanians
- **Expediated** to **90%** of coverage area
- Within first 2 years, **showcase development** to Smart City solutions, including Lighting, Kiosks, Traffic Management, Lighting Master Plan, and Water Strategy
- **Cybersecurity Plan** aligned with NYC IoT guidelines
- Deploying **City Command & Control Center** to monitor all City assets for operational efficiency
- **Virtual Traffic Management** Center
- **Expert team** ready to go at Notice to Proceed
- **Cost neutral** solutions
- Unparalleled **digital inclusion strategy & approach**
- Meeting the City's 35% **DBE requirements**

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EXHIBIT 2-2. *Three Principles for Success*

City of New Orleans—**CONNECTED**. A Smart City is an innovative and future-ready city that uses ***connectivity as its foundation to eliminate the digital divide*** between those with access to IoT and those without. Through connectivity, the City will improve quality of life, provide digital equity, empower economic growth, and improve efficiency of urban operation and services, while ensuring the ability to meet the information needs of present and future generations.

City of New Orleans—**SECURE.** While municipalities and cities across the globe strive to become more connected, they also face cybersecurity threats that exploit the complexity and connectivity of critical infrastructure systems. Protecting this data from the threats to cybersecurity, and using it to improve safety and mobility, will lead to a more vibrant and safer city.

City of New Orleans—**SMART.** While continually improving City infrastructure will go a long way toward improving quality of life, Smart City solutions will have an exponential effect on livability by attracting new business; increasing the openness, availability, and transparency of information; and creating P3s to spur innovation in managing City services.

Path Forward

In the sections that follow, the Smart+Connected NOLA team addresses the requirements of the RFP. We describe the solutions we will provide and the outcomes we will achieve for the City. We summarize the overarching benefits that our Smart City strategies will provide in Exhibit 2-4.

EXHIBIT 2-4.

LIFE IS BETTER IN A SMART CITY—
BETTER FOR PEOPLE AND BETTER FOR BUSINESS

4G LTE TO 5G CONNECTED, SMART CITY

- Digital city of the future using common platform architecture that connects mobility services, lighting, citizens, & government
- Convergence of all networked services (voice, video data, machine, etc.) on to a single network, reducing infrastructure duplication & cost
- Accelerate innovation due to the ability to obtain high-speed access to network assets
- Connect people & enhance social cohesion
- Maintain a competitive edge in a global market & attract investment
- Promote local business opportunities for the new digital economy & enable new services & business models

CITY COMMAND AND CONTROL PLATFORM

- Simplifies management of municipal services, consolidates control into one place
- Facilitates integration of multi-vendor Smart City solutions and enables analytics that can enable data-driven decision making & planning
- Integrated lighting, traffic, waste management & other solutions
- Leverages analytics & remote monitoring
- Reduces City's operational costs

SMART LIGHTING

- Lowers electricity and maintenance expenses through Smart Metering, remote monitoring, & intelligent dimming/scene setting
- Smart Lighting can yield a reduction in crime through enhanced settings in problematic neighborhoods
- Adaptive to changing road and weather conditions
- Poles used for other Smart City sensor mounting

IOT SENSORS, CAMERAS, AND KIOSKS

- Strategically placed monitors can offer air quality detection
- Can map areas of high pollution, track changes over time, identify polluters, & analyze potential interventions
- Information from sensors can help inform discussions about air quality and increase citizen interest in making changes
- Cameras placed on light poles, street lights, kiosks in areas with high crime rates and violence
- Provide police and emergency services with new technologies to fight crime & make cities safer
- Sensors & cameras for flooding and water level sensing

ARCHITECTURAL LIGHTING

- Interacts with the spirit of City of New Orleans with dynamic architectural lighting
- Signifies important occasions

ENHANCED LIVABILITY

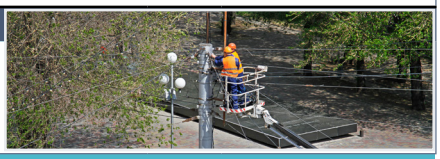
- Benchmark that balances City of New Orleans know-how to deliver a Smart City project for all citizens
- Improve quality of life for all citizens through Wi-Fi access, e-learning, e-health care among other solutions
- Securing an efficient & well phased Smart City plan by alignment of opportunities around live, work, & play

SUSTAINABILITY

- Proven approach for city development that meets the Greenprint Vision
- Application of chosen technologies and ideas in sustainability and Smart City plans as a generator for economic drivers
- Smart City solutions that proactively solve the ongoing urban problems in traffic management, energy conservation, & digital services for citizens

PUBLIC-PRIVATE PARTNERSHIP

- Achievement of City of New Orleans vision using PPP & other funding options
- Using revenue generation solutions, energy, neutral host data mining, & other
- Building credibility by attracting investment to City of New Orleans for innovation



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RFP Criteria: Does the solution establish a City Institutional Fiber Network with connectivity to 430 City of New Orleans and Sewerage and Water Board Sites?

Connectivity (Wireline)

The Smart+Connected NOLA network solution is aligned with the goals set forth in the Foresite Group's study, shown at right, for a City of New Orleans institutional fiber network.

Advances in telecommunications technologies and policies driven by the federal government have created additional means for providing high speed broadband connectivity. By allowing entities to access and use the citizens broadband radio services (CBRS) portion of the spectrum, enterprise wireless networks can now provide highly secure connectivity similar to that of a fiber optic network.

We propose to deploy a wireless enterprise LTE/5G network over a wireline network. The advantages of this deployment include:

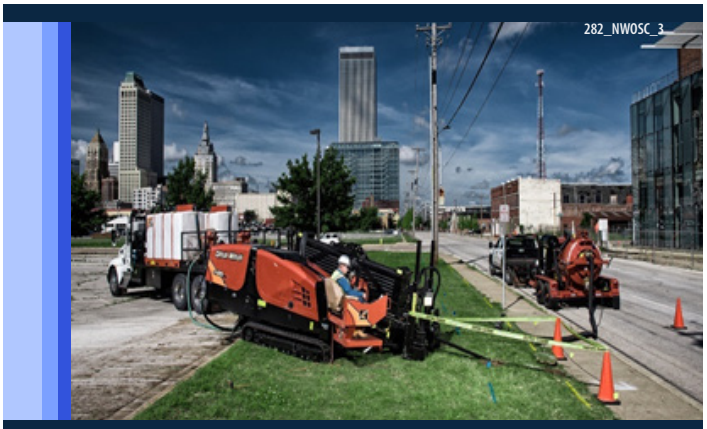
- Speed to deploy and provide immediate coverage to large areas
- Reduced cost of infrastructure per connected user
- Minimal impact to citizens/businesses during deployment (no roadway closures)
- Upgraded migration path to 5G and future technologies
- Scalability to provide increased coverage areas and densification

Leveraging Existing City Real Estate Assets

The proposed enterprise network will leverage existing City-owned real estate assets to support the new network infrastructure. This will include installing antennas and radios on building rooftops throughout the city. Our preliminary radio frequency (RF) coverage prediction model indicates we can cover **90%** of the coverage area within the City limits using the existing city buildings along with **supplementing the wireless network with fiber optic interconnects to existing City-owned dark fiber. This will provide connectivity to 70% of SWBNO's 430 sites (Exhibit 2-5)**. By leveraging existing City assets, costs to deploy the necessary infrastructure can be minimized. Equally important, locating equipment on buildings controlled by the City provides an additional layer of physical security to the network.

The objectives outlined in the Foresite study include:

- ✓ Expand the city government's provision of online services to residents.
- ✓ Support implementation of Smart City applications.
- ✓ Achieve cost efficiencies in daily information technology (IT) operations.
- ✓ Expand operational efficiencies to other departments through IT.
- ✓ Provide high-speed Internet access at city government owned and operated facilities to help disadvantaged residents bridge the digital divide.



Jacobs **Telecommunication Experience** in **Louisiana**

- Designed and permitted 100+ small cell sites in Louisiana
- Built hundreds of wireless macro sites throughout Louisiana
- Multiple fiber installation technologies, including directional drilling and micro/macro-trenching

The proposed enterprise network will leverage existing City-owned real estate assets to secure the coverage needed, enhance security, and provide connectivity to the SWBNO sites.

Leveraging Existing Commercial Fiber Connectivity

The new wireless network will leverage the existing commercial fiber connectivity at City-owned locations to provide backhaul for the network components. Additionally, we expect to utilize the City's existing dark fiber assets in the Central Business District (CBD) to minimize impacts of deployment. In our solution, new 864 strand fiber optic cables will be installed when necessary to facilitate backhaul connectivity for the network in locations where existing fiber assets do not exist. Redundant EPC cores will be installed within two secure city locations (New Orleans City Hall and Orleans Parish Communications District). Providing redundant cores will ensure the reliability/availability of the network.

Rapid Deployment Approach

The network will be deployed rapidly, providing broadband connectivity to underserved portions of the City quickly while providing a cost-effective alternative to residents/businesses in other portions of the City. Providing an alternative connectivity option to the residents and businesses of New Orleans will have a positive effect, injecting competitive pricing into the market. Not only will this network be used to provide broadband connectivity to the City, but it will also provide the foundational connectivity for deployment of Smart City technologies. By using the new enterprise LTE/5G network, the City will be able to avoid using commercial cellular networks for connectivity, further reducing the cost to implement new smart solutions throughout the city. As the network is deployed, existing City locations within the proposed coverage area can have their broadband connections **migrated over to the new enterprise network**. This will reduce the City's reliance upon the existing commercial wireline infrastructure. The new wireless network, as illustrated in Exhibit 2-5, will also provide a cost-effective alternative for connecting existing and/or planned City facilities, expanding the connectivity of the City's IT infrastructure.

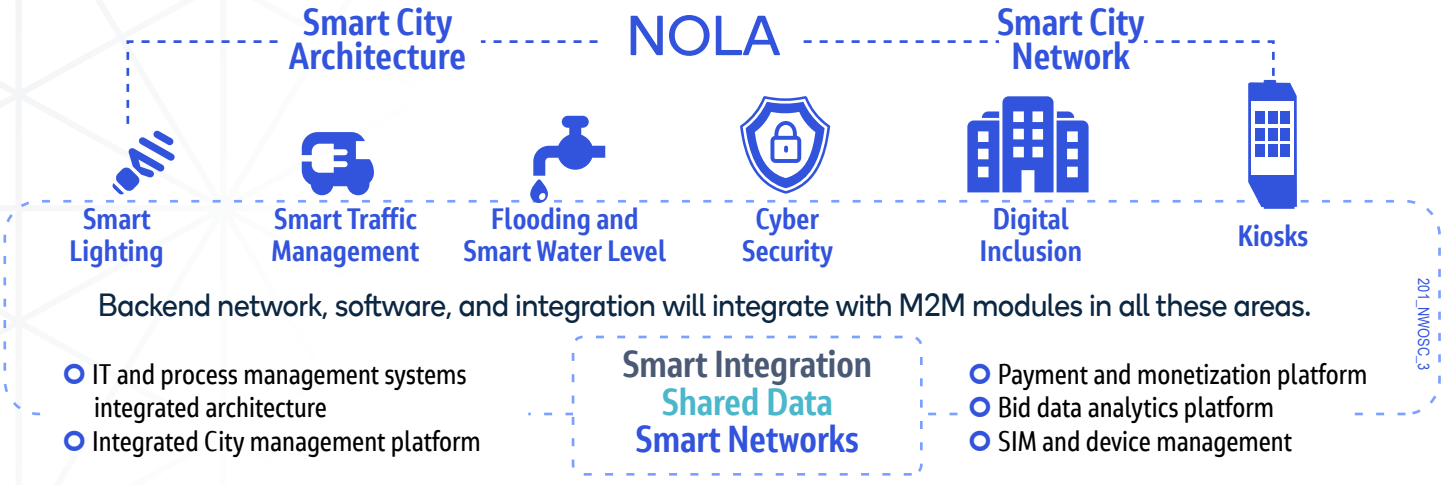
Addressing Mission Critical "5 Nines" Systems

As the team's delivery partner, it is important for the City to have confidence in not just Qualcomm's outstanding technology track record but also in Jacobs. *Engineering News-Record* ranks Jacobs as the No. 1 telecommunications firm in our industry, bringing an extensive small cell, fiber optic, and LTE/5G portfolio to this effort.

Our expertise includes RF design, engineering, site acquisition, construction, network integration, optimization services, and O&M for a broad range of network architectures—LTE/5G, centralized radio access networks (C-RAN), first responder

EXHIBIT 2-5. *Integrating Smart City Architecture into the City's IT Infrastructure*

The system architecture developed for City of New Orleans will harness the power of information and technology for a more connected, secure, and smart City.



SECURING TOP SPOTS WITH ENR

#1 TOP TELECOMMUNICATIONS & DESIGN FIRM

Jacobs is proud of our **2021** *Engineering News-Record* rankings as the **No. 1 Top Design Firm and No. 1 Top Telecommunications Firm**. We also hold top spots in ENR's most recent (2020) rankings in Project Delivery, Environmental, Green Design, Program Management (PM), and Construction Management for Fee (CM).

#1 DESIGN FIRM
TELECOMMUNICATIONS FIRM
COMBINED DESIGN AND PM/CM FIRM

- Telecommunications
- Towers & Antennae
- Data Centers
- Mass Transit & Rail
- Bridges
- Sanitary & Storm Sewers
- Sewer & Waste
- Water Transmission Lines & Aqueducts
- Government Offices

#2 TRANSPORTATION FIRM
ENVIRONMENTAL FIRM

- Transportation
- Highways
- Water Supply
- Hotels, Motels & Convention Centers

#3 PROGRAM MANAGEMENT FIRM
WATER FIRM
GENERAL BUILDING FIRM

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networks (FirstNet)—which addresses "5 nines," IoT, fiber fronthaul and backhaul, inbuilding distributed antenna systems, and smart cities. We support world-leaders in communication infrastructure and every major mobile carrier, including Crown Castle, Extenet, Zayo, Mobilitie, AT&T, Verizon, T-Mobile, Sprint, and many others.

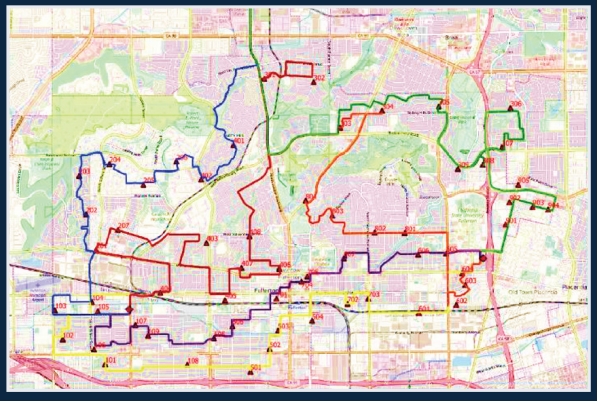
Designing a network that incorporates backhaul path diversity, as well as equipment redundancy, provides a network with high reliability. Jacobs and our teammates are fully versed on this and many other applications that will support your objectives. Ultra-reliable low latency communications (URLLC) is another key feature of 5G networks, expected to benefit a wide range of mission critical applications. On 4G networks, the typical round-trip latency for radio transmission is around 15 milliseconds with a typical end-to-end system latency of some 30 to 100 milliseconds, but with 5G the radio network latency reduces to 1 millisecond, making it possible to deliver much more responsive real-time control applications, especially when edge computing is employed. Our proposed network will be initially deployed using 4G technology. ***As the technology becomes commercially available, the network can be seamlessly migrated to 5G technology to take advantage of the increased reliability provided by the advanced technology.*** Jacobs has designed, constructed, and integrated several public safety grade communications networks across the country that require "5 nines" of reliability. This experience includes the largest publicly owned network for the Los Angeles Regional Interoperability Communication System, as well as portions of the FirstNet network. Our experience will ensure the quality installation of a highly reliable network.

Open Access **Fiber Network**
Fullerton, CA

Jacobs is designing the largest privately funded open access fiber networks in the U.S., with SiFi Networks. The open access networks provide citywide platforms for Smart City applications including 5G, streetlights, traffic light control cabinets, bus stops, and other potential Smart City points. Network redundancy will eliminate single points of failure and achieve **99.999% reliability** for commercial connections

Key features include:

- "As needed" blown-fiber installation for reduced initial investment in fiber purchase cost.
- 100% underground fiber installation for high reliability and low visual impact in neighborhoods.
- GIS data collection of thousands of fiber connection points.
- Design of several hundred miles of conduit pathway for fiber optic cables, in the city right-of-way.



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Net Neutral

The proposed City-wide enterprise LTE/5G network will provide services to all citizens and businesses following the Net-Neutrality principle. This will provide equal access to broadband connectivity, regardless of income status or network usage. Following the principle of Net Neutrality will not only bridge the digital divide experienced in portions of the City but it will also foster innovation for startup businesses by providing the bandwidth required to develop future use case applications while minimizing the capital cost of connectivity. Upon implementation of LTE/5G technology for the enterprise wireless network, network slicing can assure the City your critical communication demands are met while maintaining and managing the needs of the public users.

RFP Criteria: Does the solution establish a 350-square-mile City-Wide private 5G network?

Connectivity (Wireless)

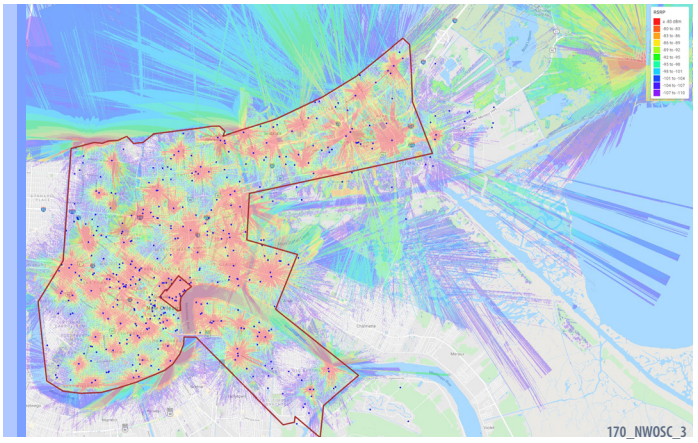
Building an enterprise LTE/5G network that offers a dynamic, connected platform is essential to achieving a truly Smart City. This network provides a suite of solutions that include wireless, wireline, and Smart City digital communications networks so that every residence and business in New Orleans has access to world-class, high-speed broadband Internet access. An enterprise LTE/5G network, built with a dynamic high performing optical/internet protocol (IP) core, will provide the City with the flexibility to enable a variety of access to connect with people, sensors, moving vehicles, video monitors, water meters, and other smart connected solutions—all securely and with the highest reliability while offering sustainability options and operational efficiencies. During special events in the city, additional targeted capacity can be added to accommodate increased network load.

The City of New Orleans is wise to have included the requirement to install connectivity to benefit all citizens to help eliminate digital divide and inequitable access. This warrants *Expedited Delivery for Connectivity:*

- Enterprise LTE deployed 6 months after permitting and upgrade to 5G when feasible
- Provides immediate coverage for 90% of the area in 75 square miles

New Orleans stands to benefit significantly in leveraging this private LTE/5G network to gain secure and reliable connectivity for their citizens, businesses, and visitors across City properties, while providing opportunities for the City to monetize new revenue models and providing citizens and users unique services and applications. As indicated in Exhibit 2-6, the RF prediction model, our solution will provide ubiquitous wireless coverage throughout the City.

EXHIBIT 2-6. ***Enterprise Private LTE Radio Frequency Coverage Aligns with City's 430 Sites***



Today's enterprise networks are deployed based on 4G (LTE) technology, but are quickly converting to 5G—the challenge is having a solution that meets today's needs while anticipating what's next. 5G equipment to support enterprise networks has been under development for several years and is expected to become commercially available in the coming year. Qualcomm has been at the forefront of the development of the equipment to support 5G enterprise networks. With Qualcomm technologies and Snapdragon™ processors and modems, Smart

Cities have access to superior wireless solutions, engineered to support today's technology while adapting to future wireless releases. Building on Qualcomm Technologies' leadership in 3G/4G LTE and now 5G, we can further integrate additional wireless technologies including Wi-Fi 6, Bluetooth, and global navigation satellite system for an industry-leading private LTE/5G network offering. As illustrated in Exhibit 2-7, Smart+Connected NOLA team members have extensive experience with these applications.

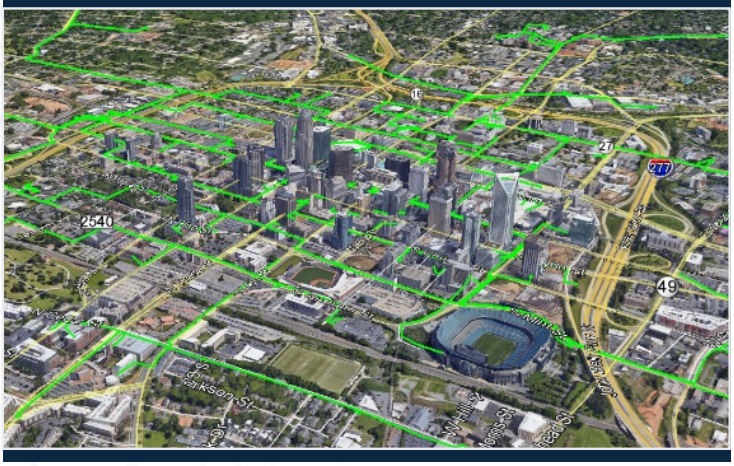
EXHIBIT 2-7.

Fiber Design for 4G, 5G, and Commercial 1GB Clients

Jacobs is designing Verizon's One Fiber, multipurpose fiber network in Charlotte, NC, to provide backhaul and fronthaul services for 4G, 5G, and commercial 1GB clients.

- Network supports 99 4G and 245 5G small cell nodes, plus nearly 5,000 commercial 1GB customers
- Network supports 5G small cell network, that was launched in conjunction with 2020 Republican National Convention
- Uses fiber cables of up to 1,728 fibers each to provide fiber capacity for future growth
- Microtrenching for compressed construction schedule and minimal disruption to vehicular traffic flow

278_NWOSC_3



Private LTE/5G Wireless Network

Private LTE/5G is based on technologies developed for wide area mobility and scaled down to be deployable by the City of New Orleans. By building a unifying connectivity fabric using a private LTE/5G wireless network and the deployment of a Smart City connected platform, the platform can support many use cases and deployment across different verticals to offer unique services and applications.

The solutions deployed for the City of New Orleans will be built with a seamless path to 5G.

It is important to remember this project is an opportunity to recover, reimagine, and rebuild how New Orleanians connect through equitable deployment of infrastructure. Our team is committed to digital inclusion with a focus on digital equity to alleviate the digital divide in New Orleans. Achieving these Smart City capabilities are the organizing principles for our partnership as we design and construct new infrastructure and move toward long-term operations.

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Potential applications and deployments include smart lighting, smart traffic, smart kiosks, transportation, venues, airports, etc., and diverse services for low-bit-rate IoT through high-speed broadband on a common network.

However, implementing our planned solution for the City in an accelerated deployment depends on securing permits – our goal is to deploy our solutions 6 months after we get the permits. The value of using wireless technology to provide broadband coverage across the City is realized by our compressed deployment schedule (which can be found in Tab 5, Implementation Plan).

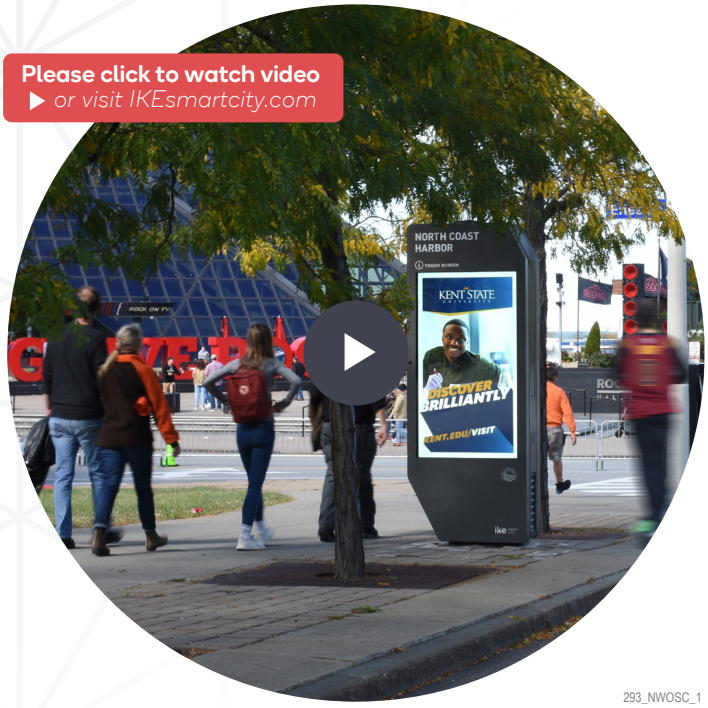
RFP Criteria: Does the solution establish a consolidated Smart City service plan including Smart Kiosks, Smart Lighting, Intelligent Traffic, Smart Metering, Water Level Sensing, and Smart Mobility?

As described in this section, the Smart+Connected NOLA team's solution incorporates Smart Kiosks, Smart Lighting, Intelligent Traffic, Smart Metering, Water Level Sensing, and Smart Mobility components, either directly as a priority, or as an added value application as the funding model matures.

Smart Kiosks

IKE is a breakthrough citizen engagement platform that helps cities, business improvement districts, and destination management organizations communicate with the public, encourage a pedestrian-oriented environment, and tell the story of their city. The kiosks will be installed at no cost to the City and revenue will be shared with the City. Through an ever-expanding series of applications, IKE:

- Drives discovery
- Enables navigation
- Delivers social equity
- Encourages economic development
- Enhances public safety
- Generates revenue



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Digital Ticker

IKE's digital ticker provides additional wayfinding with a design aesthetic that reflects traditional public transit cues. The LED strip is located at the top of the kiosk to maximize visibility for pedestrians and vehicular traffic. With different options for content, the ticker can be remotely programmed to scroll or display customized information, including:

- Street names or landmark identifiers
- Transit information like real-time bus schedules
- PSAs or alerts from the City
- News headlines or important updates

Note, the digital ticker space is dedicated to community-related content; advertisers cannot pay to be in the ticker.

Customization

IKE reserves real estate for clients to brand the kiosk both on- and offscreen. The most effective kiosks balance a clean and appealing aesthetic with an inviting and engaging user experience.

- Branding—Client's choice of logo or text branding will be applied to the upper corner of both faces of the kiosk. Custom ad panels can be created to welcome residents and visitors to the area with unique executions by neighborhood.
- Kinetic lighting—Clients can choose from a palette of base light colors to complement their brand and city aesthetics. Colors can be changed to celebrate holidays, events, and more, e.g., pink for Breast Cancer Awareness month, orange for Halloween, purple for Mardi Gras, etc.

» Content—A customizable geofence ensures that content is specific to the area around each kiosk location.

"After a thorough review of several kiosk providers and manufacturers, the City of San Antonio selected IKE because it has an experienced engineering team that provides innovative software and hardware development. It will give us the opportunity to communicate in a different way with our residents and tourists, and it will also allow the City to receive revenue from the project."

—Brian C. Dillard, Chief Innovation Officer, Smart City Administrator, City of San Antonio, TX

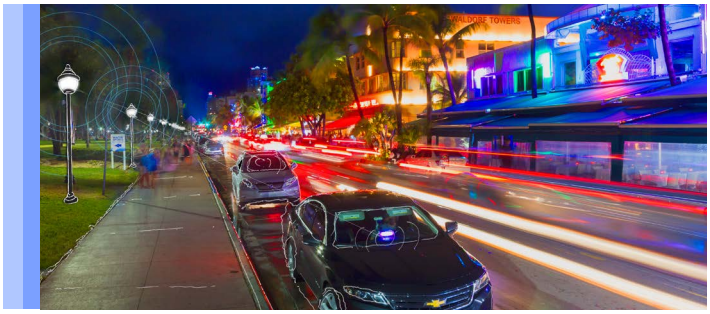
Smart Lighting

Smart street lighting is an essential part of the platform for achieving the City's goals for connectivity, mobility, and security.

Achieving the City's lighting goals is the foundation of our smart lighting approach. We will follow Louisiana Department of Transportation and Development (LaDOTD) requirements as a guide for integrating inspirational illumination, identifying additional lighting required, facilitating roadway and citizen safety, securing optical performance, and enhancing citizen and tourist experiences. Street lighting control brings significant benefits—from unprecedented awareness, control, and efficiency to sustainability and smart integrations.

Smart+Connected NOLA team member Juganu has developed a smart lighting solution for the City of New Orleans that provides 3,000 lights in Phase 1 that we plan to install within 12 months after Notice to Proceed, barring any delays in the permitting process. The proposed solution significantly exceeds the current specifications and will provide better quality of light, significantly higher lumens per watt, and a better optical design leading to 18%-28% more efficiency. Additional benefits include the following:

» ***Saves money for the community.*** Energy costs will be immediately reduced by up to 50–70% with installation of LED lamps and controls to enable intelligent on/off switching (a best practice learned from our analysis for the City of Miami Beach), scheduling, targeted progressive dimming, and efficient energy management. Overall street lighting operational costs will also be reduced through detailed maintenance and preventive grid interventions, based on system-generated reports.



For the City of Miami Beach, Jacobs, in association with DBE team member HLB, developed a uniform set of lighting standards and lighting design requirements for the city's planned open platform LED street lighting network for 9,000 streetlights across the city—setting the stage to integrate other Smart IoT and operations solutions. We also played a key role in the project's stakeholder outreach.

» ***Increases lighting service quality.*** Our solution will mitigate the risk of accidents due to lighting system malfunction, as most lighting problems will be detected and addressed before drivers or pedestrians are impacted. Exhibit 2-8 depicts our work on Britain's Essex Highway, where the team's solutions enhanced safety and accessibility.

» ***Makes the City more sustainable and the environment cleaner.*** By reducing electricity consumption and, therefore, the amount of released carbon dioxide, our solution reduces the City's environmental impact. Furthermore, the light pollution affecting skyglow, migrating birds, and wildlife will be significantly decreased.

EXHIBIT 2-8.

Leading Britain's Smart LED and Smart City **Transformation**

As part of a joint venture contract for Essex Highways' Long-Term Asset Management and O&M, Jacobs is managing, operating, and maintaining all streetlight and highway assets – including 127,000 streetlights (44,000 LED), 5,000 miles of roads/highway, and 4,000 miles of pedestrian paths/ sidewalks. As Britain's first LED streetlights with built-in connectivity capacity, the radio-controlled luminaires communicate with our CMS so we can switch them on and off and dim them remotely and know when lights are inoperative or malfunctioning. We also implemented a Smart Highway technology pilot with sensors (traffic, air quality, storm drainage) that transmit data through the streetlight network to a central platform for potential use in enhancing public services.

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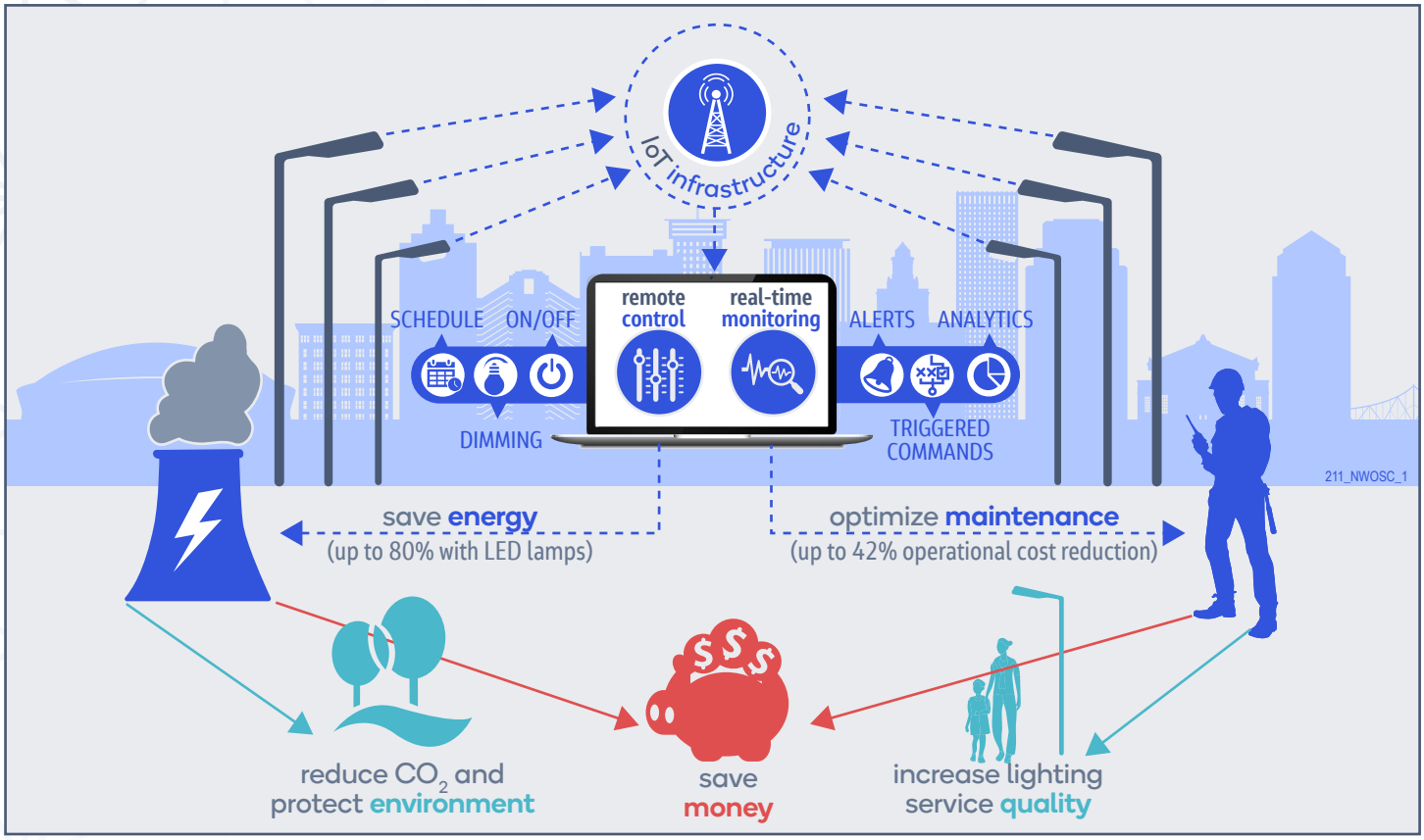
> We are taking advantage of new technology to create the potential for Smart Cities. This allows us to offer more, for less, and supports our ambition to embrace digital technology to give our residents and businesses the quality of life and work they aspire to."
>
> – Councillor Kevin Bentley, Deputy Leader, Essex County Council

» ***Juganu equipment that ensures interoperability.*** Open communication standards will promote unprecedented freedom of integration and implementation. The lighting system will be compatible with any network provider or hardware manufacturer.

In addition to the benefits of energy conservation, light quality, and ease of maintenance, smart street lighting is the platform upon which all other Smart City devices will be built. With energy savings realized by converting high-pressure sodium (HPS) lamps to LED, the electrical circuits originally designed for higher power consumption will be freed up to provide power to other devices.



Street Lighting Inventory

The first task before deploying street lighting consists of developing a detailed streetlight inventory database, which is developed conducting a field survey. **Malone Electrical, our DBE partner,** will be responsible for delivery of this scope of work. During the survey of each light pole, we will assess whether other items, such as conduit, wire, and pull boxes, need to be upgraded as part of the program.

The inventory is the most critical effort to obtaining the information required for the upgrade plan. To perform the inventory in the most-timely manner, **we will use tablets with satellite capabilities so that information can be uploaded immediately and assessed to move forward with the upgrade plans. A GIS database will be developed with this information.** We have used this for Centennial, CO, and Peachtree Corners, GA.

Peachtree Corners, Georgia, **Deploys** C-V2X with Qualcomm for **Safety, Traffic Flow**

> Pulling this project together with Sanjeet Pandit and Avinash Patwardhan, Ph.D, BCEEM to make our community safer, is a true testament to what can happen when you push for innovation that makes a difference. Looking forward to future collaborations and what's next! *Qualcomm Jacobs #smartcity #cv2x #siliconorchard*"
>
> *— Brandon Branham, Assistant City Manager, City of Peachtree Corners*

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Our first activity will be to thoroughly analyze the City's GIS data. Next, we will survey all poles and lights in the field and, as a minimum, we will collect all of the attribute data with the following attributes included as key data points:

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Closer to home, team members also completed the lighting design for the Louis Armstrong New Orleans International Airport North Terminal.

- Object ID
- X Coordinate
- Y Coordinate
- Ownership
- System Description
- Condition
- Fixture Type
- Pole Number
- Pole Type
- Pole Height
- Arm Length
- Bulb Type
- Circuit Number
- Circuit Type
- Voltage
- Service Point Information
- Maintenance Zone
- Wattage
- Transformer Base
- Aerial Conductors
- Pullbox Type
- Electric Meter
- Compatibility of Arm with New Street Light
- Compatibility of Existing LED with New System
- Notes

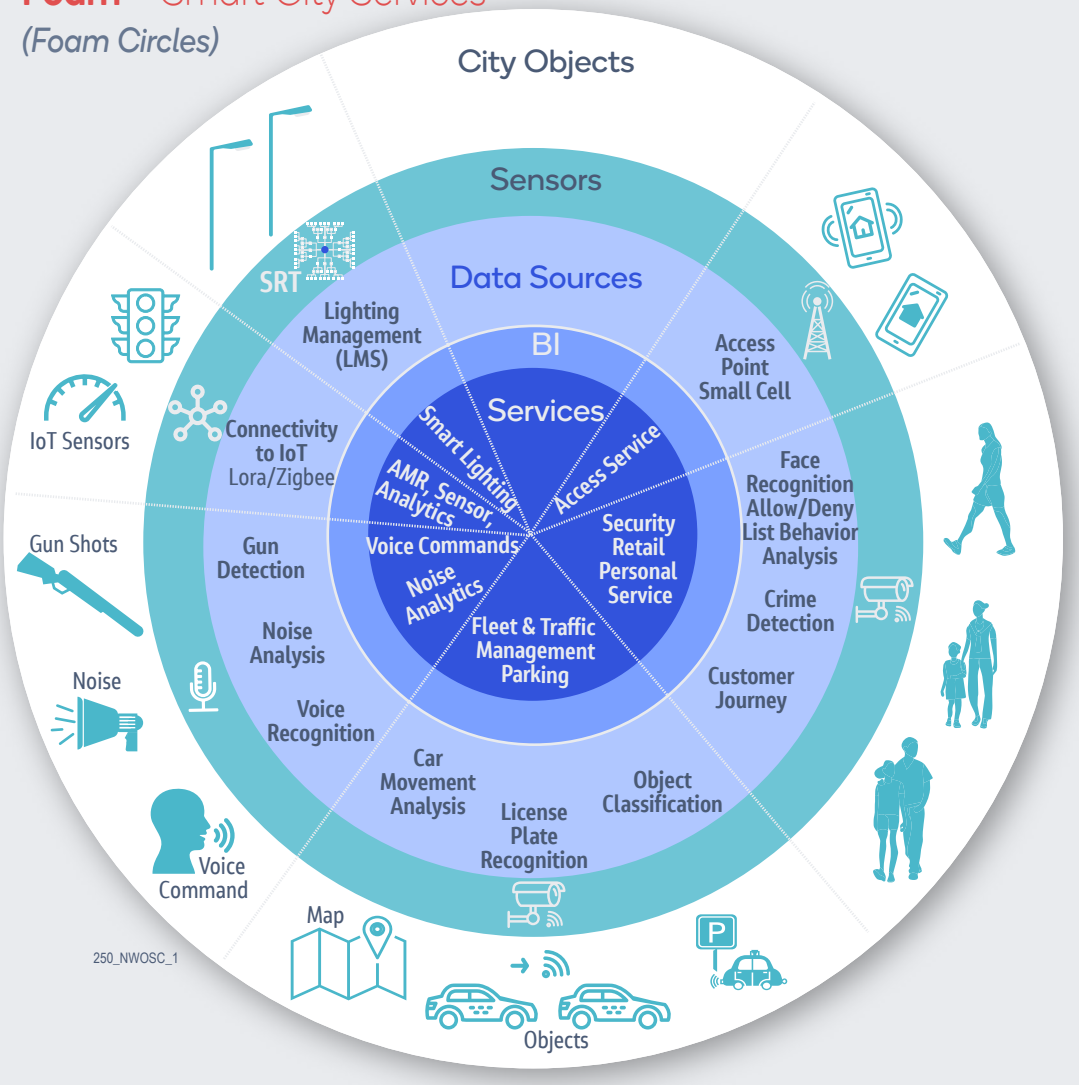
Lighting Solutions – Juganu Foam Solution – JNET© Overview

Juganu Smart Luminaire is a single hardware device that establishes the full edge solution, providing inherently and aesthetically, Wi-Fi access, smart lighting, and the communication (backhaul) infrastructure. The luminaire also houses an integrated suite of metadata-capturing cameras and environmental IoT sensors that can communicate and dynamically react to real-time events.

The Smart Luminaires enable the "Foam" solution – a digital platform that uses the embedded smarts,

Foam – Smart City Services

(Foam Circles)



- **Objective –** Abstraction of the entire City into a set of evolving services
- **City Objects –** Variety of elements throughout the city that are subject to services, including people, cars, IoTs, etc.
- **Foam Sensors/Connectivity –** Embedded and external sensors, including: Video cameras, Microphones, Gas Sensors, etc. Connectivity: Lighting Source Routing Tree (SRT), LoraWan
- **Data Sources –** Analytics engines, performs ingestion on data generated by City Objects, collected by Sensors
- **Business Intelligence (BI) –** Analytics engines into data that can provide value and lead to services
- **Single API Interface –** For creation of high-level applications providing:
  - Partial management functionality of basic systems
  - Flexible tools for configuration of services, billing and licensing; creates simplicity, sophistication and innovation experience
- **Services –** Serving the community, people, municipality and government, based on the data Sources
- **Native UI –** Native UI, which is an interactive tool to show and work with location – connected services

coupled with Edge intelligence, to provide lights that are not just lights but also can see, think, connect, and protect.

The luminaires offer Circadian lighting and correlated color temperature between 3,000k to 5,000k, as well as combined high color rendering index (CRI) and high efficacy and dynamically adapt the light spectrum and minimize the blue light component.

EXCELLING NATUAL LIGHT

FULL COLOR SPECTURUM **CRI/TLCI >93**

R9>95

TTW TRUE TUNABLE WHITE

FOR HEALTH AND WELLBEING

HEALTH – Minimal Blue Light

Low Glare

Highest Efficiency

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For the City of New Orleans, Juganu Foam will be deployed with the following features:

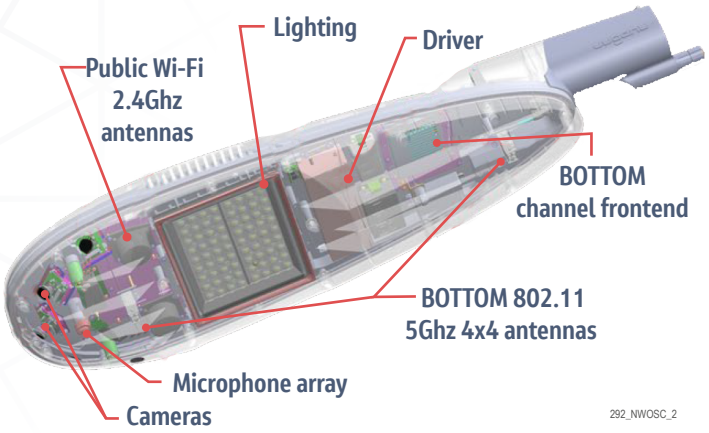
- Public ***(Wi-Fi)*** access (populated over City streetlights or indoor per request)
- Multi-level wireless backhaul, which connects thousands of fixtures into a single fiber-optic cable

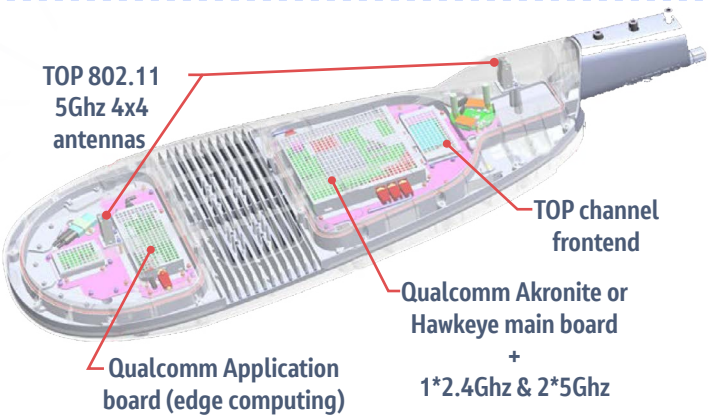
- ***Smart Lighting*** features remote control (on/off/dimming) and ability to manage a group or specific lamp.
- ***Extensive SDK/Rest Application Programming Interface (API)*** that enables modular integration with ***our Smart City Command and Control Center*** collaborating with third-party technologies (e.g., NoTraffic) to provide a holistic solution (services) to address the City's and community's evolving needs.
- Our solution's smart lights provide the best possible lighting
- Our solution's smart lights enable unlimited connectivity and accessibility

Foam Smart Lamp

Designed as a modular fixture, Juganu Smart Lamp has two HD video cameras, as well as microphones, environmental gas sensors (carbon dioxide, etc.), extensive edge AI compute power enabling a variety of applications, IoT gateway to interact with standard IoT edge devices, and more, providing a full scale of services supporting the entire community of New Orleans and vicinity.

Juganu streetlights are built as a platform for both internal IoT devices and a communication HUB for external communication and IoT devices.





Backhaul Bandwidth

Each pole (JLED HUB) is a node in the JNET mesh network, which is a backhaul for internal (e.g., Wi-Fi access point) and external (e.g., gas meter) devices. The bandwidth is allocated in a flexible way, so that the goodput (real data throughput) of ~1Gbps (4 as roadmap) is shared between 25-100 poles, providing on average 40-10Mbps per pole. If a node is not providing service at a certain moment, the bandwidth is allocated to other nodes.

Juganu has used their digital platform, Foam, to transform cities worldwide using public lighting infrastructure, including the Qualcomm Smart Campus in San Diego (U.S.), City of Philadelphia (U.S.), City of Arlington (U.S.), Benito Juarez Municipality (Mexico), Ma'alot Tarshiha Municipality (Israel), City of Or Yehuda (Israel), Municipality of Kalamata (Greece), and Friendship Bridge (Guatemala).

Edge Compute and Sensor Fusion

Each fixture is enabled with a strong application processor with cutting-edge AI-enabled compute. Juganu edge framework enables real-edge AI and sensor fusion, to provide the best response time and mitigate market privacy issues.

Smart Lighting, Municipality of Kalamata, Greece

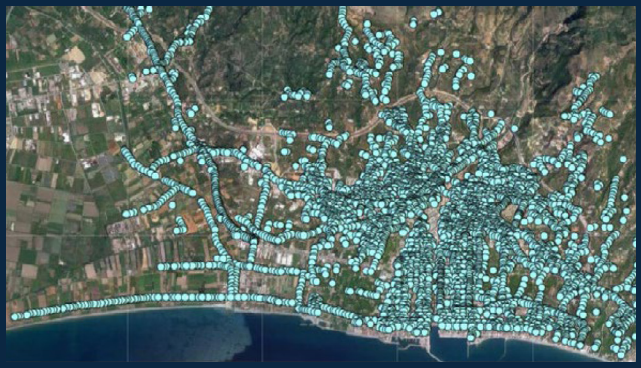
Juganu collaborated with the Kalamata Municipality to build a network of nodes utilizing the streetlight poles that would address the needs of both the City and the surrounding villages.

Juganu's solution comprising 12,000 streetlights, 700 cabinets, and significantly fewer gateways than the industry standard provided an easy-to-deploy, highly reliable, secure, real-time, dynamic, and intelligent connectivity infrastructure, for lighting and IoT management and control services.

Juganu's technology's self-orchestrating capabilities meant rapid installation and mobilization.

Network Hierarchy: Parent/Child Connectivity, Interactive Map

Results:
After implementing Juganu's solution, Kalamata Municipality **reduced electricity consumption by 60%**. Kalamata Municipality has been able to **schedule infrastructure repairs more efficiently and ensure road safety** both in rural and urban environments, contributing to higher living standards.



Kalamata Dashboard: Light Fixture Display

Video Cameras

Each fixture has two 13M-pixel video cameras, located at the sides of the module. The angles were designed to provide full coverage of the street. If installed in each light, the cameras cover each spot from two or more angles.

Wi-Fi Access Point

Each fixture has a Wi-Fi access point, which provides public internet connection to the people walking the street. The public Wi-Fi service is provided with a dedicated HW separated for the backhaul communication HW. The options are 802.11n 2.4GHz MIMO 4x4 access point under a Wi-Fi 6 backhaul or if required 802.11ac under a Wi-Fi 6E backhaul.

Juganu, together with Qualcomm Technologies, enforces the latest standards for service QoS (quality of service) for minimal latency and optimal roaming (switching from pole AP to adjacent AP). The ultimate benchmark for IP wireless link is a VOIP audio call since the human ear is most sensitive to any interferences and glitches. Juganu targets a continuous VOIP call for a user driving in the street.

3G/4G/LTE Small Cell

Juganu HUB optionally has integrated cellular small cells that provide cellular service to the people walking along the streets.

Frequency Re-Use

The following is the case both for Wi-Fi and cellular small cells and it is a crucial and very important Foam advantage to understand. Using small cells, which is a huge and growing market, increases the service Mbps/ concurrent users per m^2. Small cells can be considered as very small towers with reduced range but with the same Mbps service capability; therefore, small cells do not interfere with each other and the same wireless MHz can be used by adjacent cells and statistically serve an order of users. Since cellular frequency cost per MHz is very high and there is a limit on the total frequency bandwidth to allocate to each cellular provider, increasing revenues/ service/MHz is a crucial point. The same above explanation can be considered as well for Juganu's public Wi-Fi solution. By having a Wi-Fi hotspot in

each pole in the city, the infrastructure can provide service to a much greater number of users than a standard public Wi-Fi deployment. With Juganu's approach, even a 10Mbps per pole can serve all users' needs.

Lighting Operations

A critical activity during the program will be integrating all the newly installed Juganu LED lights and controls into the Zyter City Command and Control Platform. As part of the conversion effort, all legacy high-pressure sodium, metal halide, and LED fixtures will be inspected and inventoried with both day and nighttime inspections to identify issues. Any fixtures found faulty during this period will be replaced with Smart LED fixtures with smart controls.

Energy Efficiency

Our Energy Efficiency Plan supports the operational model by estimating energy use and cost for the program. Our approach is to first determine the baseline energy demand and consumption profile (i.e., business as usual). To measure our performance, we propose promulgating key performance indicators (KPIs) that flow from the baseline assessment and include:

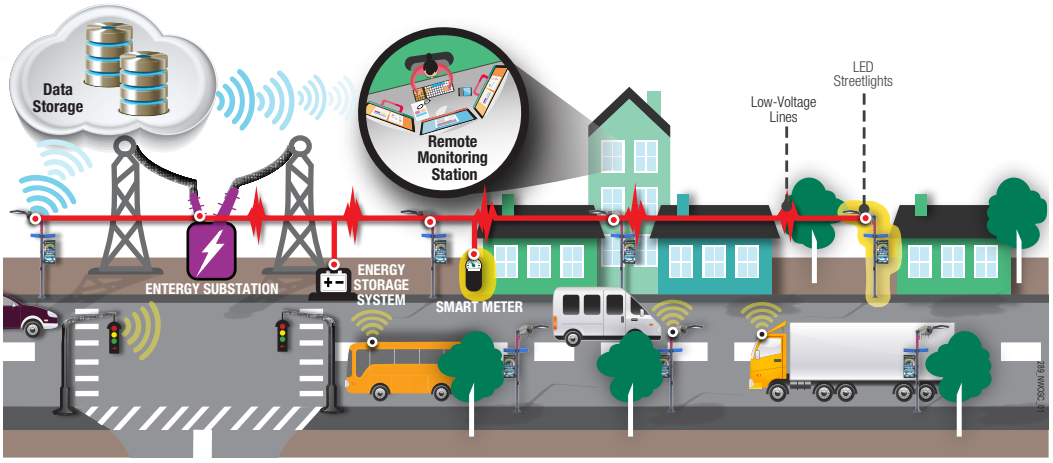
- Annual energy usage
- Greenhouse gas emissions
- Safety
- Resiliency (uptime)
- Service vehicle emissions

Our energy efficiency goal is bold and reflects our commitment to reduce overall greenhouse gas emissions. The Energy Efficiency Plan begins with replacement of the remaining high-pressure sodium (HPS) assets with LEDs after we complete a survey to count the remaining HPS assets. Relative to the baseline for street lighting, we anticipate electricity savings of approximately 60% at the end of the implementation period.

As a suggested innovation, we propose to deploy the LTE/5G network with hundreds of new low energy-consuming devices and not exceed the current energy consumption profile. Our goal is to integrate LEDs and state-of-the-art energy efficiency LTE/5G measures from team member Juganu to provide significant benefits, without increasing greenhouse gas emissions. We will incorporate energy efficiency into each device so as to not exceed the current baseline level of usage.

ON/OFF/Dimming	Remote Monitoring & Control	Addressing Types	Dimmer Autonomous Behavior
• Remotely control Lamp light in terms of dimming [0-100%] • Remote control of on/off and individual power consumption Power [Watts] • Restore last dimming level after electricity break per the current active dimming schedule- profile	• Extensive Remote Control/Monitoring protocol supporting Broadcast, Multicast, Unicast • Get status, Group ID settings, Frequency adjustment... (about 100 commands) • Mobile applications for Field installation and maintenance	• Broadcast, Multicast, Unicast, Public address (x16), Attribute Address (patent pending)	• GPS, GMT offset /RTC – provides astronomical Clock based on the Lamp geographic location to control the Lamp light according to across year Sunset/ Sunrise timing on a weekly basis

266_NWOSC_3



Maintain and Improve the Safety of the Electrical Infrastructure

Our approach to maintain and improve the safety of electrical infrastructure is described next. We understand that two-wire 480V (480V to ground) systems have a phase and ground conductor only, so the ground conductor serves as the return path of current. While this is allowed per the National Electrical Safety Code (NESC), this is a National Electrical Code (NEC) violation, which requires the ground conductor to be used solely as a return path in case of an emergency and it should not be regularly used. This two-wire system was common practice for utility companies and still is in use today. We assume that several systems like this exist. Therefore, we added a KPI to indicate that, where applicable, these two-wire systems will be converted to three-wire systems (480V phase to phase). This ensures that the electrical system has the equipment grounding conductor as an added measure of safety and complies with current NEC requirements. Field investigations will be conducted to document these conditions. When a two-wire system is found, a separate ground conductor will be pulled the entire length of the circuit and grounding connections will be made within the pole and at handholes and control centers.

Architectural Lighting

Light is transformative. It defines how people see their surrounding environment and how they are seen in it. The Smart+Connected NOLA team has industry-leading qualifications to develop an architectural/LED lighting design for the City's program that accounts for the fact that lighting technology will constantly evolve throughout the program. Working with the City, these design concepts will be developed more fully, and maps and technical specifications will be provided.

3D Video Mapping

City Hall might be well suited for 3D mapping, as all sides of it are visible. We will evaluate this option in the next phase. Depending on the City's preferences, a variety of images could be projected to commemorate special events, such as the Fourth of July, the artwork of local artists, Mardi Gras Floats, or the unique natural beauty of the City of New Orleans area.

The introduction of video imagery on the building would not only enhance the building's persona, but it could inspire community engagement by recognizing a cause, such as the use of pink lighting for Breast Cancer Awareness Month. Controls would be essential to create a programmable system that could be pre-set for desired events.

Intelligent Traffic

Intelligent traffic includes traffic management and smart mobility, which are important aspects of the City's program as **gridlock along the City's streets impacts productivity, safety, and quality of life for residents and visitors alike.** Intelligent traffic management solutions are

Mapping Concepts

Guiding Principles for

City of New Orleans Smart Lights

SAFETY | Good roadway lighting allows for a co-existence of vehicles, pedestrians, and cyclists. A basic function of night lighting is to allow all the users of road and pedestrian ways to be able to visually survey their immediate surroundings and, thus, feel secure. People's perception of safety is highly dependent on good vertical illuminance, good uniformity, visual clarity of the surrounding area, minimal glare, good color rendering, and visual hierarchy to support wayfinding.

GLARE | Glare from overly bright or poorly aimed light fixtures can be uncomfortable and can contribute to people feeling unsafe. If a light fixture is overly glary or aimed in a way that prevents good visual clarity, it can temporarily disable one's adaptation to the surrounding illuminance, making it difficult to see. Attention should be paid to selecting fixtures with acceptable source and lens brightness, and roadway lighting should never tilt greater than 5% above the horizontal plane to avoid direct view of light sources.

VISUAL ACUITY | Creating visual clarity in the surrounding area works hand in hand with vertical illuminance and uniformity to increase the feeling of safety. When surrounding buildings are softly illuminated to provide a visual backdrop, it is easier for someone to quickly make a visual assessment of their surroundings and to identify an area as safe. People can instinctively feel that they might be attacked and pulled into a darker surrounding area. Surrounding building interior glow, lighting at entries, supplemental area lighting, and ambient lighting from path and roadway lighting can all contribute to creating good visual clarity.

COHESION AND CONSISTENCY | In kind with visual clarity, we strive to create a simple cohesion and consistency across the city. By selecting fixtures that are a part of a "family," this aids in the predictability of the visual experience. A major benefit to selecting fixtures within a family from one manufacturer leads to easier maintenance as well.

COLOR TEMPERATURE AND CRI | Color temperature can affect visual acuity and people's sense of space. A cooler color can make people feel safer and more alert, while a warmer color can make people feel more relaxed. Good color rendering can significantly contribute to a feeling of safety. Some traditional exterior light sources, such as high-pressure sodium and older versions of metal halide, have limited color rendering capability and the potential for color shift. State-of-the-art LED sources have the benefit of good color rendering across all parts of the visible spectrum, allowing all colors to be easily detectable and instantly recognizable, even in lower illuminance ranges.

ENERGY REDUCTION | A combination of energy efficient light sources (LED), proper spacing, interaction between light and site materials, and selective light distribution lead to an overall efficient project/site. It is important to coordinate with designers and engineers so that all aspects are being thoughtfully selected to ensure the lighting is integrated into the built environment.

ECONOMIC DRIVER | The opportunity to move to LED and Smart technology offers communities a wide variety of beneficial options to decrease cost and increase revenue. Options include metering parking, maintenance cost reduction, electricity cost reduction, city-wide data mining, and increased community awareness of safety and public announcements. Lighting controls in outdoor lighting systems reduce the number of operating hours, lower maintenance costs, and increase energy savings.

ADAPTIVE AND INTELLIGENT CONTROLS | Adaptive and intelligent controls provide customizable and strategic lighting to meet the needs of each community. Daylight and occupancy sensors, energy monitoring and reduction, and time-management systems are great examples of systems. Lighting controls can be used to change lighting intensity to meet the needs of the space based on time of day, weather, adjacent ambient lighting, and current occupancy of the roads.

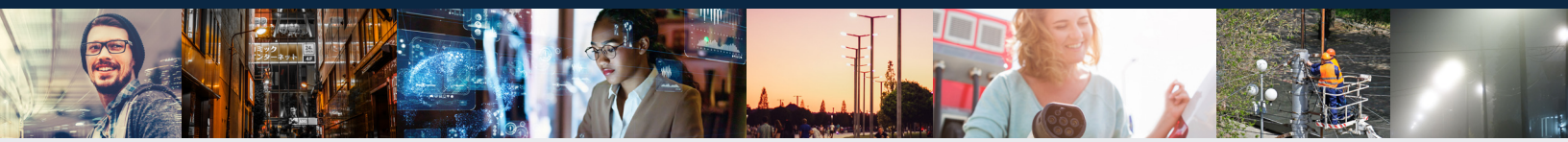
SMART IoT OPTIONS | Many other smart lighting features can be advantageous to the City of New Orleans. Some of those IoT (Internet of Things) in practice and anticipated for the future include Smart Parking Optimization, Traffic Congestion Relief, EV Charging Stations, Environmental Notifications, Wi-Fi, Future Self-driving Car Connectivity, Incident Detection, Energy Reports, City/Safety Security Alerts, Situational Awareness, and Pollution (air/noise) Mapping.

MAINTENANCE | The adoption of LED technology has significantly increased the lifetime of exterior lighting systems. With fewer failures and the added benefit of not having to relamp or replace fixtures nearly as often, labor and maintenance costs are reduced. When fixture selections are based on particular families or manufacturers, the familiarities with maintaining those fixtures will lower labor costs, too.

LUMINAIRE STYLE | Any new luminaires need to be provided with a marine grade and salt spray rating. Design of the luminaire and pole may need to match existing standards, or there may be an opportunity to create a new brand and style appropriate for the smaller, sleeker LED luminaire.

ENVIRONMENTAL FACTORS | The rapid growth of urban environments often leads to a changed perception of our night sky, mainly due to uncontrolled outdoor lighting. Light pollution, including sky glow, glare, light trespass, and energy waste should be considered when designing a quality lighting system. Using proper optics, specifying shielding devices and glare accessories, and aiming fixtures within the intended area aids in an efficient and environmentally conscious lighting system. Also, wildlife can be negatively affected, and care should be taken to specify glare-free fixtures and utilize robust controls to dim or extinguish lights when not in use.

222_NWOSC_2



helping cities and counties worldwide improve the way people, goods, and data flow within the area and in neighboring environments.

Investing in intelligent traffic management during roadway construction has tremendous returns on investment (ROIs), as documented by several use cases by the U.S. Department of Transportation (DOT), and should be an absolute part of any build. Ideally, this approach should include:

- Electronic signage to communicate upstream conditions at major decision points
- Closed-circuit television (CCTV) coverage to monitor roadway activity, especially in areas of high conflict
- Video detection or magnetometers to monitor traffic conditions
- Video detection and signalization of other modes (bike-ped lanes)
- Connectivity to traffic signals (ideally with 2070 controllers) and Ethernet network equipment
- Connectivity to an agency owned and controlled traffic management center (TMC)

Intelligent traffic management and smart mobility solutions (Exhibit 2-9) can range from lessening congestion and managing traffic more efficiently to optimizing commuting time or providing greater access to ultra-high broadband connectivity. At its core, intelligent traffic management requires reliable, scalable, and secure networks to link signage, signaling, cameras, vehicles, devices, and people. It requires network and cloud architecture that can process the masses of data in real time and ensure low-latency responses, such as for autonomous vehicles. It also requires sensor management, video analytics, space-time analytics, and automation subsystems that are built into next generation network architecture.

Given this backdrop of current capabilities and trends in mobility, Smart+Connected NOLA team members NoTraffic and Zyter recommend a realistic, conservative—and programmatic—approach to evaluating technology options for City of New Orleans intelligent traffic management. The Smart+Connected NOLA team has conceptualized the City's intelligent traffic management and mobility solution from the ground up, from home, to neighborhood, to the City, as shown in Exhibit 2-10.

NoTraffic Transforms Intersections to Support **Safe Routes to Schools** Program and Agency Traffic Operations Needs

NoTraffic was selected by the San Bernardino County Transportation Authority and the City of Redlands, CA, to provide pedestrian safety insights in support of SBCTA's Safe Routes to Schools program, deliver a cost-effective solution for high-accuracy intersection detection and signal network communications, and to position the City to deploy the latest generation of Emergency Vehicle Preemption technologies city-wide.

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NoTraffic **Modernizes Critical Intersections** to Support Optimized Traffic Operations and Prepare for **Connected Vehicle Applications**

NoTraffic was selected by the California Department of Transportation (Caltrans) to deploy NoTraffic's innovative cloud-based traffic management platform in the Caltrans Connected Vehicle Corridor in Palo Alto, CA, to modernize the aging traffic signal infrastructure for current and future needs. The platform surpassed all performance requirements and is under consideration for deployment across several districts state-wide.

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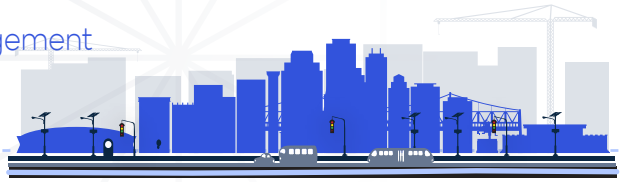
EXHIBIT 2-9.

Smart City Architecture

City of New Orleans

Smart City Network

Intelligent Traffic Management



Commuter	Smart Infrastructure	Toll, Parking & Fines	Traffic Management
City Smart Bikes with Tracking	Smart Traffic Lights	Parking Management	Integrated Mobility
Smart Parking	Smart LED Streetlights	Integrated Fine Management	Video Analytics Based ANR
Smart Payments	EV Charging Infrastructure	Insurance Violations, Rules Enforcement for Speeding, Jumping Signal, etc.	Traffic Management System
Pedestrian Facilities	Bicycle and Bicycle Stations		Traffic Rules Enforcement: Red Lights and Speeding
NMT (Non Motorized Transport) Facilities	Smart Signalization Junction Improvement		Blacklisted Vehicle Tracking Alerts
Smart Bus Shelters	Signage, Bulletin Boards, and Road Markings		Command and Control Center

Mobility Value Chain

Smart+Connected NOLA Smart Solutions

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Intelligent traffic management solutions will manage traffic more efficiently, optimize commuting time, and leverage communications for improved mobility.

EXHIBIT 2-10.

Smart Mobility Corridor

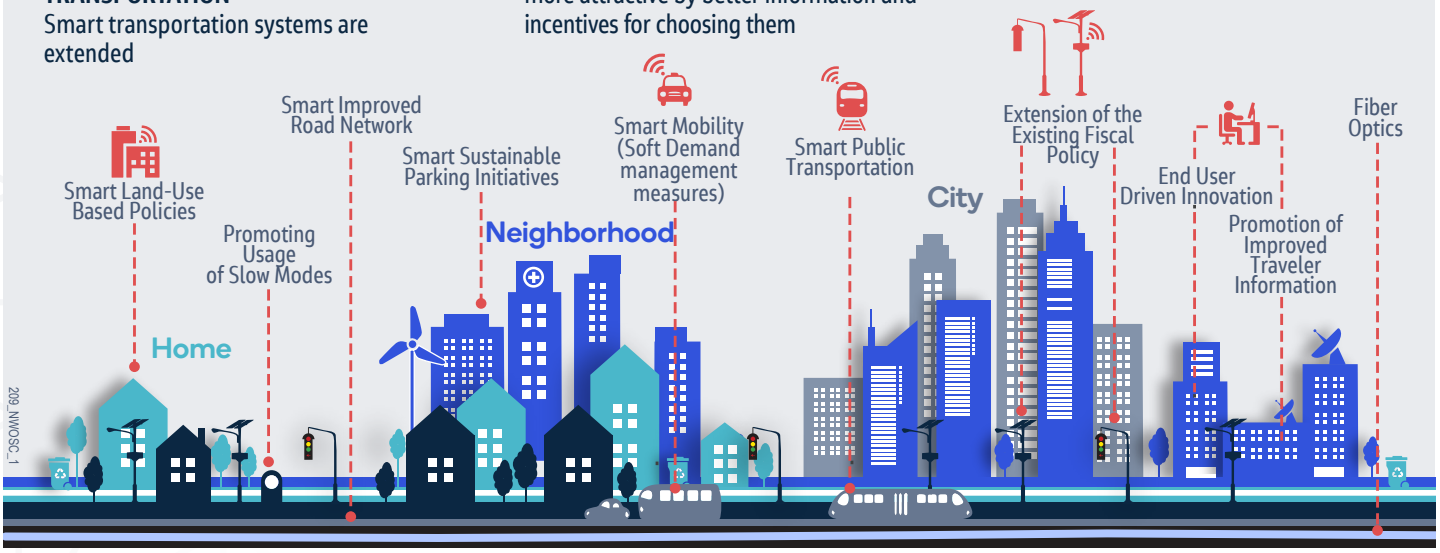
1 URBAN DEVELOPMENT
The city is developed and designed in a way that makes smart means of transportation the first choice

2 SMART MEANS OF TRANSPORTATION
Smart transportation systems are extended

3 TRANSPORTATION SYSTEM
The road network is adapted to smooth traffic flow

4 INCENTIVE
Smart means of transportation are made more attractive by better information and incentives for choosing them

5 INNOVATION
Development of transportation technology and new concepts makes green growth possible



Smart Metering, Flooding, and Water Level Sensing

The Smart+Connected NOLA team has extensive experience developing business case evaluations, conducting water meter evaluations, overseeing the implementation of customized advanced metering infrastructure (AMI) solutions, as well as operating and maintaining water meter infrastructure. Through Jacobs, we are currently managing the SWBNO AMI project. We take a holistic approach to deliver proven AMI solutions that improve not just meter-to-cash, but overall utility operations. Jacobs' project manager for the AMI task will serve as this team's water task manager so that the team can capture synergies between the projects and enhance cost savings.

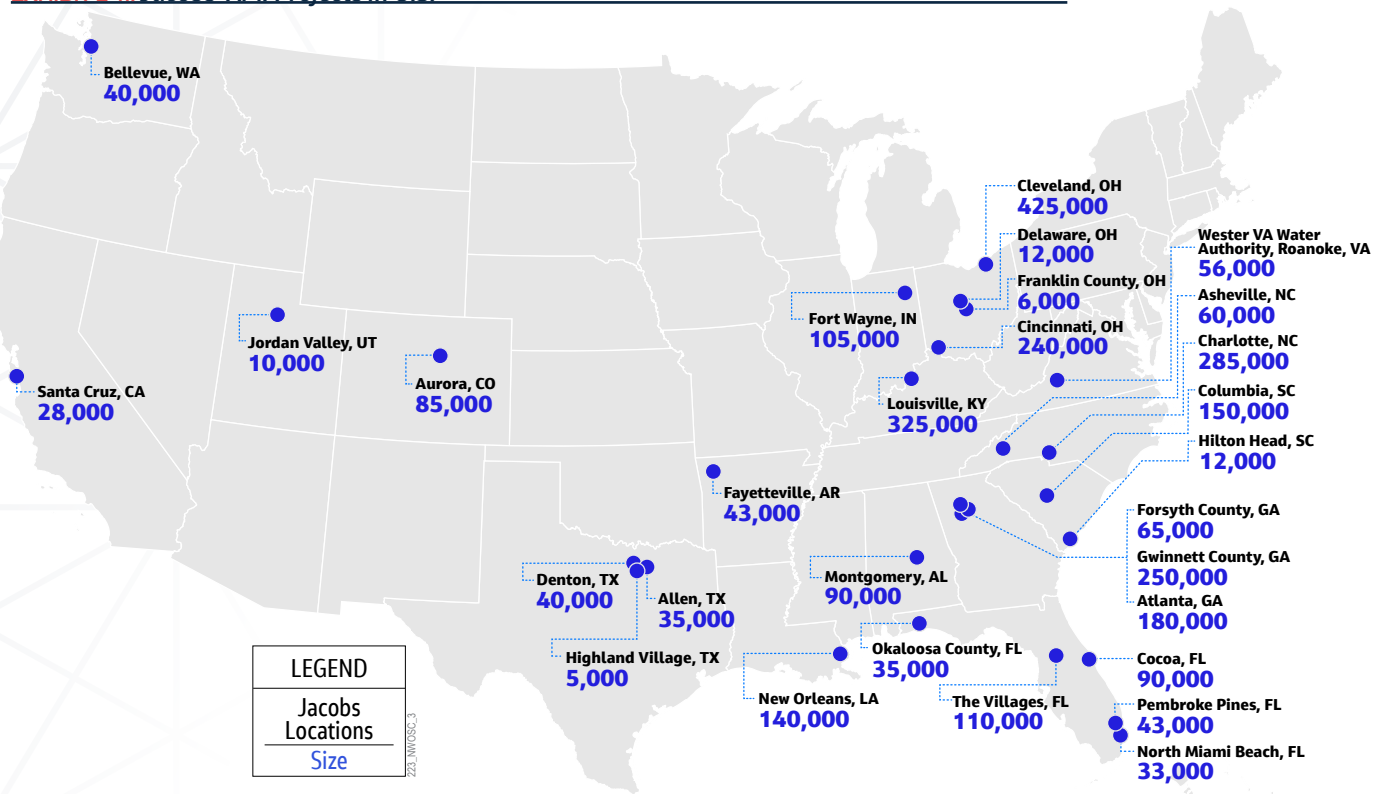
» ***Our AMI technical team has expertise with the top AMI systems and extensive hands-on experience implementing these systems for large water utilities.*** Our knowledge enables us to develop an accurate technology assessment and integrated solution for New Orleans. We will also see that the technology selection and implementation plan maximize the opportunity for success. Exhibit 2-11 depicts our deep domain expertise in AMI nationwide.

» ***Jacobs manages and operates water systems.*** From utility managers who have managed AMI system upgrades, to hands-on staff who have changed out meters, to specialists who manage customer service and billing activities, our folks have "been there and done that." We can provide these resources for lessons learned discussions and ongoing dialogue with SWBNO staff throughout the project so you can be sure your expectations are clearly defined, met, and even exceeded.

Our team's experience implementing and managing both AMI and Smart City systems sets us apart from our peers.

Jacobs takes great pride in our business and technical expertise on water AMI systems and having managed and implemented the most aggressive water AMI projects and programs nationwide. We firmly believe that an in-depth understanding of water utility operations is critical to these projects and that gas or electric experience does not provide the full understanding necessary to excel in this space. The understanding of inaccuracies in water metering and the impact on non-revenue water (NRW); residential water metering technologies such as PD, ultrasonic, and magnetic; cross-connection protection of potable water systems;

EXHIBIT 2-11. *Jacobs' AMI Projects in U.S.*



and devices that support remote valve operation and other advanced on-the-edge technologies are key differentiators specific to the water industry.

NRW Project: Qualcomm and Jacobs have successfully delivered an NRW project in Gwinnett County, GA.

From developing implementation plans, where realistic deployment schedules and constraints are analyzed, to helping utilities use "systems thinking" to plan holistic network and sensor deployments, our approach provides our clients real value in both advising and actively managing AMI and Smart Cities implementations.

Flooding

Jacobs also has extensive experience and capability in flood forecasting and warning and delivers competitive and innovative solutions to our clients. Our team has skills in all areas of flood forecasting, including rainfall forecasting, rainfall-runoff and hydraulic modeling and forecasting systems development – through to flood warning and warning dissemination. Our ability to take care of the full process means we can actively help you to protect your community. Our experts use state-of-the-art technology to develop flood early warning systems. This includes our own world-leading Flood Modeler software. In close collaboration with operational forecasting teams, we use a range of approaches to develop reliable and timely flood forecasts by making the best use of hydro-meteorological data and critical water level thresholds. This includes systems for highly urbanized locations. Our established reputation in this field is based on our experience developing successful forecasting systems, models, and tools across the globe over the past 25 years.

Merging our work in predictive modeling, advanced sensor technologies, data analytics, and visualization with seven decades of industry domain expertise has allowed Jacobs to develop a world-class program that will meet all of the needs of the City of New Orleans. The result of the program will be reduced cost of operations, improved response to customer problems, and improved regulatory compliance.

For the City of Miami Beach, Jacobs is using its technical expertise, integrated with stakeholder preferences, to develop improvements to mitigate street flooding.

Incorporation of Stakeholder Preferences in Miami Beach Street Improvement Designs

Neighborhood Prioritization
- Flood vulnerability
- Economic impacts
- Emergency access/evacuation
- Critical facility access

Project Prioritization
- Flood risk severity
- Regional consequences
- Community input and need

Options Matrix
- Blue-Green opportunities
- Elevate road
- 15- vs. 30-year

Existing Condition Harmonization
- Vehicular and pedestrian access
- Positive drainage conveyance
- Improved aesthetics

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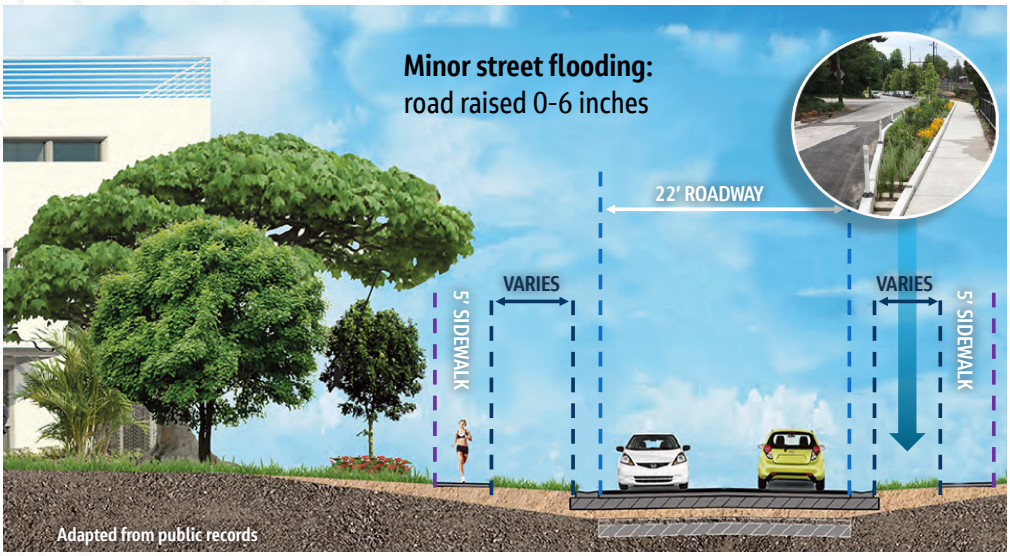

Water Level Sensing

Monitoring of surface water level can be carried out by different methods. Pressure sensors, floaters, radar sensors, and ultrasonic techniques are some of the most applied methods providing accurate and reliable data acquisition for water level measurement. Cameras, mounted on streetlight poles, can detect the water level in the images, locating the water line on a submerged planar surface, usually a stage gauge. The images come from a vision camera at the adjoining Juganu streetlight, close to the river or water body being monitored.

The task related to smart metering, flooding, and water level sensing is part of Phase 2 and we will work with the City to develop a customized solution leveraging our significant experience in this service offering.

EXHIBIT 2-12. *NoTraffic has deployed successful ITS projects for clients across North America.*

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Smart Mobility (Virtual Traffic Management Center)

Smart+Connected NOLA team member NoTraffic developed a patented, innovative, groundbreaking intelligent traffic management smart mobility platform (SMP) that leverages the latest developments in **artificial intelligence, edge processing, and cloud computing** to transform and modernize existing traffic signal infrastructure. The NoTraffic platform uses a hardware enabled software-as-a-service model (HESaaS) to deliver traffic applications and services through a combination of edge and cloud processing with over-the-air software updates and additional application downloads. This model enables rapid deployment of services, minimizes construction requirements and future proofs traffic signal systems to support current and future requirements and applications.

As illustrated in Exhibit 2-12, the NoTraffic project team has collectively deployed successful ITS projects in excess of 1,500 intersections in the U.S. with an additional 500+ worldwide.

Smart Mobility Platform (Virtual Traffic Management Center)

The Smart+Connected NOLA team SMP is a unique solution in the industry that is ideal for the City of New Orleans' current and future traffic management policies, planning and challenges.

The platform will empower the City to provide equity of traffic signal service to all roadway users in all City locations.

SMP will leverage the innovative NoTraffic autonomous traffic management system to modernize the City's existing signal infrastructure. The NoTraffic platform enables a portfolio of software-defined traffic apps and supplies critical transportation data to the smart mobility applications and services that will be delivered with the Zyter City Command and Control Center Integrated IoT software platform.

The key features of our SMP are illustrated in Exhibit 2-13.

Mobility Platform Security Architecture

The NoTraffic platform was designed with end-to-end, redundant security and encryption mechanisms to fully protect the City of New Orleans' signal infrastructure:

» The NoTraffic sensors communicate with the in-cabinet NoTraffic control unit over an encrypted Wi-Fi connection via an on-board firewall service.

EXHIBIT 2-13.

Sense
Receive and log an ever-growing volume and rate of sensor data, events, and alarms

Understand
Detect, filter, process, understand, and create actionable data

Visualize
Make it easier for operators to understand and see what is going on

Take Action
Provide more than data and deliver insights that allow users to take action and make better decisions

Investigate & Collaborate
Promote sharing and collaboration among stakeholders (audits, investigations, case management)

- The NoTraffic control unit is protected by the on-board firewall service that secures the data transmissions to and from the sensor units and to and from NoTraffic cloud backend via the private CBRS radio access network (RAN) and/or public LTE/4G/5G networks.
- The City's signal infrastructure is protected by the on-board firewall service in the NoTraffic control unit that will be installed in the City's traffic signal cabinets and the electrical isolation of the industry standard interfaces used to connect to the City's traffic signal controllers.

The NoTraffic cloud backend is protected by the fully integrated firewall service that serves the NoTraffic virtual traffic management web services and the NoTraffic cloud API that will support the Zyter Mobility Platform.

Data Privacy, Backup and Recovery- NoTraffic Platform

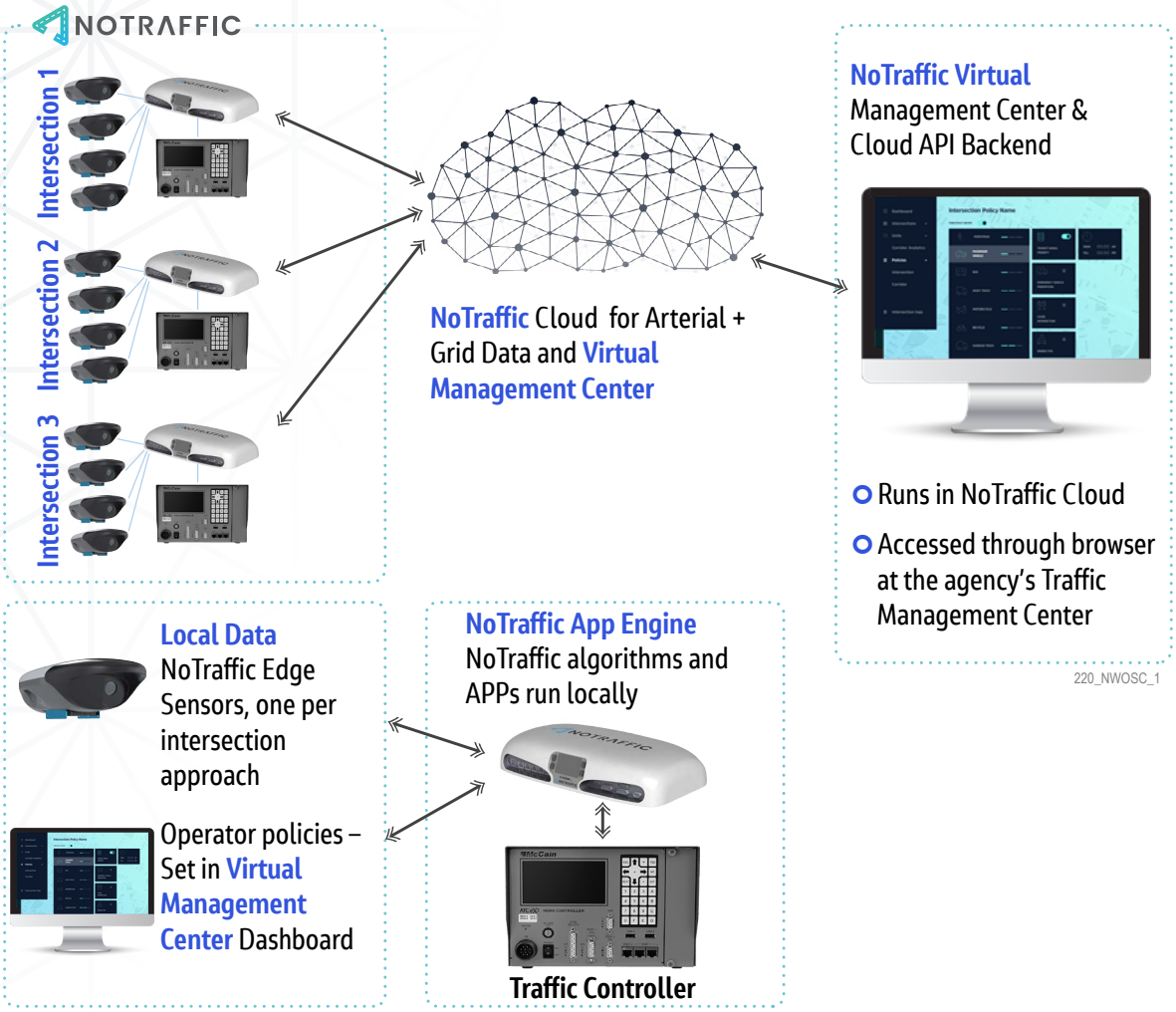
The NoTraffic sensors and all subsequent algorithms and data processing steps use only meta-data for traffic operations and analytics. No personally identifiable information (PII) is used. System configuration information and system generated meta-data are stored in the secure NoTraffic cloud, which has high-availability and redundancy to ensure data integrity. System configuration changes are captured in logs and can be rolled back in the event of configuration or system errors.

SMP Benefits

The key benefits of our team's SMP tailor-made solution, which will help the City centralize and unify information, are as follows:

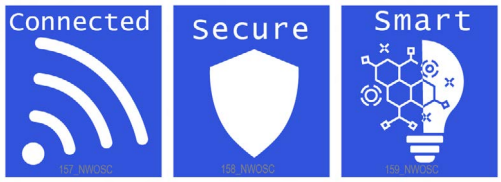
- Streamlining operational processes and improving response time through automated workflows

High-Level NoTraffic System Architecture



- Easier and more effective decision making
- Proactive response to emergency situations, with effective coordination of field-forces by integrating multiple application and system data sources
- Customizable dashboards that provide users with the information they need to make decisions and take action
- Virtual Traffic Management Center (VMC) that includes a full data analytics suite with:
  - Detailed vehicle counts
  - A running log of signal operations
  - Real-time status information

City Command and Control Center



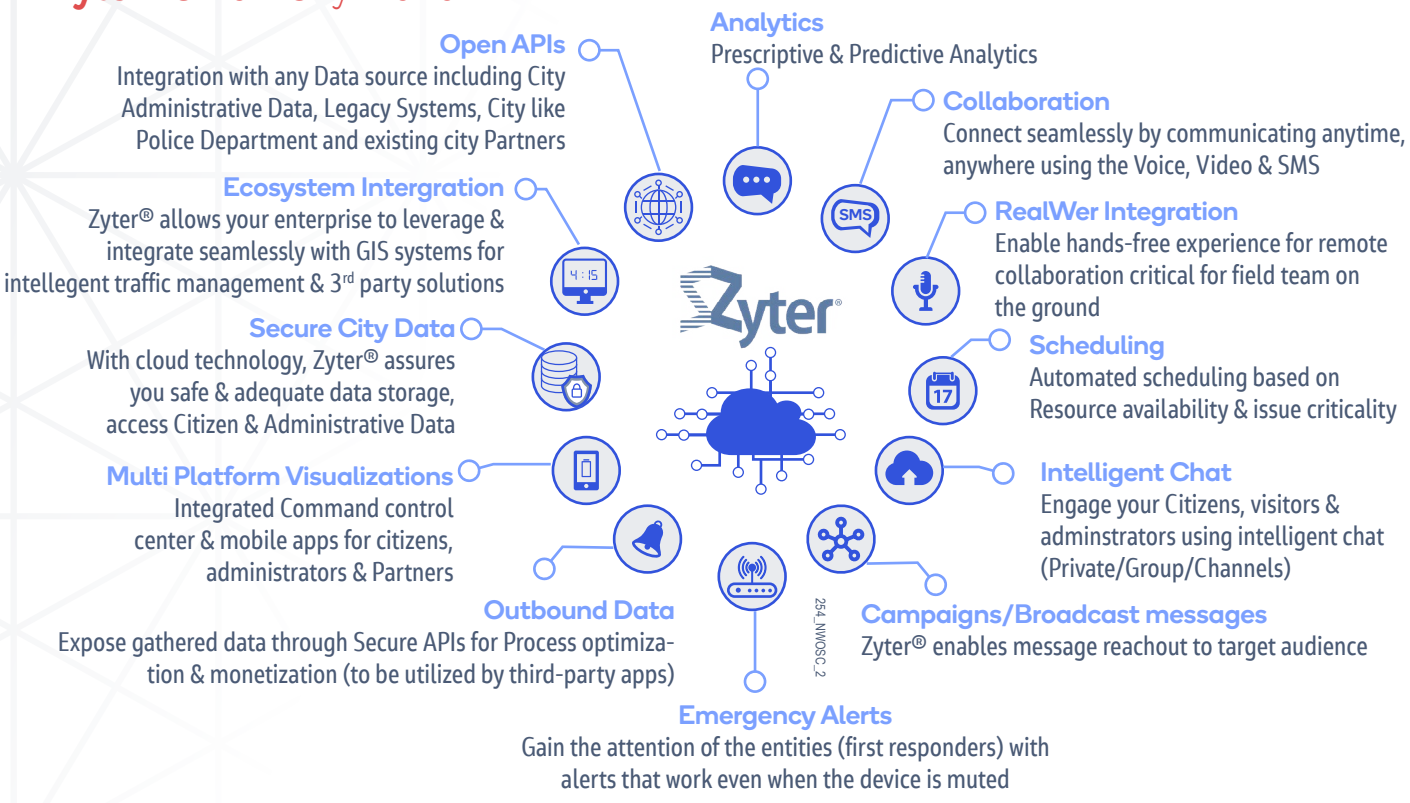
The Smart+Connected NOLA team will leverage the Smart City Platform for the City of New Orleans to improve City operational and policy decision-making through data and analytics. This will be done through team member Zyter's data analytics platform. The platform has the ability to connect to and control any IoT device from any vendor deployed anywhere through its flexible adapter framework.

Zyter's platform also has the unique ability to execute workflows, alerts, or processes based on events and data coming from not just IoT devices but also from different information systems (like emergency systems, city services, and other departments), since Zyter's adapter framework is also able to connect into any of the city's services and departments in addition to IoT devices, to enable end-to-end orchestration of these services and intelligent processing across and within the City's departments. Key features of the platform are depicted in Exhibit 2-14.

Additionally, the Zyter Smart City Platform comes with a command and control center, which will be located in New Orleans, that creates a complete view of everything that is happening in a city in real time across all verticals (parking, lighting, security, energy management and more) with high-level and detailed dashboards with live alerts, real-time analytics, and historical analytics as well, allowing the users to look at the big picture and also dive into the deeper aspects of the city they are managing.

EXHIBIT 2-14.

Zyter - Smart City Platform



Finally, the Zyter Smart City Platform can also enable collaboration between different stakeholders in a city in case of emergencies and provide access to the right contextual information at the right time at their fingertips through their mobile devices. All of these features are unique to Zyter and provide the next level of value-add to the cities, the citizens and the administration as well.

Penn **Station, NY**

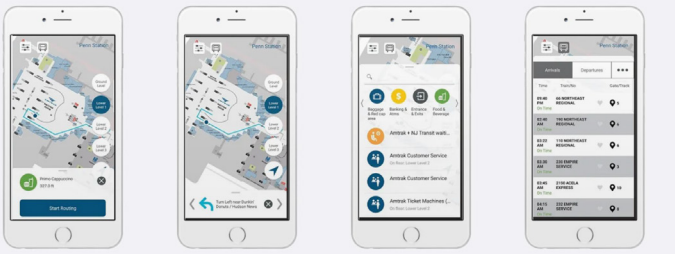
Zyter deployed 300+ BLE beacons working closely with the labor unions at Penn Station, New York. These beacons are used to enable Smart Wayfinding in the one of the largest and busiest metro stations in the U.S., serving more than 600,000 passengers per day. We leveraged Zyter Smart campus platform to build and deploy a commuter engagement mobile app with personalized features alerts based on individual schedules, proximity-based marketing based on individual preferences, etc. Zyter also built a custom application that improved retailers' ability to implement targeted advertising.

The wayfinding solution provides indoor navigation within the building, based on the location of the train and location of the passenger.

276_NWOSC_2

Zyter served as the prime vendor for delivering the Smart indoor Navigation and Wayfinding solution for Penn Station New York. Also created upsell and cross-sell experienced-based, real-time location services.

Amtrak screenshots



navigate multiple levels with ease

get turn-by-turn directions to waiting area, restaurants and stores

discover destinations throughout the station

get real-time boarding and Amtrak track information

Zyter

Zyter's Smart City Platform will enable New Orleans to better manage the city ecosystem and unlock the full potential of the connected IoT devices and services provided by the City so that the City can:

- ***Improve Operational Efficiencies***—Simplify and automate day-to-day management tasks to achieve long-term efficiency improvements and significant cost reduction.

City Command and Control Center

256_NWOSC_3

- ***Make Smarter, Faster Decisions***—Get actionable insights so you can make intelligent and informed decisions faster using real-time data streams, comprehensive dashboards and incident reports.
- ***Provide Intuitive Experiences for Stakeholders***—Using our human-centered design method, Zyter Smart Cities delivers an intuitive and seamless experience across a full range of apps and services, regardless of devices and data sources.
- ***Improve Safety***—Identify and address potential issues quickly, before they escalate, using context-aware incident reporting and contextual alerts.
- ***Secure your Enterprise***—Ensure the highest levels of security at all times with the platform's 256-bit AES encryption along with built-in user identification and authorization.

City Command and Control Platform – Cybersecurity

Critical elements of the platform's cybersecurity profile include:

- Encrypt all data in transit and rest using enterprise grade cloud hardware secure module (HSM) and secure key vaults and will meet National Institute of Standards and Technology (NIST) 800-53 compliance standards.
- Apply NIST privacy framework guidance so that data architecture design and delivery and self-auditing compliance align with California consumer privacy laws and General Data Protection Regulation (GDPR) standards.

- Apply strict data masquerading rules applied when building test data management platforms.
- Apply zero trust architecture and strong identity and access management roles for data query API gateways to limit the exposure of data shared, which varies depending on your security clearance level.

Appropriate cybersecurity applications will be designed and put into place to align with Phase 1 deliverables.

RFP Criteria: Does the solution have an open API for simple integration of CAD, AVL, Advanced Traffic Management and a Real-Time Public Information Portal?

Our solution includes an open data platform using API technologies. **All application data will be made accessible via open APIs.** API access will be based on roles and access-control policies defined for each user and application (role-based access control). Robust authentication procedures and an optimized developer experience are key aspects of our design. We will work with the City of New Orleans to define the detailed data API specification and developer portal.

Data API

Our team's solution will expose data through public HTTPS-based APIs using REST, JSON, and GraphQL. A well-known endpoint will be established for each operational service (e.g., traffic, air quality, parking). Within each operational service's API, a rich GraphQL syntax will be defined, allowing client services to query by date range, data type, geographic region, and other attributes.

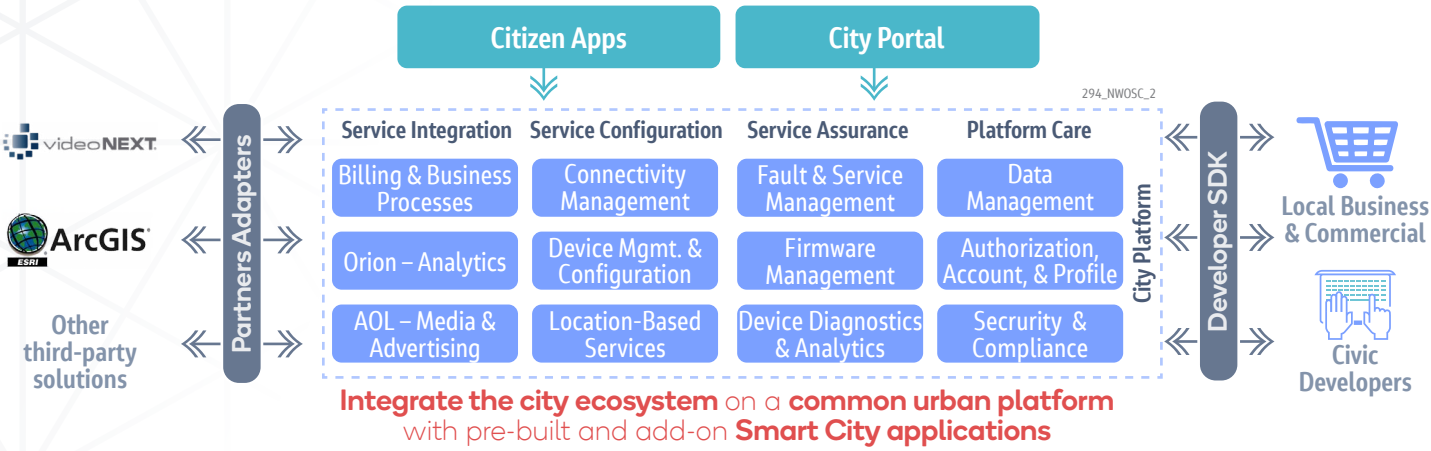
Access control will be role-based. The APIs will only accept requests from registered applications, which are uniquely identifiable applications that present a credential at the time of the request. Valid credential types will include API keys, OAuth 2.0 client credentials, or service account keys, depending on the type of application and the operations it is allowed to perform.

In some cases, the user of an application must also authenticate. APIs will use the OAuth 2.0 protocol for authenticating user accounts. The OAuth 2.0 authentication process determines both the user and the application. In other cases, APIs may support anonymous access to public data using API keys. However, API keys only identify the application, not the user. When using API keys, the user must be authenticated by other means, if required.

API Support

Support will be provided for the API via the Developer Portal, UserVoice, and online forum. The developer portal will provide the following:

- Reference documentation
- API key provisioning



- Client libraries (optional)
- Landing pages
- Tutorials
- Guides to specific problems, including use cases
- Conceptual documents explaining difficult/ counterintuitive terms
- Blogs (optional)

Client libraries:

- Provide idiomatic, generated, or hand-written code in each programming language, making the API simple and intuitive to use.
- Handle all the low-level details of communication with the server, including authentication.
- Can be installed using familiar package management tools, such as npm and pip.

Generation and distribution of API keys, OAuth2.0 client credentials, and service account keys will be automated through the developer portal. Client libraries may be provided for certain APIs. These libraries will provide an optimized developer experience by using each supported language's natural conventions and styles. They will also reduce the boilerplate code that developers must write by providing higher-level abstractions, encapsulating implementation details and service API concepts.

SMP provides a "single pane of glass" to empower the City of New Orleans to make informed operational decisions related to traffic, transit, and roadway infrastructure. The key features include:

- The SMP will gather data from the subsystems, including but not limited to the traffic management platform consisting of the NoTraffic platform and existing signal systems in the City, smart streetlights, **computer-aided dispatch (CAD)** and **automated vehicle systems (AVL),** smart parking, etc., into a single interface that will support monitoring, planning, simulation support and to generate actions in the smart mobility subsystems.

- The SMP will use the **secure API capabilities** of the proposed subsystems and can incorporate other devices and platforms through the Zyter SMP data hub feature.
- The SMP provides dashboards that are customizable by user needs and City departmental preferences. API access will be based upon access control policies defined by security keys issued to devices, users, and subsystems.
- The SMP will provide screens to configure, manage, and monitor any smart mobility subsystems or devices from any permissible location.
- The SMP will provide rules-based logic to trigger actions in the smart mobility subsystems based upon City-defined policies.
- The SMP will provide network layer monitoring tools and network incident alerts to support troubleshooting.
- The SMP will enable web conference initiation from the platform user interface.
- The SMP will integrate with City's ESRI GIS and other and street network map services with the ability to display status of network attached resources. A complete view of sensors, facilities, video streams and alarms will be provided in an easy-to-use and intuitive GIS-enabled graphical interface with configurable workflow and business logic.
- The SMP will provide trouble-ticketing and workflow management tools that give operators and managers a management dashboard that provides a real-time status and is automatically updated when defined actions, incidents and resources have been assigned with status updates that include pending, acknowledged, dispatched, implemented, and completed.
- The SMP will provide a visualization platform to view historic analytics and predictive models that can be performed across all City operations and departments as desired and permitted. Reports and analytics will be generated by an easy-to-use interface with drag and drop facilities.
- The SMP data hub will connect to multiple data sources simultaneously via REST/SOAP APIs. The SMP data hub enables bi-directional data sharing for updates to City web pages in real time to keep citizens informed and deliver on the City's smart transparency policies. All application data will be available via the SMP data hub API.

RFP Criteria: Does the solution include a Lighting Master Plan?

Lighting Master Plan

Congruent with the street lighting inventory, we will develop a Lighting Master Plan, which will be led by **HLB Lighting Design, a DBE firm. The Lighting Master Plan** will serve as a guideline for incorporating inspirational illumination, roadway safety, long-distance visual cues, visual acuity, optical performance, advanced technology, environmental conditions, and maintenance requirements. The goals and strategies identified in this plan will position City of New Orleans as a world leader in sustainable city lighting and advanced technologies that best serve the community and visitors.

We will use the GIS data to help determine areas that are above or below standard illuminance criteria. We will take sample photometric calculations on each typical corridor within the City to establish a baseline. We will then analyze areas to determine if they are above standard criteria (over lit) or below standard criteria (underlit), based on the photometric criteria established by City of New Orleans and LaDOTD. We will address underlit areas and will analyze over-lit areas to determine the reason for the above-standard illuminance, such as crime prevention, and adjust the lighting, as appropriate.

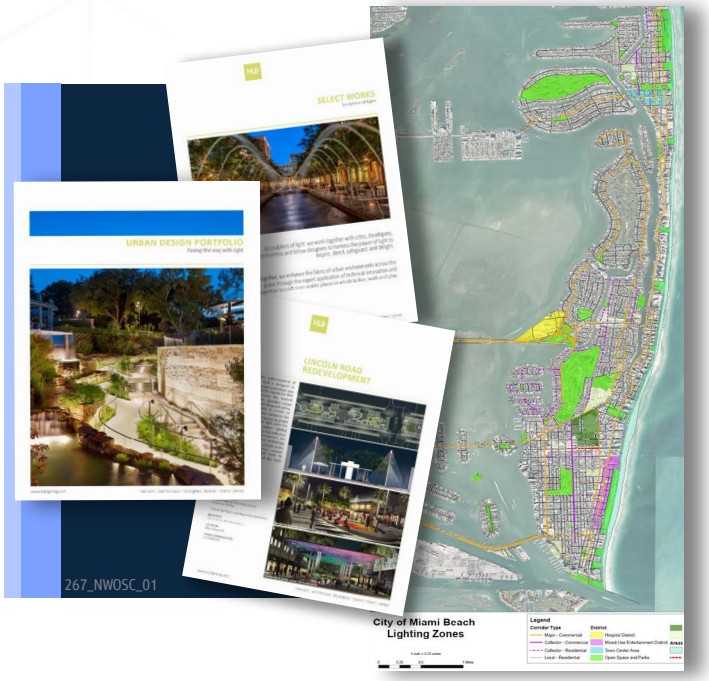
Lighting Master Plan

Vision

- Create an opportunity for branding and identity for City of New Orleans.
- Evaluate visual acuity to enhance safety.
- Use LED technology to maximize energy efficiency and reduce maintenance costs.
- Employ cutting-edge controls, adaptive controls methods, and two-way communication.
- Consider environmental conditions, including resiliency and light trespass and sky brightness.
- Provide a network for IoT devices throughout the City.

Mission

- Provide a Lighting Master Plan that maintains consistency throughout the City.
- Upgrade existing light poles with modern technology.
- Gain the support and solicit feedback from the communities directly affected by the program.
- Provide a specification guide and standard that can be used on future City projects.
- Improve long-term maintenance and upgrade quality of light.



Our team's lighting experts will develop a Lighting Master Plan that achieves results that are both functional and beautiful.

Our Lighting Master Plan will include lighting analysis, a detailed narrative that describes how the lighting analysis will be conducted, and will clearly identify the following:

- Baseline photometric analysis
- A lighting enhancement analysis for public and traffic safety
- Analysis for addressing illumination below or above current or proposed standard
- Use of GIS to identify typical and atypical street conditions (we will provide background study maps)
- Updates to the City's streetlight ESRI map layer
- Compatibility of existing LED lights or luminaire style with new LED system
- Compatibility of recently installed LED lights with a smart LED lighting system (by placement of node, sensor, or transmitter)

Once the lighting plans are submitted and approved and permits obtained, construction will begin to convert the 3,000 lights to a Smart LED system. Full implementation will not occur immediately, but will be delivered in phases so that the work can proceed in a timely, efficient manner.

The construction plans will remedy the areas that do not meet existing lighting standards and will ensure all infrastructure meets current code requirements. Once construction is complete, we will perform inspections and provide as-built documents and O&M manuals as part of the closeout of the construction phase.

The Lighting Master Plan will provide several key benefits:

Safety and Visual Appeal:

- Development of area enhanced through better lighting
- Light environment aligned with functionalities and uses of space
- Visual comfort
- Better light quality and ambiance
- Safety of citizens and visitors

Economic:

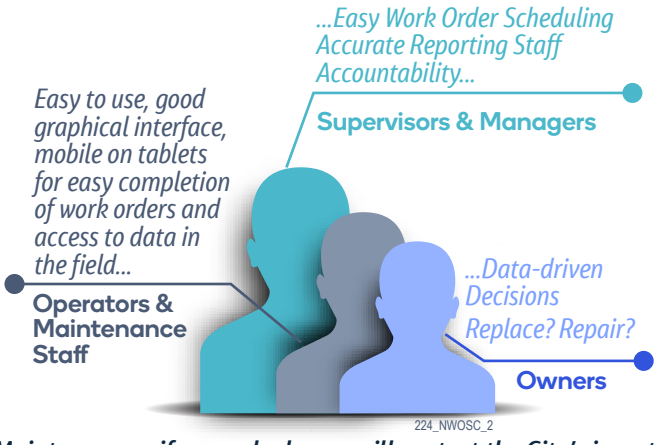
- Reduced energy costs using higher efficiency lighting products and thorough planning
- Improved lighting management
- Lower maintenance using advanced technology and smart control systems

RFP Criteria: What is the maintenance, management, and upgrade plan for the solution?

The Smart+Connected NOLA team will provide O&M of the systems deployed. Our team provides end-to-end services that will enable the City to meet today's challenges, while nimbly adapting to the ever-changing landscape of technological innovation and disruption. Our holistic services provide for a technically sound solution that fully integrates and interconnects hardware and software, is interoperable across multiple platforms, prioritizes privacy and data security, and will be future proof and future ready for reliable, resilient, and sustainable operations and upgrades—even as technology continues to evolve and new applications are integrated into the initial system.

We will coordinate and work with all agencies and departments from the City, including energy, public works, transportation, SWBNO, and others during this program. Our objective is to fully coordinate activities so there is minimum disruption to citizens. This relates to the ongoing maintenance and replacement of hardware to make sure system operation is uninterrupted. Of growing importance is the continued maintenance of the software driving the devices. Throughout the life cycle, the devices will have continual firmware updates to address bugs and introduce new and improved capabilities. Much of the updating can be completed through automatic "over the air" updates. In our Digital Inclusion Plan (Tab 3) we define how we develop the local work force for O&M of Smart City solutions. Leveraging our Zyter city command and control center and its analytics capabilities, we will meet or exceed the 95% requirement of properly functioning lights.

Staff will monitor that these automated updates are completed, and they will manually address any issues that may arise. The complexity of the system and the life-safety aspects of many of the proposed devices make this a critical task. Device failures will occur through natural (e.g., weather, aging) or human (e.g., crashes, utility incidents, vandalism) causes. We will report and replace failed devices in a timely manner. We will track failures through the asset management system, which will also aid in identifying failure patterns, allowing for more in-depth troubleshooting.



Maintenance—if properly done—will protect the City's investment by ensuring the maximum operational lifespan of the technology.

Computerized Maintenance Management System

Field maintenance is more than just replacing broken devices. As the systems become more complex—and as we rely on them more for daily operations—the attention to preventive maintenance has become a key element in the Smart City. The simple act of cleaning lenses on streetlights and CCTV cameras can have a large impact on their performance. Although it isn't as glamorous as deploying a cutting-edge piece of software or the latest device, maintenance—properly done—will protect the City's investment and maximize the operational lifespan of the technology.

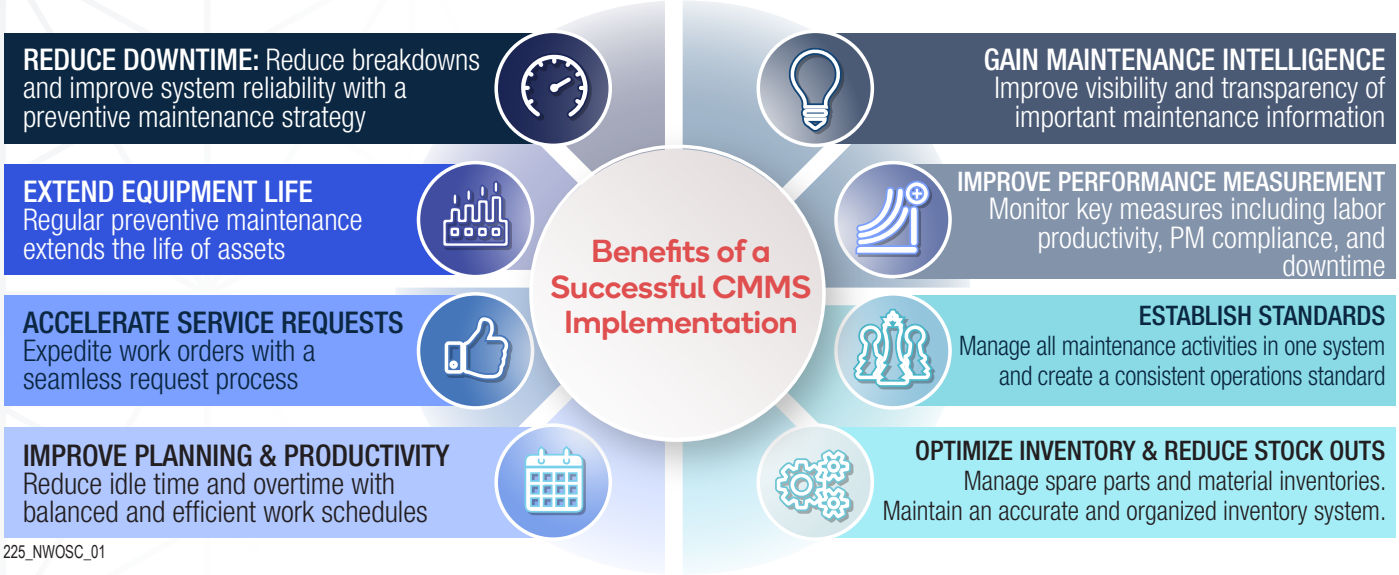
The Smart+Connected NOLA team will install, configure, and train new project staff in the use of our standard computerized maintenance management system (CMMS), called Maintenance Connection (MC). The CMMS targets two goals: (1) work management, and (2) asset management. The CMMS will be configured to support maintenance staff by optimizing their workflow for performing everyday work; providing data to document overall system performance, including the condition of assets; and understanding when to plan for repair and replacement (R&R) needs before assets fail.

Jacobs will create an asset data hierarchy and registry so that critical assets are appropriately tagged and that asset condition information is readily viewable. We will also create work order status options, priority codes, and notifications sent to staff as work orders are routed (especially emergency work orders).

Maintenance Connection is deployed around the country as a key component of our Maintenance Excellence Program. This web-based system allows for work order tracking, preventive maintenance scheduling, service requests, inventory control, and customized reporting. Reporting provides a basis to analyze maintenance efficiency and asset performance metrics as well as industry standard KPIs.

Our team will generate preventive maintenance (PM) and predictive maintenance (PdM) work orders. PM work orders will be populated in the CMMS based on asset type and manufacturer, in accordance with best practice maintenance frequencies and warranty information. Jacobs will develop the PM/PdM work orders at an asset level and will adjust the PM/PdM frequencies within those classes appropriately. For example, some assets within the same class are older than others and require more maintenance or are more critical to the overall system operation and need to be closely maintained, while others are less critical.

Labor and capital cost efficiencies can be gained by using our MC software to create PM work orders based on run times, criticality, and condition of assets to strategically maintain assets. The creation of an accurate and detailed maintenance history



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will provide a sound basis for tying key maintenance practices and intervals to specific failure modes known to exist in the operating context of assets. MC software is a proven tool used by Southwest Airlines, Honeywell, AT&T, Verizon, Hewlett Packard, and other major companies, as well as in the municipal and government sectors.

Asset Inventory and Management

A complete asset inventory is at the heart of a solid and well-orchestrated asset management strategy designed to create an up-to-date digital asset inventory, extend asset life, and reduce public safety hazards and the cost of risk.

The Smart+Connected NOLA team will define an appropriate asset hierarchy by considering the following three important factors:

- Asset reporting requirements to internal and external stakeholders
- Maintenance tasks (internal and contracted)
- Trending and data analysis

We will upload streetlight attribute data into the supporting GIS to reflect asset locations and features. We will also upload assets into the supporting CMMS, if not already tied to the GIS, so that service requests from the public and preventive and corrective maintenance work orders can be issued to perform work on these assets and to track all associated costs (labor and materials).

We will first confirm the desired asset hierarchy before assets are uploaded into the supporting GIS and CMMS systems. We will review the current asset hierarchy in the GIS and CMMS, recommend changes if necessary, and identify an appropriate asset hierarchy for new asset types.

Once assets are in the GIS and CMMS, we will tie previously gathered condition data to the asset so that it is displayed to maintenance staff who are responsible for making decisions about maintenance and point repairs, and to the asset manager to identify optimized timings for when an asset needs to be replaced based on condition or "likelihood of failure." We will prioritize asset replacements with the most critical assets first. Criticality is typically defined by asset location, i.e., it is more important to replace an asset or set of assets in a highly populated area than asset(s) located in a more remote area.

Once assets are in the GIS and CMMS, reports can be pulled to understand frequency of maintenance at an individual or grouped asset level, as well as to provide the ability for a user to perform data analysis to avoid public safety issues and reduce overall risks and costs. We will update the database as new projects are completed and will also update the database with proactive inspections of the system after major wind and rain events.

Upgrade Plan

Once the Lighting Master Plan is approved and the survey of existing inventory is underway, we will develop upgrade plans for Phase 2 to remedy the problems identified in the Master Plan and inventory. The Lighting Master Plan will aid in identifying areas that do not meet photometric lighting standards, and the survey will aid in identifying infrastructure that may need to be replaced.

Upgrade plans will be sectionalized, concentrating on areas that are a priority for the City and the development of Smart City applications. These upgrade plans will ensure light fixture replacements match those developed in the Lighting Master Plan. This will allow continued standardization throughout the City and a reduction in inventory.

The upgrade plans will optimize energy conservation while meeting the photometric requirements of each lighting application. These plans will include specifications that are congruent with the Lighting Master Plan. Additional surveys that are needed will be conducted using the approach identified in the Lighting Master Plan.

In addition to lighting upgrade plans, we will develop other construction plans to aid in implementation of connectivity, along with the integration of other Smart City devices on the light poles. **When light poles need to be replaced, we will consider integrated poles with sensors and cameras embedded into the pole.** If required, at all service points, we will add smart meters that can record peak load and energy usage, and monitor for power outages, and we will connect them to the central asset management database.

Miami Beach **Smart City Street Lighting** System

Jacobs and HLB worked together on the City of Miami Beach Smart Lighting project to develop lighting guidelines for street lighting. We evaluated existing lighting challenges and advised on new technologies to address the varying needs of the community (gathered through public outreach efforts). These guidelines will serve the city and design team to develop the master plan for the urban lighting in Phase 2, similar to the City of New Orleans Smart City program.

Example of City of Miami Beach Chart of Priorities

RFP Criteria: What is the cybersecurity plan for the solution?

Cybersecurity Approach—Understanding the Requirement

The City of New Orleans requires a cybersecurity technical solution that defines the required security for all aspects of the streetlights covered by the program. Jacobs will employ cybersecurity best practices and a **proven security framework for securing IoT devices and data handling** in the following ways:

Secure information end to end. Each connected device starts generating data the moment it is plugged in and every second thereafter. Before a system goes live, Smart City managers must have a clear understanding of the magnitude of the data that will be collected, as well as how it will be used and stored. That way, the data can be better secured and appropriately encrypted from the outset, using strong encrypted protocols to protect the data in transit and at rest.

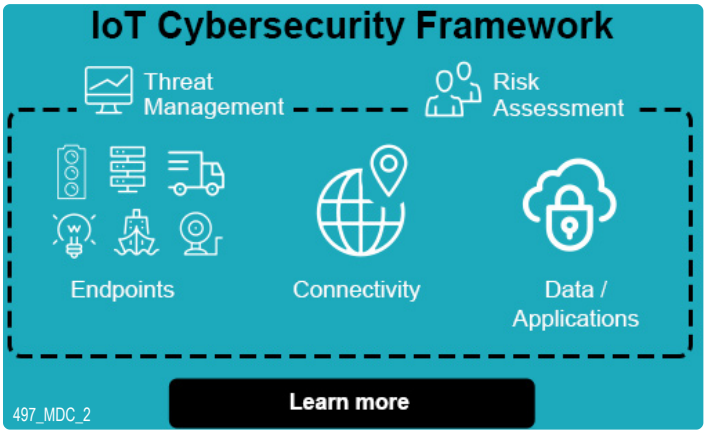

Image Courtesy of IoT Cybersecurity Alliance

Access control to standardize the need to know. While the IoT guidelines presume public data consumption, very few people in an organization need to know everything in a given system. Protocols and options for access create boundaries while still providing the openness and functionality desired for connected infrastructure to be effective. These protocols offer complete accountability,

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Keeping Our Country's **Vital Institutions Safe in a Digital World**

Jacobs operates the Security Operations Center for the U.S. Department of Education's Office of Federal Student Aid (FSA) – **one of the largest grants organizations** in the federal government where **we process over 14 trillion transactions per year**. We provide full lifecycle cybersecurity services, including requirements and policy, security architecture and engineering, advisory services, incident monitoring and response, active threat hunting, cyber forensics, and security/risk assessments and compliance.

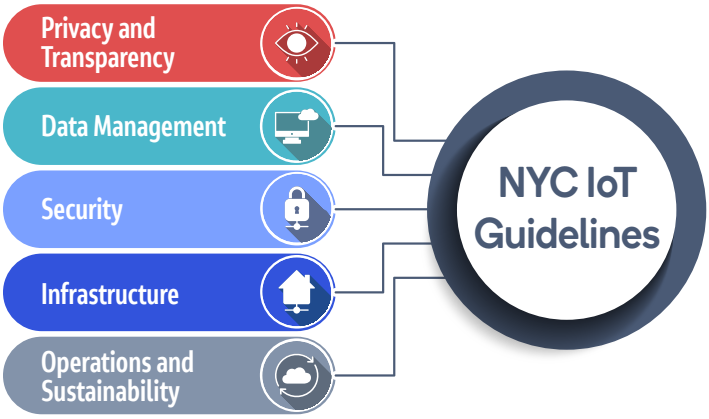
Our powerful suite of cybersecurity solutions enables us to analyze FSA's massive amounts of data and provide real-time detection and instant alerting of critical events that are often lost in the billions of events collected daily. The system includes an easy-to-understand graphical display that provides data fusion and composite intelligence from multiple log or event data sources in a single pane of glass. Users can quickly see emerging threats as they occur and even visualize impacts on downstream high-value assets.

identifying who is using the information, ensuring they are authorized, and governing that access. This approach also promotes a cyber-secure culture based on least privilege by setting automatic access control standards and limitations.

Identity management to protect individual identities. Identity management is critical across connected systems. Each connected piece of infrastructure may have different rules or standards for providing access, some weaker than others. By synchronizing access credentialing and using strong certificate authentication practices, a Smart City like New Orleans can help protect residents' identity information.

Implement appropriate security controls as deterrents. Currently, repercussions for cybercrimes are limited and ill-defined. Sanctions, fines, prison sentences, and the U.S. code all need to be updated to reflect the consequences for rule-breakers in an interconnected world. The attacker can be local or from a remote, international operation outside of the U.S. criminal code jurisdiction.

Alignment with NYC IoT Guidelines. In the RFP, the City refers to the New York City (NYC) IoT guidelines as a model. While those IoT guidelines provide a good start for assisting City agencies in understanding the potential risks associated with IoT deployments and best practices for mitigating these risks and promoting a consistent approach for IoT deployments, the Smart+Connected NOLA team believes the guidelines need to go even further to provide the required security and privacy required for the City's smart program. For this reason, Smart+Connected NOLA considers the NYC IoT security guidelines to be the bare minimum for ordinary data, such as clogged storm drains, and inadequate for information gathered from traffic cameras or phone location information. The NYC IoT guidelines also neglect many operational and life-cycle issues for security. Therefore, we recommend significantly stronger standards, as discussed below.



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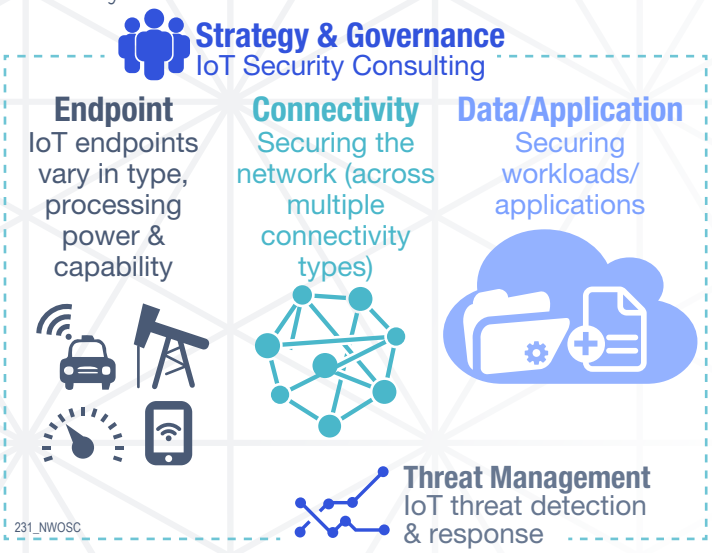
Data Privacy

The Smart+Connected NOLA team will implement security into the design of the solution in accordance with the NYC IoT guidelines, NIST 800-53 and NIST 800-82 frameworks, as well as the Center for Internet Security (CIS) Control 1, protecting the confidentiality, integrity, and availability of the data collected, moved and stored by the various components. By

Multi-layered approach to securing IoT

a multi-layered approach to security helps protect the IoT ecosystem end-to-end.



following state laws, industry standards, and best practices, Jacobs' solution will deliver a true defense-in-depth security posture.

The reason for leveraging all these standards is that IoT information may incidentally gather data that may need to be secured more than typical. For example, a traffic camera or phone location information near a medical clinic may capture identity information of clients at that clinic. This could be subject to Health Insurance Portability and Accountability Act (HIPAA) rules, in addition to other identity-based information. Availability of the streetlights is critical as well as the data confidentiality for citizen images and data captured. Jacobs will focus its efforts to assess and implement controls that ensure availability and confidentiality first. Jacobs will evaluate the quality and utility of all design documentation available for cybersecurity purposes.

Location data from individual phone users is considered to be PII at a minimum, particularly because it may contain information about minors. This means the infrastructure that carries the IoT data will require significant protection and will require all the measures listed under NIST special publication 800-122.

Personally Identifiable Information

Jacobs' cyber experts will implement security into the design of the solution in accordance with the NIST 800-53 and NIST 800-82 frameworks, as well as CIS Control 1, protecting the confidentiality, integrity, and availability of the data collected by the various components. By following state laws, industry standards, and best practices, our solution will deliver a true defense-in-depth security posture.

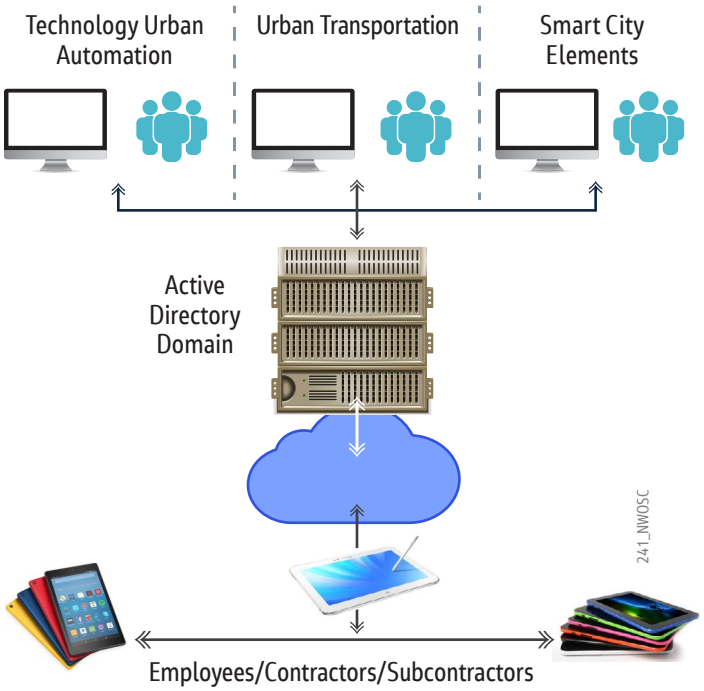
Data Safeguard in Transit and at Rest

Jacobs has proven experience in understanding this critical component of the Smart City concept and has developed a holistic approach to enterprise information management (EIM) that safeguards against bad data and minimizes unintended outcomes.

Holistic Approach to Enterprise Information Management (EIM)

Current trends in commercial, state, local, and federal government computing infrastructures have focused on the use of scalable, distributed storage and the processing of data for analytic uses, with an emphasis on managing the **volume, variety, velocity, and veracity** of data. Deploying data analytic platforms without a carefully designed and holistic EIM approach leaves some valuable business opportunities unaddressed. What makes our solution different from others is that our EIM foundation builds on what other current solutions provide, which is "data that clients need," and refines it into "data that is fit for use."

Active Directory Diagram



Jacobs will apply a proven data migration approach, highlighted below, that will seamlessly integrate the City's historical data with the new systems and data stores. Also, with this approach, data migration is accounted for in the development of conceptual, logical, and physical data models and is defined by the following steps:

Data profiling. Builds an understanding of the incoming data and maps it against the data requirements of the application as well as current data within the enterprise data warehouse (EDW). Using an automated data profiling tool (e.g., Informatica Data Profiling), our development team reviews the resulting output to understand the source data quality in a fraction of the time and with higher confidence than traditional manual profiling methods.

Data design. Includes the creation of conceptual, logical, and physical database architectures to detail the alignment of incoming data to business requirements.

Data cleansing. Converts data to usable formats, applies business rules, and applies address validation or entity resolution, as required by the application.

Data migration development. Incorporates all of the designs and produces the data tool's mappings and workflows or custom scripts needed to load the data into the database.

Data quality validation. Makes sure that mapping designs were followed, the data are usable, and data cleansing routines are operating correctly.

Deployment. Once deployed, the mappings are continually monitored for quality and performance, which includes stress testing, periodic data quality checks, and workflow enhancement when data sources are updated.

Encryption in Transit.

- Protect end-to-end communication with session encryption over HTTPS / REST(S).
- Manage session encryption keys by vaults that have short key life.
- Apply NIST guidance on AES256 bit encryption, TLS 1.2 advisory, and remove non-safe encryption algorithms in the embedded security libraries.
- Follow Secure Production Identity Framework for Everyone/SPIFFE Runtime Environment (SPIFFE/SPIRE) Cloud Native Computing Foundation (CNCF) standards to create a distributed secured identity-based control plane.

Encryption at Rest.

- Encrypt disks, volumes that hosts file systems, databases, and object stores using cloud HSM keys.
- Rely on storage subsystems in Kubernetes which support encryption.
- Apply transparent data encryption (TDE) for SQL/NoSQL like subsystems.

Support for Encryption in Backups and in Replicated Sets

Our data loss prevention (DLP) approach sees that sensitive data is not lost, misused, or accessed by unauthorized users. After determining City of New Orleans data protection objectives, we will define priorities for what is to be protected. We will make sure data is classified, which at times will be driven by regulatory compliance, such as HIPAA, Payment Card Industry Data Security Standard (PCI DSS), or General Data Protection Regulation (GDPR). Systems will be audited regularly and, if data use violations are identified, our DLP policies and tools will enable remediation and protective actions to be exercised. These actions include:

Secure data handling. Data of a sensitive nature will be protected by a minimum of AES256 encryption for all data in transit and at rest, including backups.

Privacy. City of New Orleans Privacy Policy will be used and implemented for this effort.

Backup and retention. All data required for storage will follow a backup schedule of no less than one full backup per week of all critical data, server images, and other components that are configuration backup capable, with incremental backups performed nightly. Retention of data will follow City data retention policies.

Configuration and change management. All systems and solution components, including data, will follow a standard configuration management process that includes logging of all system changes, data integrity, and validation.

Incident response. For any validated incidents, a formal incident response policy will be implemented, along with an appropriate escalation plan to alert and notify City personnel of the incident.

Access control. A formal access control policy will be established that limits access to a system or to physical or virtual resources. Users will be granted access and certain privileges to systems, resources, or information following the Least Privilege Access Model.

Data classification. Jacobs will follow the City's established data classification for all data transmitted or recorded by the solution.

These policies are general in nature and are subject to change throughout the program. During program initiation, we will evaluate additional policies or procedures for implementation in addition to the policies listed above.

Data Recovery or the Ability to Roll Back in the Event of Human or System Error

Backup and recovery are the processes of creating and storing copies of data that can be used to protect the City of New Orleans against data loss due to human or system error. **Recovery** from a **backup** typically involves restoring the data to the original location, or to an alternate location where it can be used in place of the lost or damaged data. Our process will include:

- All persistent data are stored in a scalable Kubernetes storage cluster and geo-replicated to support high availability failovers.
- All backups are geo-replicated and are in hot standby read only mode and also moved to offline cold storage.
- In the event of configuration error and entire cluster shutdown, redeploy the cluster using standard infrastructure automation, i.e., IaaS/PaaS platform, DNS, or Network.
- Recover data from the hot standby snapshots into the volumes; in the event hot standby snapshots are lost, restore from cold storage.
- Redeploy container applications from Registry or Artifactory.
- Follow application test procedures to validate the data.

Data Lake and Warehouse

Our data lake will be the repository for unstructured data, while our data warehouse will function as the structured data source. The unstructured content will consist of vast amounts of raw and native format data. Data lake hosted information will be formatted appropriately at read-time.

Archiving

Our archiving approach will enable access to data for future discovery and use. In particular, static data will be archived because it does not change once recorded. The following points are referenced when archiving data sets:

- Compliance regulations—retention schedule
- Overarching archive policy
- Proactive protections and data integrity

Protocols Established for Dealing with Unauthorized Access to Or Disclosure Of Confidential Data

Our strategy and Data Management Plan (DMP) will track and control the life cycle of the Smart City data. The DMP provides details on data collection, repository, security, and sharing. The DMP will provide availability and accessibility of the Smart City data-

sets so that veracity and value of data assets are realized.

Our team will address the various functions of the data management life cycle, such as:

- How data are governed
- How data will be ingested
- How will data be organized and stored
- Cybersecurity to protect the data ecosystem, PII, and intellectual property
- Data quality, archiving, and preserving
- Data sharing and monetization methods

Our approach will enable Smart City staff to capitalize on business objectives, while having an available and reliable data ecosystem. The following shows our end-to-end approach to data management, processing, and engineering – from ingest through actionable intelligence.

Data Validation of the Solution Performs On Records As They Are Created Or Edited And Indicate Whether This Is Different For Batch Jobs As Compared To Single Records

Data Profiling

As an example, assume the City of New Orleans has a relational database containing all City assets related to smart mobility. Further assume that this will be a one-time transfer of historical data to the new SMP using two to three Jacobs data engineers. Following the steps outlined above, the first activity would be for a data engineer to characterize or profile the originating database. Depending on the number of tables and level of data normalization (estimate of complexity), it could take 10-15 working days to determine base information about the data and database structure if it contains about 100 tables (estimate another 10-15 days per each additional 100 tables).

Data Design, Cleansing, and Migration Development

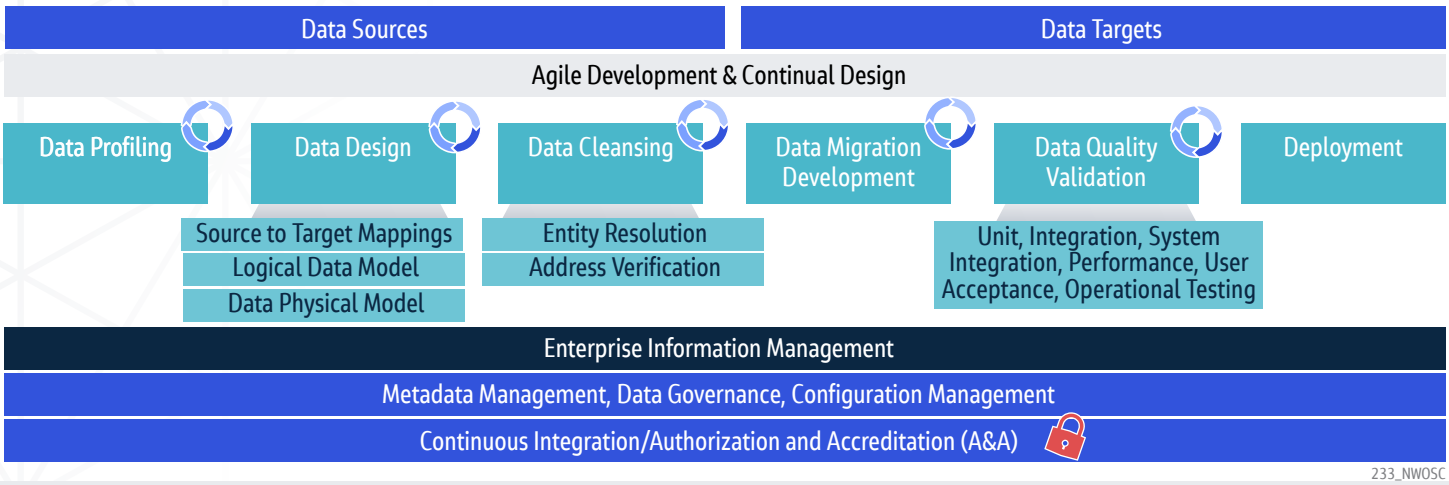
During the data profiling effort, a mapping will be developed between the original data model and the new systems data model that the data will be migrating to (Exhibit 2-15). Mapping will include development and testing of any queries needed to extract the data from the original database. Analysis of the data, itself, will lead to development and testing of any transformations, including data cleansing and enhancement, that may need to be applied to the original data for it to "fit" into the new data model required by the new system. This would take an additional 15-20 working days, which will also include development and testing of any queries needed to insert or load the data into the new data model.

Data Quality Validation

The next step will be to validate that the final output of the above extraction and transformation will correctly load into the new data model. Validation includes confirming "zero" data loss from the original to the new data model. To ensure no data loss, if need be, the new system must be able to extend or modify its data model to accommodate historical data that cannot afford to be lost. This could increase the time it takes to complete the transformation development phase.

EXHIBIT 2-15

Six Step Approach to Data Migration



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How The Solution Tracks Changes To Records, Audit Trail For Edits, Revert To Previous Versions Of A Record

Our approach to audit logs and changes made to IoT data or user access will consist of using the process described below. Our approach is designed to meet the City's auditing, compliance, security, and governance policies. Our audit logs process will help answer questions such as:

- Which user was accessing the system and when?
- Who updated this field value on this record and when?
- What was the previous field value before it was updated?
- What actions has this user taken recently?
- Who deleted this record?
- What locale was used to make the update?

Our city and command control operating system backs up previous versions of files and offers an easy way to go back in time. The system uses cloud storage services and keeps previous versions of files.

The Extent to Which the Solution Has Been Designed to Comply With Laws and Regulations Governing the Storage and Use Of Protected User Data

The Smart+Connected NOLA team understands national, regional, and local data governance and compliance laws such as California Data Protection Act, New York Data Security Act, European General Data Protection Regulation (GDPR) laws, and DoD Authority to Operate (ATO) compliance laws. Our solutions have passed the stringent DoD ATO compliance controls and operate in Amazon Web Service (AWS) GovCloud. Security is a moving target. We follow best practices to each specific environment we build to ensure strict compliance standards are met. Once the target platform is built, we apply controls validation to make sure it is built in the safest way possible with zero trust principles and we have third-party certifications to do continuous compliance.

Etihad Rail Project: Cyber Security Risk Assessment

Customer: Etihad Rail
Location: United Arab Emirates

Challenge

- Influx of cyber attacks against state-owned-and-operated critical infrastructure in the region. Jacobs' Operational Technology Services Group was engaged to capture and address cyber security related risks during the detailed design phase of the project, which included:
  - Defining cyber security requirements to provide Etihad Rail with the means to evaluate tender submissions when going to market.
  - Providing the successful contractor with functional requirements and specifications to ensure the ICS/SCADA rail control network addresses identified risks and mitigates vulnerabilities to an As Low As Reasonably Possible (ALARP) level.
  - Devised specifications capturing device hardening procedures with configuration examples across several technical categories, which included (but was not limited to): network firewalls and switches, IDS systems, SIEM use case & threat detection requirements, SCADA servers and engineering workstations, user account management, password/credential management, remote connectivity, software whitelisting, software patching/ vulnerability management, supply chain/vendor supplied equipment requirements, disaster recovery, physical security and independent penetration testing requirements.
  - Assessing contractor design submissions to ensure compliance against Jacobs devised functional requirements and specifications.

Jacobs Solution

- We focused not only on keeping operations running but also on keeping employees safe.
- We proposed recommendations which closely align to reputable standards including; NERC-CIP, NIST 800-82 and ISA 62443 - standards that have been developed by subject matter experts with established credentials in their respective fields, to ensure the guidance provided was relevant and addressed both technical and governance related controls to secure the data network, controllers and the sheer multitude of disparate systems inherent within a rail control system.

Outcome

- The most impressive means to combat the threat of cyber attack against critical control systems is the ability to implement countermeasures that integrate well with the control system displays so that frontline employees also understand what is going on.
- Upon completion of our engagement, we produced requirements which promote better cyber resiliency and diagnostics as well as the ability to maintain operations despite degradations from an attack across the rail network's control system infrastructure.
- We continue to provide ongoing support to Etihad Rail.

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i. Other than the provision of reports for the City, please describe in detail how you will sell, share, manipulate, aggregate, package, or otherwise monetize data obtained through the platform, detailing which data shall be used and how and identifying potential third parties that may be involved.

See Data Management Plan.

ii. Proposers should provide a plan outlining their understanding of the use of data collected, generated, identified, or transmitted in connection with the Smart City, Wireless and Wireline project. This includes data monetization, sale, and/or sharing. Proposers should also detail how they plan to address and limit bias in their analytics and algorithms. Data collected from sensors, once anonymized and aggregated at the block level, shall become intellectual property of the City. It may be stored in cloud entities identified and managed by the Selected Proposer. City IoT deployments must protect and respect the privacy of residents and visitors. The City is committed to being open and transparent about data collection, processing and use.

See Data Management Plan.

iii. Data Management: Proposers will create a Data Management Plan that will describe how data will be collected, managed, integrated, and disseminated before, during, and after the Smart City Project.

An effective **Data Management Plan** requires a Data Governance Model for establishing a successful data management policy for the City. The model addresses the need for establishing and integrating the City's processes and practices and defines how data is owned and managed. **The Data Governance Model also introduces a structured approach for business alignment, reduces total cost of ownership (TCO), establishes metrics for ROI, supports project prioritization, and increases accountability and collaboration across the City.**

Our governance will provide effective processes and a structure to Smart City data assets and infrastructure, and will provide methods to define and manage Smart City data to deliver data integration and a single point of reference. Our approach will also establish responsibility for data and the ability to collaboratively and continuously improve data quality through use of policies and responsibilities. Our structure will support:

- Data decision making
- Data definitions and semantics
- Data exports and sharing

This approach will add rigor to the process of managing, using, and protecting organizational data. Our approach also includes data layers prepared for cross-organizational collaboration, as identified in the data structure diagram in Exhibit 2-16. We identify the data layers to be determined and governed as follows:

- Raw Data—initial ingest point with support of explorations, open formats and sources
- Functional Data—leveraged for more siloed and domain specific functions
- Enterprise Data—formal business ready for cross-function activities and enterprise applications
- External Data—conditioned for business-to-business and other sharing services

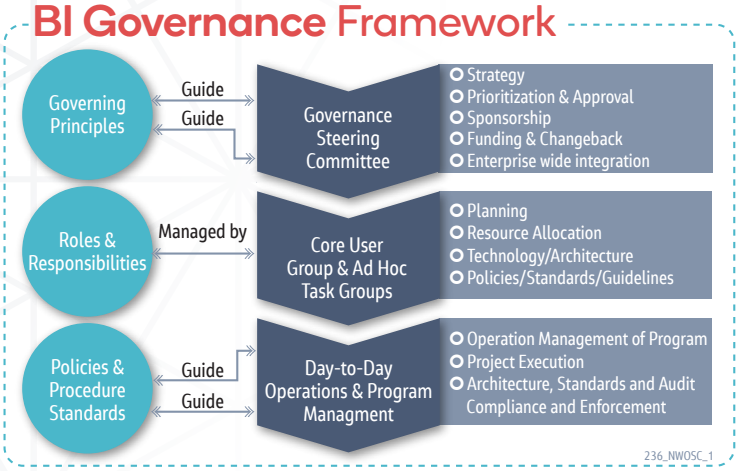
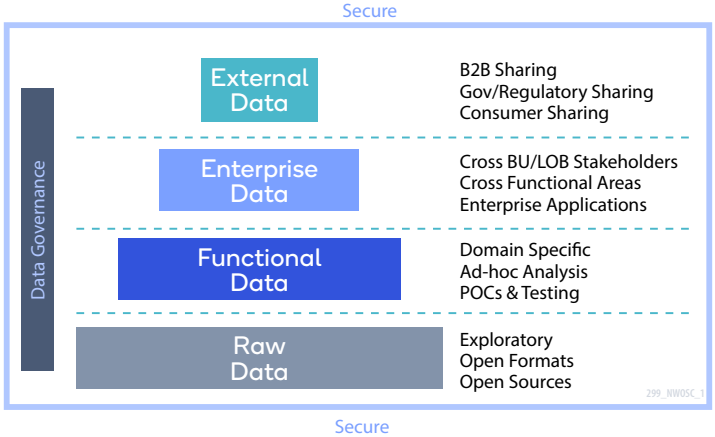


EXHIBIT 2-16

Master Data Structure



As the City of New Orleans moves data through the various layers, information becomes more refined and targeted. Data sets may include reference data, with permissible values, and analytical data supporting decision making. Additionally, oversight and decision-making responsibilities must be considered when governing the data ecosystem, along with data security and integrity, which the following sections will address.

Semantics

We will apply a semantics layer to enable standard and understandable business representation of Smart City data, which helps end users access data autonomously using common business terms. Our semantic layer will map complex data into familiar business terms such as the defined categories to provide a unified and consolidated view of data across the organization.

Modeling

Another key component our data management solution is to provide the access to data analysts and scientists to gather unstructured and structured data for data modeling. Such models can support machine learning (ML) activities, to include defining the following:

- Entity relationships
- Data dictionary
- Data mapping
- Glossary—a glossary will make the rest of the data modeling techniques easier, providing a clear and unambiguous collection of terms

Quality

We will enable a Data Quality Management (DQM) Plan to enforce sustaining high quality data-sets. DQM follow the full life cycle of a Smart City, from acquisition of data through business application use. The purpose of our DQM efforts is to achieve desired business outcomes, as indicators and reports are only as good as the information they contain.

2020 Miami Super Bowl: Security Risk Advisor + Integrator

Customer: North Miami Beach Water
Location: Miami, FL

Challenge

- Protect NMB's technology, people, and processes, maintain their operational stability, and ensure the consistent supply of water to the 2020 Superbowl
- Secure a number of sites (i.e. booster stations, pumping stations, facilities, ICS control center) from potential malevolent cyber attack(s)
- Environment contained a high number of legacy, aging, and vulnerable systems
- Address attack surface from both a cyber and physical security perspective, attempt to identify practical risk from public and internal sources
- Determine realistic consequences and align treatments to transfer, remove or reduce threats to the industrial network and system

Jacobs Solution

- Established client's Risk Profile (using Risk Management Framework)
- Established 24-7 team(s) to support and supervise critical facilities
- Applied technical and governance-based controls at nexus points within environment
- Removed internet access and remote connectivity
- Switched to manual operations at all sites
- Disabled all wireless/radio/cellular services
- Stood up temporary Security Operations Center (SOC) to aggregate data received and react to potential Indicators of Compromise (IoC)

Outcome

- Game day came and went without any reported issues
- NMB has greatly improved their overall cyber security posture and can embark on new initiatives that will layer defenses and improve cyber resiliency to further reduce risk across the business

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RFP Criteria: How is the project financed and who bears the capital and ownership risk?

Smart+Connected NOLA, to be formed as a special purpose vehicle (SPV), will assume full responsibility for the project financing. JLC will be responsible for securing the project financing and a JLC Infrastructure Fund I L.P. wholly owned vehicle will hold 100% ownership of the SPV. Please refer to the Financial Plan later in this section for a summary of Smart+Connected NOLA's project financing plan.

Our well-structured, well-governed delivery team brings proven ability to implement all facets of a Smart City program. Our longevity in the market and corporate financial strength contribute to the team's confidence that we can be the partner the City needs to meet the program's objectives, maintain stakeholder confidence, and drive on-time, high-quality performance with exceptional safety and security.

Project Delivery Approach Overview

The Smart+Connected NOLA team has developed a comprehensive and committed project delivery approach that will allow the City to realize your connectivity and digital inclusion goals. The Advanced Broadband and Smart City Systems Program will be deployed using a P3 model under which Smart+Connected NOLA, to be formed as an SPV wholly owned by a JLC Infrastructure Fund I L.P., will assume the project's design, build, installation, financing, operations, and maintenance responsibilities over a 15-year concession period from the project's substantial completion date. JLC will serve as the project developer and equity member and will apply its extensive experience in investing equity capital in US P3 projects to deliver the project, secure project funding, and provide a timely and efficient financial close. To meet or exceed all City project objectives, while realizing the numerous benefits of a P3 delivery model, Smart+Connected NOLA's approach to delivering the project incorporates the following key elements of success:

- The project delivery approach functionally integrates Smart+Connected NOLA team members with P3 delivery experience, Smart City technical expertise, and a proven track record of successfully delivering projects in the City.
- Smart+Connected NOLA has been organized such that the various project roles and responsibilities have been optimally allocated to team members best positioned to manage them. This objective has been accomplished through a strategic approach to subcontracting in all phases of project delivery.
- Smart+Connected NOLA will take a two-pronged approach to operating and maintaining the project by adhering to the performance-based nature of operating a P3 asset, while appreciating the uniqueness of the project and the distinctive operational elements associated with it.

Smart+Connected NOLA's delivery approach provides the City with a long-term partner that holds interests aligned with those of the City and is therefore highly incentivized to deliver long-term, successful project performance.

Approach to Subcontracting

Smart+Connected NOLA's organizational and contractual structure allocates project obligations and responsibilities to the team member who is best qualified to effectively manage them. Substantially all obligations related to design, installation, operations, and maintenance will be flowed down from Smart+Connected NOLA to Zyter. Post-award of the project, Smart+Connected NOLA will enter into the following key agreements to deliver the project on time and on budget, and meet the City's required technical requirements during the operations period:

1. ***Master Service Agreement (MSA):*** Smart+Connected NOLA and Zyter will execute the MSA under which Zyter will assume full responsibility for the implementation, operations, and maintenance of the project. Zyter will further subcontract various responsibilities to the additional team members but will assume financial responsibility for the performance of the subcontractors' obligations. Smart+Connected NOLA and Zyter have reached agreement on key terms that will serve as the foundation for the MSA including the following:

- Fixed pricing for the implementation of the project, to be adjusted upon agreement with the City on specifications of the project.
- Annual compensation to Zyter to cover the project's operations and maintenance costs, to be adjusted upon agreement with the City on specifications of the project.

2. ***Program Management Agreement (PMA):*** Smart+Connected NOLA and Jacobs will enter into the PMA under which Jacobs will lead project implementation. Jacobs will serve as Smart+Connected NOLA's representative and serve in a critical project management role for the project. Smart+Connected NOLA and Jacobs have reached agreement on key terms and provisions that will serve as the foundation for the PMA.
3. ***Shareholder Agreement (SA):*** Smart+Connected NOLA and a wholly-owned vehicle of JLC Infrastructure Fund I L.P. will enter into the SA, which will govern JLC's role as an equity member and its equity capital commitment to the project.

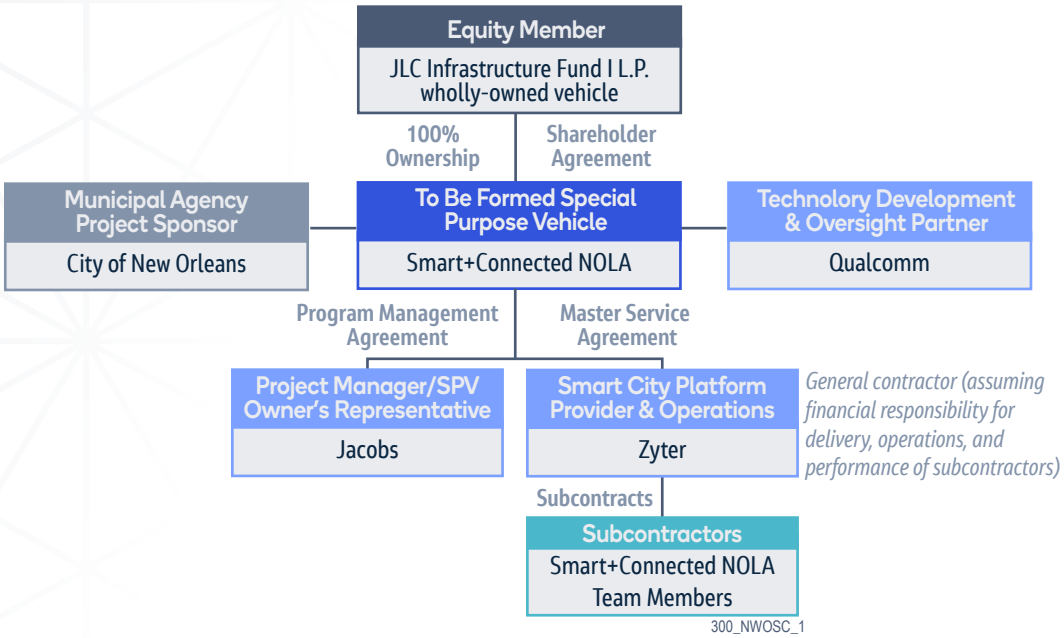
Exhibit 2-17 illustrates Smart+Connected NOLA's contractual structure.

Financial Plan

Financial Plan Overview

Smart+Connected NOLA is pleased to provide this Financial Plan submission for the project. Smart+Connected NOLA has committed considerable time and resources to develop an integrated, competitive, and highly executable financial solution for the project that will bring best value and significant financial upside potential to the City. Smart+Connected NOLA will be responsible for funding the project's upfront installation, hardware, and other development costs (implementation expenditures). The Financial Plan assumes that the implementation expenditures are funded by equity contributions from JLC. The Financial Plan also proposes a cost neutral diversion to Smart+Connected NOLA of existing budgeted City annual expenditures currently spent on internet connectivity, streetlight maintenance and energy usage, and traffic light operations and management costs (cost diversion payments). Finally, the Financial Plan also incorporates a proposed revenue sharing arrangement with the City, resulting in potential return **payments from Smart+Connected NOLA to the City** over the proposed 15-year project period, which can be applied toward City-directed purposes, such as subsidizing broadband connectivity to underprivileged New Orleans citizens.

EXHIBIT 2-17



Smart+Connected NOLA's approach to the Financial Plan structure aims to deliver certainty of reaching financial close on terms wholly satisfactory to the City. The Financial Plan's structure offers several key advantages that support this important goal:

- ***Cost-neutral to the City:*** Smart+Connected NOLA has developed a self-sufficient Financial Plan that should not impose any additional financial obligations on the City.
- ***Debt-free capital structure:*** The Financial Plan does not incorporate any up-front debt financing proceeds, which reduces any uncertainty regarding securing commitments from debt financing providers.
- ***Simplified financing documentation phase:*** Absence of upfront project debt financing and, in-turn, required credit agreements with debt financiers, position the project for a significantly more streamlined process to financial close.

Smart+Connected NOLA has provided meaningful flexibility in its Financial Plan. As discussed in Tab 4, JLC currently holds more than sufficient capital available to invest in the project.

Assumptions Regarding City Participation and Contribution

Smart+Connected NOLA will need the City's support to execute the Financial Plan. The Financial Plan's feasibility will be dependent on the City's ability to contribute the following to the project:

- Required City permits for the project's installation work provided in an expeditious fashion to allow Smart+Connected NOLA to meet the project's targeted implementation plan schedule as detailed in Tab 5, Implementation Plan.
- Fifteen-year access or leases to the required City sites for installation of wireless, streetlight, traffic light, and kiosk equipment and solutions.
- Fifteen-year access to existing City fiber connections or other backhaul internet service provider (ISP) infrastructure as the Financial Plan assumes that the City will be responsible for paying the ISP backhaul costs.
- Fifteen-year access to the City's power infrastructure.
- Agreement from the City to make fixed payments with escalation over 15 years, representing estimated cost and energy savings to be realized by the City (cost diversion payments) as a result of implementation of the project.
- Coordination of broadband network customer acquisition effort and leveraging City resources to maximize third-party revenue and, therefore, City revenue share.
- Granting of Smart+Connected NOLA exclusive rights to advertise products and services on the installed smart kiosks and to monetize traffic light sensor collected data, resulting in additional City revenue share.

Assumed Sources of Operating Period Revenue

Smart+Connected NOLA is expected to have two primary sources of revenue over the operating period: (1) cost diversion payments from the City, and (2) commercial revenues from monetizing various components of the platform. The following provides additional details on the Financial Plan's assumed sources of revenue over the operating period.

Costs Diversion Payments

The Financial Plan assumes that the City will divert existing budget capital for internet connectivity, streetlight, and traffic light operations and services costs to Smart+Connected NOLA. The following summarizes the Financial Plan's specific assumptions for these diverted costs:

1. ***City network costs diversion:*** The diversion of monetary amounts currently allocated by the City for connectivity at municipal facilities based in the City. The Financial Plan assumes that the City will divert to Smart+Connected NOLA $360,000 per year or $30,000 per month (excluding inflation escalation) in current internet access fees for the City's municipal facilities that are connected today. With the installation of the new wireless network, we aim to provide, at the same cost, broadband connectivity to more than 70% of the municipal facilities not currently connected.
2. ***City lights energy costs savings:*** Smart+Connected NOLA believes that the implementation of our smart lighting solution on the City's existing 3,000 non-LED streetlights will result in energy costs savings of up to 60% of the existing energy costs incurred by the City. The Financial Plan incorporates the diversion of these forecasted energy costs savings to Smart+Connected NOLA. The Financial Plan assumes the City currently incurs $1.1 million in annual energy costs for the City's

55,000 streetlights network and will divert to Smart+Connected NOLA about $120,000 per year or $10,000 per month (excluding inflation escalation) in energy costs savings from converting 3,000 non-LED streetlights to Smart+Connected NOLA's proposed LED smart solutions. The Financial Plan also incorporates diversion of monetary amounts currently allocated by the City to operating costs and third-party management services fees associated with the City's streetlight network. The Financial Plan assumes the City currently incurs annual operating costs and third-party management services fees of $3.5 million for the City's 55,000 streetlights network. The Financial Plan assumes that the City will divert to Smart+Connected NOLA about $650,000 per year or $55,000 per month (excluding inflation escalation) in operating costs and management fees associated with the City's 3,000 non-LED streetlights.

3. ***City traffic lights costs diversion:*** The diversion of monetary amounts currently allocated by the City to operating costs and third-party management services fees associated with the City's 500 traffic light intersections. The Financial Plan assumes the City currently incurs annual operating costs and third-party management services fees of $2 million for the City's 500 traffic light intersections. The Financial Plan therefore assumes that the City will divert to Smart+Connected NOLA about $2 million per year or $170,000 per month (excluding inflation escalation) in operating costs and management fees.

Commercial Revenues

Smart+Connected NOLA has developed preliminary plans to monetize several platform solutions. We believe that the information below represents meaningful opportunities for the City to generate additional revenues via a revenue share arrangement with Smart+Connected NOLA:

1. ***Broadband network customers:*** Smart+Connected NOLA has developed a comprehensive strategic plan to successfully capture a segment of City business and residential customers for the project's broadband network. In close coordination with the City, Smart+Connected NOLA plans to access an addressable customer base of businesses and residential households in the coverage area to offer an attractive and affordable broadband alternative to New Orleanians. Revenue generated from the sale of connectivity services to new customers will be a significant monetization source.
2. ***Smart traffic lights:*** Smart+Connected NOLA believes that a meaningful opportunity exists to monetize traffic data gathered by the smart traffic sensors installed at the 500 intersections. Potential monetization data customers include automotive original equipment manufacturers, automotive insurance companies, ride share companies, and other types of private sector companies.
3. ***Smart kiosks:*** Smart+Connected NOLA is expected to generate revenue from fees paid by advertisers to market their products and services on the smart kiosks.

Approach to Ensuring a Seamless and Expedited Process to Financial Close

JLC has closed on several sizable infrastructure transactions and will leverage its experience, notably with P3 transactions, so that the City benefits from an efficient and timely transition from selection notification to financial close. To facilitate a timely financial close, JLC has:

- Secured key terms and project scope with Zyter that incorporate fixed pricing for the implementation and operations expenditures and drop-down provisions transferring the key project delivery and operations risks to Zyter. This will facilitate the execution of the MSA post-selection notification.
- Secured key terms and project scope with Jacobs to serve as Smart+Connected NOLA's representative and project manager. This will facilitate the execution of the PMA post-selection notification. Jacobs' long-standing working relationship with the City will be instrumental as Smart+Connected NOLA and the City work together to finalize the P3 project agreement and reach financial close.
- Secured commercial terms with other key Smart+Connected NOLA team members, including Qualcomm, Celona, Juganu, NoTraffic, and IKE Smart City.

- Worked with Smart+Connected NOLA team members to assemble a mobilization team that will advance critical work streams for achieving financial close.

JLC's efforts to expeditiously reach financial close will also be supported by the necessary financial, technical, and legal advisors. JLC will leverage its extensive network of advisors with experience in bringing P3 transactions to close and engage a strong team of recognized advisory firms.

RFP Criteria: The Proposer shall provide a program to educate, train, and teach City personnel in all details of the equipment and the System that shall enable the personnel to monitor the System.

The Smart+Connected NOLA team will provide a program to educate, train, and teach City of New Orleans personnel in all details of the equipment and systems provided along with all programs and criteria developed such that City personnel can monitor the system. Hands-on classes will provide training that includes course development, handouts, manuals, and classroom aids in all components of the advanced broadband and the Smart City system that is being implemented. **Bright Moments, one of our DBE partners,** will be part of our team leading the training sessions.

We will work with you to approve the training program, which may include sessions every 6 months for the first 5 years, and annual sessions for major software releases thereafter for the remainder of the contract term. Within the content of our training courses, we will include:

- Demonstrated access to lighting management system
- The ability to access and generate reporting
- Integration and access to the City's third-party applications
- Troubleshooting
- Alert notification system

Our team partners Juganu, NoTraffic, and Zyter have training classes when onboarding new users, and we will leverage these and other classes that we will develop jointly for the City.

Standard Training Topics at Every Jacobs Project

- General health and safety awareness for all employees
- Management of health and safety for managers
- Chemical safety (hazard communication) for operator and maintenance staff
- Safety equipment use such as gas monitors, respirators, and breathing apparatus
- Confined space training
- Job safety analysis (JSA) safety training
- Electrical safety and lock-out/tag-out prevention
- Fire prevention training
- First aid/CPR training

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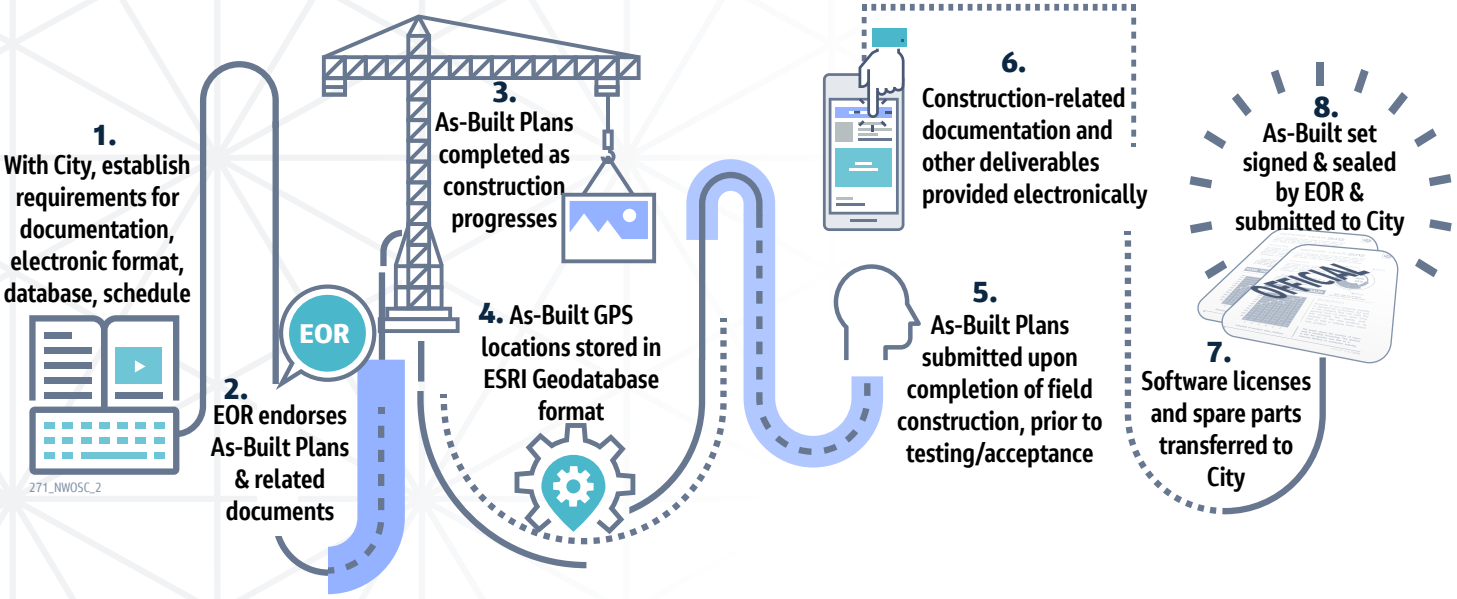
Closeout Submittals

The Smart+Connected NOLA team recognizes the importance of closing out the design and construction phases properly. We know that closeout doesn't just begin when construction activities are completed—we start with the end in mind, developing a thorough closeout plan and implementing it at the beginning of construction. In addition, collaborating early with user groups during construction allows for a smoother inspection and testing process once the work is completed.

We understand the role of proper closeout to the City in protecting against claims, supporting responsiveness to emergencies, and supporting daily operations. As shown in Exhibit 2-18 we will start early in coordinating development of our closeout plan with the City to comply with specific City closeout requirements and support timely issuance of Final Completion.

EXHIBIT 2-18. *Project Closeout Process*



As-Built Set

The as-built set will be signed and sealed by the Engineer of Record (EOR) and submitted to the City upon project completion. Closing out construction after completion allows asset location and identification information to be stored properly for access during normal operations and emergencies. We will provide all as-built documents electronically, using City-supported software. As-built information, promptly and properly stored, will be available for access by the City through GIS mapping systems and asset management systems. Access to this information during emergencies can make the difference between a severe outage impacting the entire city or a minor inconvenience for users. A proper closeout also protects the City from claims, as information documenting the design and construction process is easily retrieved and is well-organized to support analysis.

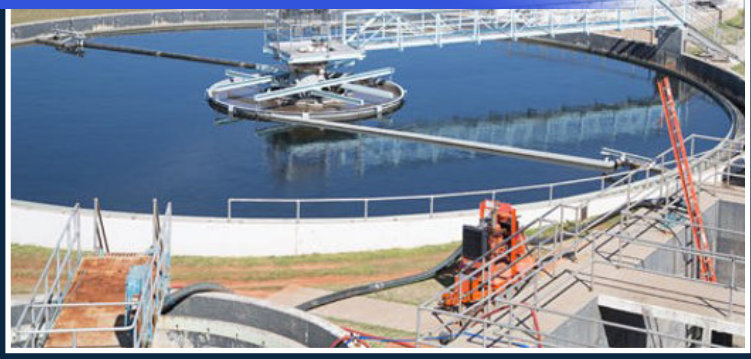
So that design and construction is closed out properly and as-built data is readily retrievable, key elements of our closeout approach include the following:

- EOR for the design will endorse as-built plans.
- EOR for the design will endorse the special provisions and all reference and support documents.
- As-built plans will be completed as construction is in progress, and changes made subsequent to the release for construction plans will be signed by the EOR; assuring that record drawings are being updated during construction makes it a seamless process to produce as-builts in a timely manner.
- As-built plans will be submitted upon completion of field construction and prior to operational testing and acceptance and prior to notice of final completion.
- As-built plans will include GPS locations of all newly installed ITS infrastructure, field elements, pull boxes, splice boxes, and conduit routing.
- As-built GPS locations will be stored in an ESRI geodatabase format and will be collected and stored at submeter accuracy.
- We will provide an organized database of construction-related correspondence and documentation, including RFIs, submittals, meeting minutes, and letter correspondence.
- Other closeout deliverables, such as inspection/testing records, O&M manuals, and warranties, will be organized and provided electronically for ease of reference.

In addition to properly storing as-built plans and the associated data, we will use the industry-leading Prolog construction management software to manage the construction administration process. Data stored in Prolog will be made available at closeout of the project.

City of Oklahoma City: VA and SCADA Master Plan/Projects

Customer: Oklahoma City Water Utilities Trust
Location: Oklahoma City, OK



Challenge

- Vulnerability Assessment Highlighted Multiple Cyber Risk
- IT Collaboration Issues
- Aged Infrastructure
- No Forward-Looking OT Plan

Jacobs Solution

- SCADA Masterplan Outlined Plan to Increase Resiliency and Cybersecurity
- Developed Enterprise Wide Secure SCADA Architecture (WAN, LAN, Systems, DMZ)
- DHS Reviewed Architecture and Performed a Verification and Validation
- Features: Privileged Access Management, Disaster Recovery, ICS Cybersecurity Policies and Procedures, ICS Security Awareness Training, Multi-Factor Authentication, Security Silos, Change Management Program

Outcome

- Secure and Resilient Enterprise Wide SCADA System
- Redundant Architecture with Multiple Data Centers and EOC
- Increased System Awareness and Better Access to Data for Management
- IT/OT Convergence With SLA's and Improved Communications
- Satisfied Client and Ongoing Client Relationship

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Hardware and Software Updating

The general guidance for network infrastructure technology refresh rates is 5 years for hardware replacement and annually for software/firmware upgrades, depending on critical security patching cycles, etc. We will evaluate all hardware and software during year 5 to determine the necessary hardware and software upgrades to maintain system functionality/relevancy for all deployed technology in our proposal.

We will roll out required technology and software upgrades throughout year 6, and we will follow the same procedure in subsequent years of the contract, as required. At closeout, software licenses will be transferred to the City using Software as a Service Model.

Summary and Conclusion

The Smart+Connected NOLA team brings a 30-year history working in City of New Orleans, during which time we have grown a substantial resource base of local staff, local knowledge, and local pride. With decades of success working in partnership with the City to improve our built and natural infrastructure, the Smart+Connected NOLA team can facilitate a faster, better, and more efficient ramp-up, collaboration, innovation, integration, and operation of a connected, secure, and sustainable Smart City program than our competitors. We understand how to work with the City to secure timely decisions, necessary infrastructure permits, and support of stakeholders to make this program a success.

The nine major partners to our consortium offer the skills, technology, and know-how to make a cost-neutral system work for you immediately and long term—we are committed and at your service to do just that.

Tab 3 -
Digital Inclusion Proposal

3 Digital Inclusion Proposal

Commitment to digital inclusion with a focus on digital access and equity to alleviate the digital divide in New Orleans*—We understand that this project is more than just providing broadband connectivity. It is an opportunity to recover, reimagine, and rebuild how New Orleanians connect through equitable deployment of information-sharing infrastructure. *Achieving these Smart City capabilities is the organizing principle for our partnership as we design and construct new communications infrastructure and move toward long-term operations.

Bridging the Digital Divide

Tab 3 Roadmap

Time to Recover, Reimagine, and Rebuild 3-1

RFP requirement addressed: Broadband Deployment Equity ..... √

Accelerating Education, Workforce Development, and Access 3-2

RFP requirements addressed: No-Cost Service; Digital Literacy; Outreach Plan Timeframe ..... √

Digital Inclusion Program: NOLA *Connected* 3-4

1. Connect Our Community Equitably 3-4

RFP requirement addressed: Wi-Fi in Community Centers and Public Park Facilities; Connectivity for Community Computer Centers ..... √

2. Create New Opportunity 3-7
3. Grow STEM Capability 3-10
4. Collaborate with our Local Technology Leaders 3-12
5. Make Our Community Safer 3-12

Conclusion 3-12

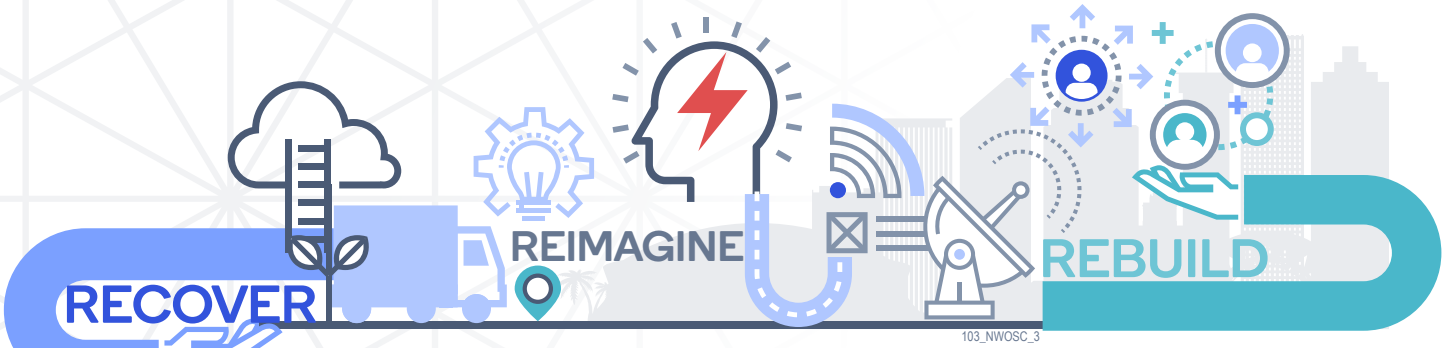
RFP requirement addressed: Outreach Plan Timeframe ..... √

Time to **Recover, Reimagine, and Rebuild**

The ubiquity of the Internet poses both opportunities and challenges for individuals and communities alike; these challenges and opportunities historically have not been evenly distributed. Digital technology has opened new domains of exclusivity and privilege for some, leaving other populations isolated from the vast digital realm. Equitable access; however, is no longer enough — increasingly, digital life requires that users be more than end-users; users are now content creators as much as they are content consumers.

Bridging the Digital Divide

A primary outcome of this Advanced Broadband and Smart City Systems program is to enrich the lives of all New Orleanians. Our offering will strive to create a fully connected, opportunity-laden, economically resilient, and equitable city across each and every neighborhood. One of the most critical components of this project's success is that it positively impacts the lives of the residents of New Orleans both directly and indirectly, helping the choices of today support and enrich the lives of future generations.



Providing the city with **digital infrastructure** & urgent resources to deliver advanced services that will **immediately address city digital inclusion** issues.

Providing the **required investments & technology to transform the City** for all residents, business & visitors by:

- Connecting all families with broadband
- Advancing public safety
- Delivering new Smart City services and initiatives to serve all residents and visitors
- Creating no additional costs to the city; providing a self-sustaining model

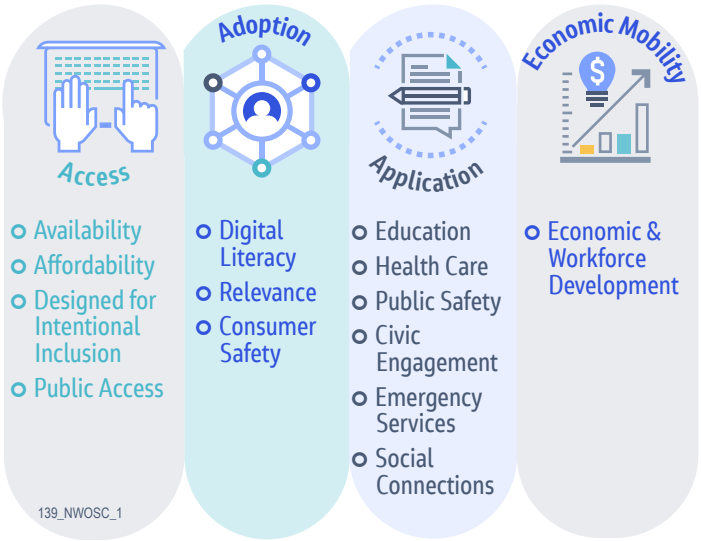
Delivering advanced broadband and redesigning the future for all families. The outcome is **balanced connectivity, economic development** & ensuring that every community has opportunities to **learn, work & compete.**

Accelerating Education, Workforce Development, and Access

Digital inclusion for a groundbreaking program such as Advanced Broadband and Smart City Systems requires commitment beyond simply providing 100% broadband access to have a lasting impact in the community. Digital inclusion should address more than just ***access***, but also ***adoption, application, and economic mobility*** so that users can fully and holistically benefit from this significant infrastructure investment. Success in the increasingly digitized social and economic ecosystems requires a comprehensive approach to fostering inclusion, bringing together high-speed internet access, information technologies, and digital literacy in ways that promote success for communities and individuals trying to navigate and participate in the digital realm. The four broad facets of digital inclusion yield the ultimate goal of creating digitally inclusive communities: access, adoption, application, and economic mobility (Exhibit 3-1).

Our digital inclusion program will partner with the City and communities to **accelerate digital inclusion** (Exhibit 3-2) and provide equity by launching programs focused on education, workforce development and public safety in the early days of infrastructure design and deployment to strive to connect families across the City of New Orleans

EXHIBIT 3-1.



regardless of their location, education level, or income.

The Smart+Connected NOLA team will collaborate with the City to develop programs and policies to protect privacy, promote safety, and address equity in a way that results in measurable community benefits. One of our goals is to ultimately be able to provide a no-cost service level for every resident unable to afford internet access and we will work with the City to identify the framework to achieve this.

We will begin developing these policies on program inception and will manage these policies throughout the program lifecycle using the following guiding

principles (Exhibit 3-3), for the benefit of all residents of New Orleans. We will begin engaging with community organizations and seek expressions of interest with local neighborhoods early in the process to ensure alignment throughout the program lifecycle.

EXHIBIT 3-2.

Digital Inclusion Roadmap

Guiding Principles

To implement the City of New Orleans' Smart City project to the level of integrity that the City envisions, we have defined our guiding principles to influence all our program activities in deploying advanced broadband and Smart City systems. Our guiding principles and actions will strive to engage the community, reduce disparities, prioritize projects by benefit, customize solutions to meet unique needs, and address data availability and local partnerships; all of which yield digital inclusion programs to leverage this infrastructure to holistically bridge the digital divide.

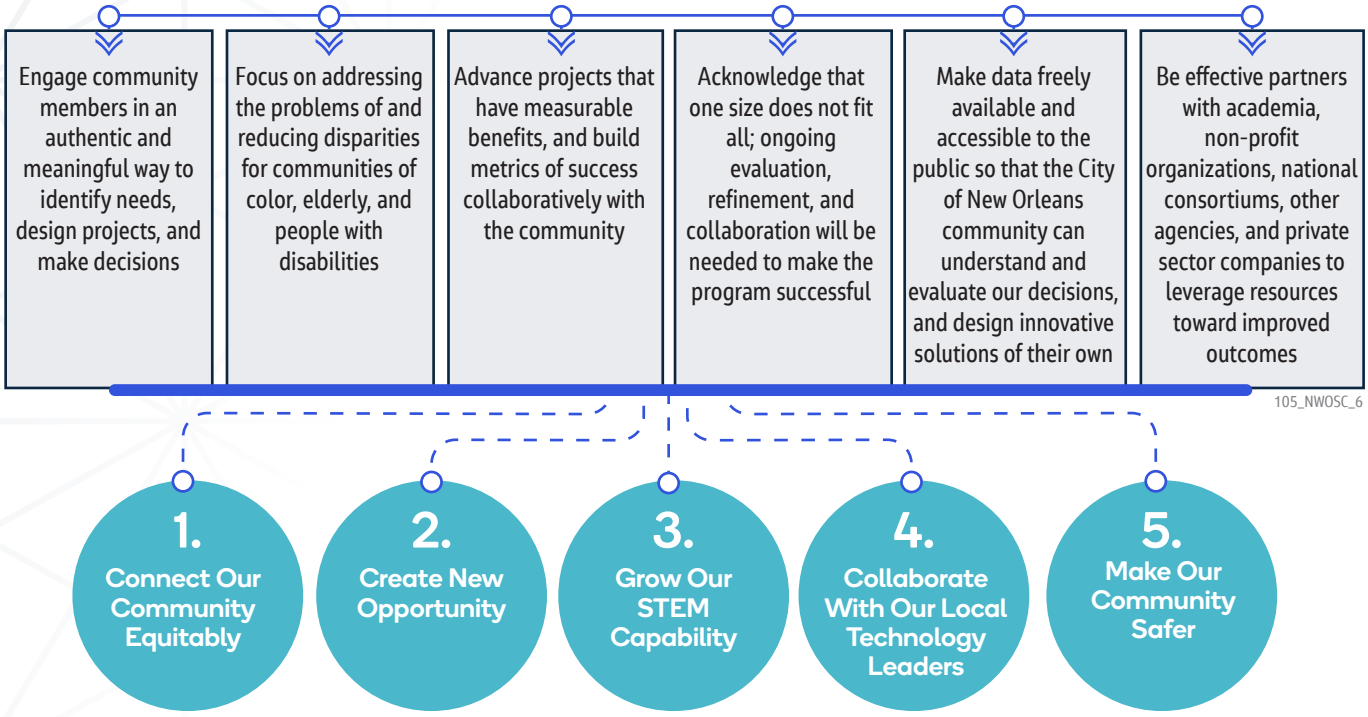
From these guiding principles flow the digital inclusion benefits of our program, NOLA *Connected*.

Our digital inclusion initiative will be led by Victoria Johnson. She delivers innovative solutions to address the urgency of infrastructure challenges in overburdened communities through her work on capital improvement programs (CIPs) in excess of $4 billion and redevelopment programs over $20 billion. Her experience and engagement in these important conversations helps underserved communities receive the allocation of resources they require to live healthy, thriving lives, and she will work with the City and key stakeholders to achieve the equitable deployment of infrastructure across the City.

EXHIBIT 3-3

DIGITAL EQUITY Recover, Reimagine, Rebuild

GUIDING PRINCIPLES



Digital Inclusion Lead Victoria Johnson Brings Experience and Commitment to Equity in Infrastructure

Victoria works with our clients daily to advocate for social value in federal legislation, including the $7T Build Back Better infrastructure plan, $2T American Jobs Plan, and President Biden's Racial Equity Plan. Recently, Victoria was appointed by the National Skills Coalition and Business Leaders United for Workforce Partnerships to serve on a national Industry Recovery Panel that will advise the Biden Administration and new Congress on federal recovery policies in the coming months to leverage investments in infrastructure to benefit underserved communities through a racial equity lens to create enduring community benefits relating to future of work, skills development, creation of employment pathways, and overall community wealth building.

Digital Inclusion Program: NOLA Connected

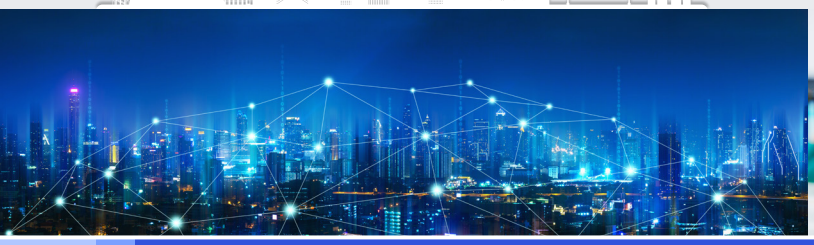
NOLA *Connected* is proposed as a series of infrastructure benefits and intentional undertakings designed to address improving the quality of life in New Orleans: 1. Connect Our Community Equitably, 2. Create New Opportunity, 3. Grow Our STEM Capability, 4. Collaborate with Our Local Technology Leaders, and 5. Make Our Community Safer.

1. Connect Our Community Equitably

Provide Connectivity for Residents Unable to Afford Internet Access at Rates Offered by Private Sector Providers

We recognize that between 23% and 33% of residents currently don't have broadband access, largely due to either lack of coverage or lack of affordability. Our fully capitalized solution rapidly addresses lack of coverage by providing a City-directed wireless network to enable citywide internet access. Our solution provides the City with the raw infrastructure and tools to be able to provide internet access to residents and to address remaining lack of affordability issues that are longstanding barriers to residents not having internet access. Our financial proposal incorporates a potential revenue share structure with the City, underpinned by the monetization and realization of incremental revenue from the private sector, providing the City with additional resources to provide subsidized internet access to disadvantaged citizens who require financial assistance. Smart+Connected NOLA looks forward to discussing various alternatives available to the City utilizing proceeds from the revenue share, such as providing free or heavily subsidized service levels for residents in underserved communities.

For example, in Fullerton (CA), Jacobs is working to help bridge the digital divide where we are designing the largest privately funded open access fiber networks in the U.S. The open access networks, **which are provisioned for 100% of all homes and businesses within the network footprint,** will not only benefit the community, but also provide citywide platforms for Smart City applications, including 5G and more.



Developing Performance Objectives for **Digital Inclusion**

Our **top-down approach** to performance management **commits high-level planning to improve the focus on performance** at the base of the organization.

In addition to delivering NOLA *Connected*, the Smart+Connected NOLA team will work with the City and key stakeholders to develop a performance management framework based on an agreed upon set of project objectives. This framework and the development of associated key performance indicators (KPIs) provide a solid linkage between strategic planning and the measurement of organizational performance. The framework drives a top-down approach, committing high-level planning to improve the focus on performance at the base of the organization.

The objectives will be factored into KPI development that may include the following:

- Connect all citizens and visitors with next generation of communications network
- Provide equitable deployment of infrastructure across all neighborhoods regardless of local economic factors
- Provide thorough approach to outreach and adoption of digital literacy services to residents
- Provide sufficient bandwidth for smart applications
- Discover new opportunities and training sessions for citizens and City staff to align with Industry 4.0
- Be ready to assist the City in executing any Smart City project it chooses to implement
- Develop City staff to possess the expertise to manage the implemented assets internally
- Include the community in an engagement process as part of strategic planning and in the implementation of specific initiatives

Performance Management Framework Pyramid

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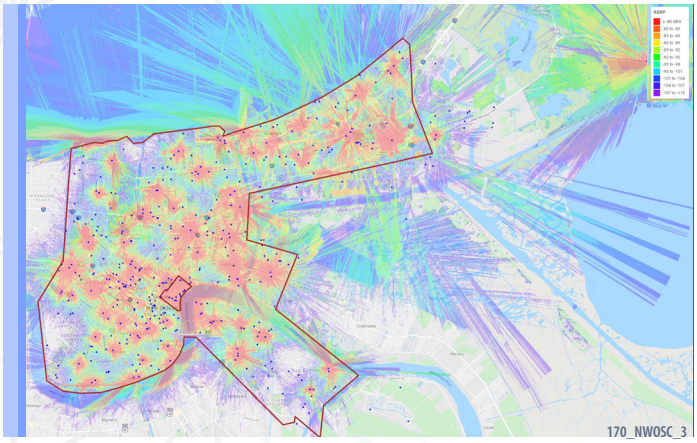
The City's goals and objectives are at the top of the pyramid because the resources and energy invested are focused on achieving your goals and objectives. Our program team will work collaboratively with you to achieve the desired outcomes that best demonstrate the City's goals and objectives. These outcomes are not necessarily the easiest or most expedient to achieve, but rather are selected for the effect their achievement will have on attainment of the stated objective. This effect is defined by a collection of attributes that might include breadth of engagement, behavioral modification, visibility, technical achievement, or efficiency improvement. In summary, outcomes are selected for their ability to affect the greatest positive contribution to meeting the City's objectives.

176_NWOSC_6

Provide Connectivity to Community Locations

Meeting Objectives

With 79 macro sites located across the city providing 90%+ coverage, our solution seeks to provide Wi-Fi throughout public facilities, including parks, community centers, libraries, recreation facilities, job-seeker facilities, and family resource centers. In addition to leveraging smart lighting and kiosks broadcasting Wi-Fi, working in collaboration with the City, we plan to install devices in key community centers to provide Wi-Fi connectivity at these facilities.



Installation of macro sites at 79 locations provides geographic coverage of more than 90% of New Orleans.

Interactive City Information

New Orleans will capitalize on the integration offered by smart technologies to provide interactive platforms that provide residents and visitors with real-time information on the City. In New York City, Qualcomm collaborated with LinkNYC to leverage information from open government programs, local businesses, and citizens to provide public information in public spaces. We will replicate, expand, and tailor this approach to New Orleans with the provision of smart screen kiosks throughout the City that incorporate touch, voice, and audio technology to deliver "hyper-local information" and services in real time, including city information and local alerts. Visitors and businesses will benefit from high-exposure local advertising which is subsidized for local small businesses in proximity to the kiosks. Residents and visitors alike will benefit from *fully* subsidized City information and alerts that will be cycled and available on the kiosks.

Aging communities and communities living with disabilities are front-and-center in our considerations as the kiosk smart screens are designed to deliver "access for all" through several design elements. Screens include headphone jacks for users who are hard-of-hearing, a high-contrast screen mode for those with visual disabilities, visual recognition for people with guide dogs, and features to support blind communities and those who use wheelchairs.

Additional benefits and features of the IKE kiosks include:

» **Delivers Essential and Emergency Communications.** Broadcasts emergency messages, critical updates, Amber Alerts, weather notifications, PSAs, road closures, and maintenance details, while also including a "push-to-call" button to reach emergency services.

Committed to **Innovative** Uses of **Mobile Technologies** for **Social Good** and **Closing** the **Digital Divide Worldwide**

The Qualcomm Wireless Reach Initiative, which has impacted more than 20 million people and is celebrating its 15th anniversary this year, plays a role in increasing access to technology and education around the globe. In countries including the United States, China, Japan, Vietnam, Kenya, Spain, and Turkey, we've provided smartphones and tablets to serve as digital textbooks and learning tools in areas where access to education isn't always available. Now, with Mobile PCs powered by the Qualcomm Snapdragon platform, we're expanding our reach to empower students and educators to learn and teach from virtually anywhere.

Qualcomm also remains committed to closing the **digital divide** through efforts designed to increase access to low-cost devices and connectivity. A few months ago, we held a device drive for the local San Diego Community. And when in-person visits to the USS Midway Museum were no longer possible due to COVID, we supported the museum's Distance Learning Program to help them offer virtual experiences and educational resources. On a national scale, our spectrum strategy and tech **policy team** have been working on this issue diligently at a policy level since 2007.

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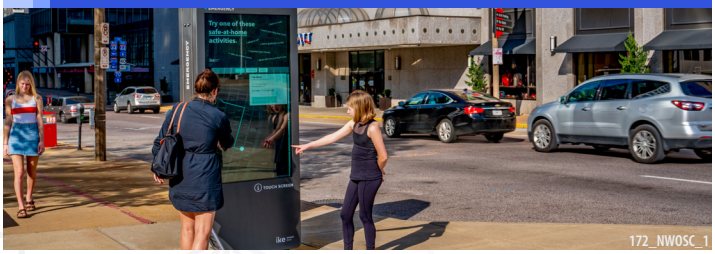
Reaching **Underrepresented Communities**

In St. Louis, the City and IKE achieved an equitable distribution of kiosks across City neighborhoods through a placement strategy that included underrepresented communities.

> The mission of our smart city initiative is to improve the quality of life for all residents and businesses. The kiosks effort is one of many ongoing smart city efforts and puts new innovative smart city technology into the hands of residents and visitors."
>
> *— Dr. Robert Gaskill-Clemons, Chief Technology Officer, City of St. Louis*



172_NWOSC_1

- **Provides City and Community Content.** Offers a new, no-cost, option for cities, business improvement districts, and destination management organizations to display promotional content using IKE's ad panels and posters application with inclusion of PSAs, art, non-profits, and community content in the ad loop up to 25 percent of the time.
- **Develops the Local Economy.** Drives traffic to local establishments at no cost to business owners through detailed directory listings and potentially offers local businesses advertising opportunities with reduced advertising rates compared to the national average.

2. Create New Opportunity

Provide Access

With Smart+Connected NOLA acting as a utility manager to Louisiana's first ever city-directed private long-term evolution (LTE) network, the options to provide connectivity are endless. Lighting up this infrastructure will enable the City to provide subsidized internet access to a diverse user group that will benefit from this resource, which can include:

Examples Of Potential **Future Digital Inclusion** Projects

Below are some example digital inclusion projects for consideration by the City in the future that could be catalyzed by deploying the Smart City project.

Virtual Classroom: Virtual reality technologies are increasingly geared toward improving education, including for communities with disabilities.

Virtual Community Center: In New York, the nonprofit Selfhelp Community Services has partnered with Microsoft and the City of New York to develop a Virtual Senior Center that offers "some 30 online classes to homebound clients" (*http://vscm.selfhelp.net/*).

New Connected Health Devices: These new devices automate health delivery and can relay real-time health information to medical professionals, as well as family members and caregivers.

Public Health Improvements: The deployment of environmental sensors and more efficiently managed transportation may also provide significant health benefits for these communities.

Connected and Automated Vehicles: Paving the way for autonomous vehicles will make Smart Cities more accessible for some of our most vulnerable community members.

177_NWOSC_2

Transportation Solutions: Transport of London's Oyster Card exemplifies the benefits of the cross-cutting capabilities of Smart City technology. Transport for London connected multiple transport options using a pre-loaded contactless smart card as its ticketless payment system, which is supported by MasterCard technology. This is aligned with City of New Orleans partnership with MasterCard; overlaying payment services over city services that are newly integrated by smart technologies will allow for greater efficiency and security of benefits payments.

Emergency Response Efficiency: Smart Cities can increase the efficiency of emergency responses by rolling out next generation 911 systems, increasing access to these systems, and providing first responders with technologies to help them serve citizens more effectively.

Integrated City Command and Control Centers: One clear opportunity is to create smart response systems that integrate information from existing public systems, as well as new smart surveillance systems.

- Small businesses that have recently registered their business with the city
- Registered JOB1 job seekers
- Students studying remotely
- Individuals formerly associated with the criminal justice system re-entering the community
- Workforce development agencies

Subsidizing Connection through Educational Development

Connectivity itself can be a strong incentivizing tool to grow students of all ages in New Orleans. We will introduce a program that pairs students and their families with subsidized internet access through completion of online education modules, as a significant step in creating equity in the digital landscape and developing new patterns of digital literacy and engagement at home.

For example, Khan Academy is a non-profit with the mission to provide a world-class education to anyone, anywhere. Many students in New Orleans are already using Khan Academy through their academic programs as Kahn Academy offers practice exercises, instructional videos, and a personalized learning dashboard in the fields of math, science, computing, history, art history, economics, and more, including K-14 and test preparation (SAT, Praxis, LSAT) content. The further use of this program by incentivizing and rewarding the growth of New Orleans students is a transformational opportunity that fits well within the subsidized access model that the City will be offering to residents in need, with *measurable* educational growth as an outcome of this service.

Supporting City of Atlanta's **Re-Entry Program** for Second Chance Residents

First graduate in April 2018 was released from prison early with a full-time job (full salary and benefits) and ~$7,000 in the bank to begin new life

Helps second chance citizens secure employment and a living wage and reduces recidivism in the community

175_NWOSC_3

Jacobs, including Digital Inclusion Lead Victoria Johnson, worked with the Department of Watershed Management (DWM) leadership in support of its workforce development program and related equity initiatives to benefit local residents, second chance citizens, youth, and women. The Re-Entry Program for second chance residents included:

- Preparing adult offenders to transition through Training and Therapy (PAT^3) Program
- Hire currently incarcerated individuals (non-violent offenses) nearing 12-18 months of release
- Participants complete 11-week construction training and are hired by DWM as full-time construction maintenance workers
- Participants are transported to job site for 40-hour work week; all income is put in secured account for full access upon release

Jacobs Delivers **Best-In-Class Workforce** Development

As program manager of the $11B 2012 London Olympics, we wanted to deliver revolutionary infrastructure that was impactful to the City of London as well as serve as the catalyst for equally impactful workforce development and economic mobility in the boroughs surrounding the Olympic Park and Olympic Village. We were successful in delivering this program 1 year ahead of schedule, $1B under budget, and exceeded our targets for community engagement.

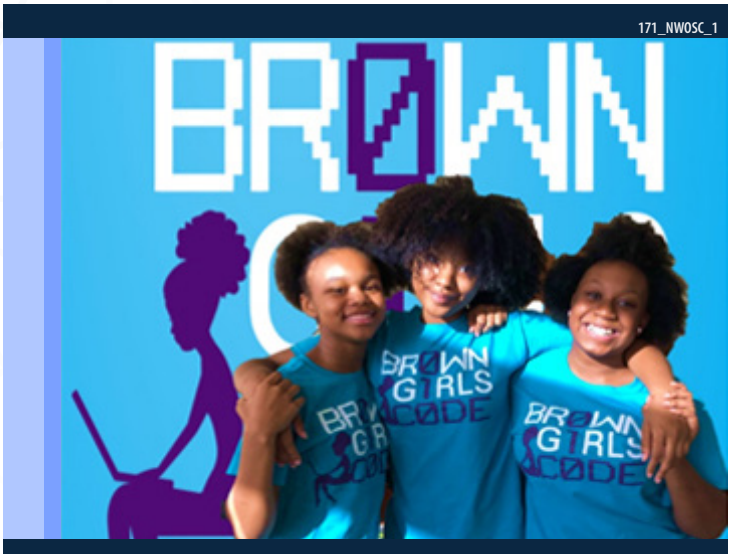
- Of the 6,309 people who worked on the Olympic Village site at the peak of its construction:
  - More than a quarter (28%) were resident in the five surrounding boroughs, and more than two-thirds (68%) resident in London
  - One in ten (10%) were previously unemployed before starting work on the Olympic Park
- More than 1,470 previously unemployed people gained work on the Olympic Park through a jobs brokerage service run in partnership with Jobcentre Plus, **a state placement agency similar to JOB1.** The brokerage gives local people 48 hours priority access to jobs before they are advertised more widely.

164_NWOSC_5

Promote Digital Literacy

Bridging the Digital Divide

We understand that equitable access to internet is just the beginning of bridging the digital divide. The Smart+Connected NOLA team is committed to providing necessary training via the Qualcomm Wireless Academy, an industry-leading program of training specific to Smart Cities. Our team can provide relevant and purpose-fit training on Smart Cities to City employees, and provide content and train-the-trainer opportunities for the City to leverage and broaden existing programs such as *Introduction to Computers and the Internet Program,* so that residents are effectively trained in the use and application of this technology.



Working with Brown Girls Code, a national nonprofit organization working to close the gender and diversity gap in technology, we can develop a New Orleans-specific curriculum to bring a chapter of this fantastic non-profit to an underrepresented part of our community. This program equips underrepresented girls ages 8—18 with the skills and training needed to pursue 21st century opportunities in computer science, information technology, cybersecurity, and other STEAM-related fields. Our goal is to increase their knowledge and enthusiasm for the fields while building confidence, technical acumen, and sisterhood. Brown Girls Code has received philanthropic support from Qualcomm, which has provided equipment and devices in the past to ensure these girls are appropriately equipped to become a competitive portion of the talent pipeline for STEAM jobs of the future.

Bridging the Digital Divide Through Celona's Private Mobile Network

WIRELESS BROADBAND AS A SERVICE TO BRIDGE THE DIGITAL DIVIDE

Campbell UNION SCHOOL DISTRICT

As a technology provider, Celona installed an outdoor private mobile network on the CBRS spectrum for the Campbell Union School District in California. This dedicated private wireless network extended broadband internet connectivity to surrounding schoolchildren, supported by indoor CPE devices installed within student homes. In addition to providing more equitable access to digital infrastructure, this project provided the following benefits:

- Low-income students have reliable access to school network resources and the internet (through Celona MicroSlicing to deliver guaranteed bandwidth and latency performance for Zoom video calls and other classroom apps)
- Cost per student decreased relative to paying for carrier MiFi units and monthly data plans
- Student data stays on the school network, including passing through mandated content filters

162_NWOSC_2

Open Career Pathways

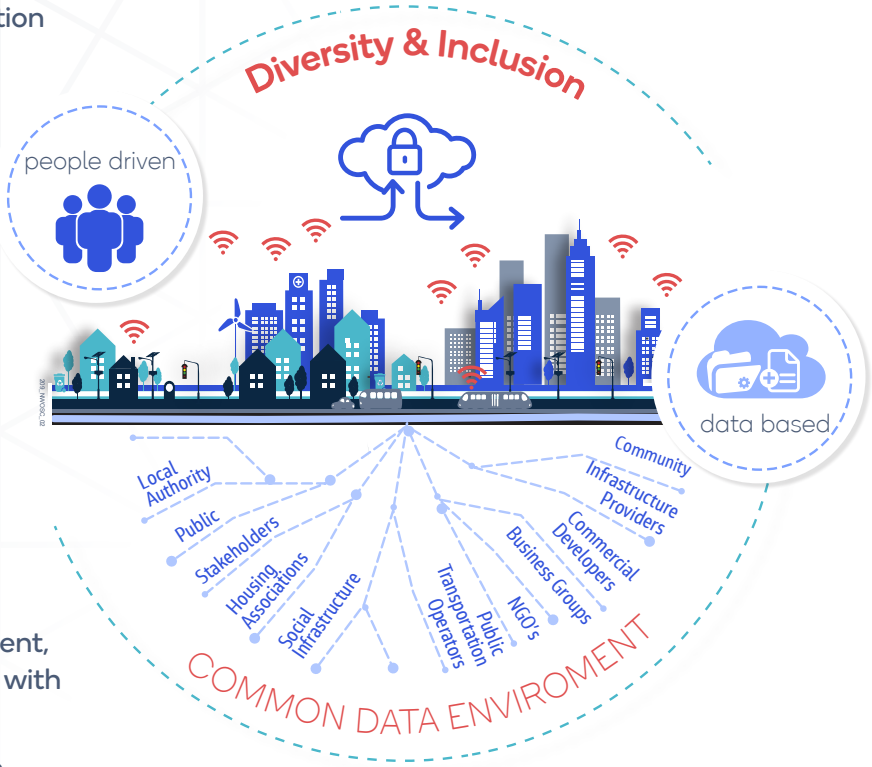
Communities of color, particularly men of color, face significant, systemic barriers to equal education, access, and especially employment. As a result, according to the Bureau of Labor Statistics, the national unemployment rate for African American males between the ages of 25—54 is 10.7% compared to 5.5% for their white counterparts. In New Orleans, 44% of African American males are unemployed, almost four times greater than the national average and almost 10% greater than their white counterparts in the City. Creating opportunity for underrepresented parts of our workforce is a critical component of flagship infrastructure programs such as Advanced Broadband and Smart City Systems. Job creation will occur as part of the deployment and operation

of the program, as well as through the diversification of employment opportunities resulting from the implementation of this infrastructure.

Furthermore, broadband access offers increased connectivity to allow for greater virtual employment and telecommuting opportunities, to "bring the workplace anywhere" to open up significant opportunities to those seeking employment.

The Smart+Connected NOLA team has implemented workforce development programs around the globe, including mentorship and training programs in New Orleans. We will combine our global workforce development experience with local programs and resources to serve jobseekers in typically underserved communities, create pathways for skill development, and connect trained members of the community with opportunities.

Our program can train interested members of the community in the areas of smart lighting, traffic management, private LTE network connectivity, kiosks, and network operations. The training program will be delivered by leading tech companies IKE, Celona, Juganu, and Zyter, providing defined training content, certification of completion, and a career network that connects the trainees with new opportunities from the firms that will implement this work; in short, direct connectivity with new local opportunities in emerging technical fields.



Our digitally integrated approach helps with the communication and transparency within all team parties.

3. Grow our STEM Capability

The benefit of delivering a first-of-its-kind technology solution is the opportunity to bring community partners along on the journey and create a system of ambassadors and skilled individuals who can leverage this project and experience to create their next big opportunity.

Proven Success in Workforce Development Programs

Program/Project	Capital Value	Define Vision, Goals, KPIs	Outreach/ Recruitment	Training/ Education	Job Placement Team	Apprenticeship	Monitoring/ Reporting
London 2012 Olympics, UK	$11B	●	●	●	●	●	●
National Western Center, CO	$856M	●	●	●	●	●	●
Atlanta Re-Entry Program for Second Chance Citizens, GA	$1.5B	●	●	●	●		●
Omaha Public Schools Bond Program, NE	$410M	●	●	●	●	●	●
Louisville Water/MSD Equity Task Force, KY	$4.3B	●	●	●	●	●	●
London Tideway Program, UK	$8.7B	●	●	●	●	●	●
Philadelphia International Airport, PA	$2.4B		●	●	●		●
Hartsfield-Jackson Atlanta International Airport, GA	$91M	●	●	●	●		●

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Our New Orleans partner targets: JOB1 | JSS Tech | LED Louisiana Economic Development | Good Work Network

Partner with Local STEM Ambassadors

We will connect with local STEM organizations to collaborate with students of all ages on the design and delivery of this project. We will be providing the front-row seat to a remarkable technological transformation to the City, as well as our engaged STEM participants. Through defined collaborative engagements with local STEM leaders, we will support STEM activities by providing innovative learning, teaching, and training initiatives to various age groups and demographics that share STEM and entrepreneurial spirit, elevating the quality of STEM opportunities in the City of New Orleans. Participation in these events will be captured with certificates of participation, also tied to pilot programs like the City of New Orleans partnership with MasterCard to incentivize participation among our STEM youth and entrepreneurs participating with the following potential organizations:

- STEM NOLA
- YouthForce NOLA
- Launch NOLA
- Electric Girls
- Operation Spark
- NOLA CODE

Jacobs Green Infrastructure Project Brings **Benefit to STEM NOLA**

Jacobs recently won an award for delivering an innovative green infrastructure project. Designed and delivered in Louisiana, the project turned 96,000 recycled PET plastic bottles into a natural infrastructure solution to mitigate erosion while improving coastal marsh production and water quality. The team, based out of both New Orleans and Baton Rouge, **donated the cash prize to STEM NOLA** in recognition of their key work in developing the next wave of engineers and scientists who will tackle our coastal challenges.

Click here for a video detailing this project.

165_NWOSC_3

Artistic rendering provided by our client, depicting the ecological value added from this project.

174_NWOSC_1

Our DBE partner Malone Electrical actively participates in the STEM community, such as this YouthForce NOLA career fair.

Deliver National Technology Focused STEM Program Training

Through the Qualcomm Thinkabit Lab™ program, we aim to show students from all cultural and socioeconomic backgrounds that they can be part of inventing the wireless world of the future. Since 2014, Qualcomm has delivered this program for 6th graders and above, with 14,000 students trained to date. This program will be offered virtually for STEM students in New Orleans.

The Qualcomm Thinkabit Lab is a STEM initiative started in 2014 at our San Diego headquarters. It was designed to inspire students of all cultural and socioeconomic backgrounds to be inventors and explore the Qualcomm® World of Work. At the Thinkabit Lab, students explore engineering and non-engineering careers available at tech companies and engage in a fun and unique hands-on engineering project. Together, the career exploration and engineering activities help students understand

where they might fit in the future workforce and how they could contribute to solving real-world problems using technology.

> The Thinkabit Lab opens the door for students to become tomorrow's makers, innovators and problem solvers. The students get excited about STEM and start thinking about future careers in STEM.
>
> *—Hollie Williams, Thinkabit Lab Instructor, Cohn Elementary School, Baton Rouge, LA*

4. Collaborate with Our Local Technology Leaders

We will leverage the synergy of our neighbor, the Fiber Academy, to develop local resources in the implementation of any fiber needs to connect the 79 antennas supporting the deployment of the LTE network. We can engage the Fiber Academy students through a targeted program, inviting them to participate in our design and planning discussions, as well as perform job shadowing during fiber installation in the field, giving the students tremendous exposure and experience as a part of this project.

Malone Electrical in the field installing fiber and telephone infrastructure conduits at the airport in New Orleans.

5. Make Our Community Safer

Safety is a core value for the Smart+Connected NOLA team, and leveraging the Advanced Broadband and Smart City Systems solution to improve everyone's safety, in every neighborhood, is our goal too. All elements of our solution address improved connectivity to first responders and improved conditions to discourage negative acts such as vandalism and violence:

- Kiosks will provide residents and visitors immediate connectivity to first responders.
- The lighting master plan will be created with the clear outcome of improving roadway and citizen safety, and implementation of the lights will aid in ambient conditions to optimize public safety.
- Our traffic solution will enable the City to understand safety challenges at and near intersections and identify issues before they occur, leveraging predictive analytics included in our mobility platform. This will help achieve Vision Zero, as the platform has the ability to issue automated incidents alerts, divert traffic during congestion, and provide appropriate signal timing for police, fire, EMS, etc.
- The command and control center will identify and address potential issues quickly prior to escalation, using context-aware incident reporting and contextual alerts.

Zyter has developed several Smart Surveillance systems that employ cutting-edge detection technology to provide real-time analytics and streamline emergency responses. Through predictive policing technologies, heat mapping and facial recognition software, government partners can detect situations before they escalate and provide the real-time information that hastens response times.

> With a City Command and Control Center, City officials will be able to monitor any emerging crisis in real-time with an unprecedented level of visibility.

Conclusion

To engage meaningfully with local non-profits, faith-based groups, and community and neighborhood organizations, **we will initiate outreach within the first 100 days of commencing this program, with the intent to receive their expressions of interest early into delivery, so we may maximize their participation throughout this program.**

We commit to supporting this Digital Inclusion Program throughout the duration of our contract.

Tab 4 -
Capabilities of Organization and Personnel

4 Capabilities of Organization and Personnel

Tab 4 Roadmap

Financial Soundness 4-1

RFP requirement addressed: Audited Financials ..... √ (Tab 10)

Program Organization Chart and Staff Resumes 4-2

RFP requirement addressed: Organization Chart and Key Personnel Resumes ..... √

Demonstrated Capacity and Experience to Provide End-to-End Solutions and Future Proofing 4-12

RFP requirement addressed: Demonstrated Capacity and Smart City Project Experience ..... √

Financial Soundness

The Smart+Connected NOLA team provides the City with financial stability and capitalization essential to the successful P3 delivery of the Advanced Broadband and Smart City Systems. Audited financial statements for JLC, Zyter*, Qualcomm, and Jacobs** are included in Tab 10, as required in the RFP.

**Zyter's parent company Infinite will serve as the legal entity*

***Jacobs Project Management Co. (JPMCo) will serve as the legal entity and delivery arm, and is a wholly owned subsidiary of Jacobs*

Our team has constructed a financial solution that achieves a cost neutral outcome, minimizing the risk and direct funding requirements from the City.

Our key delivery firms have a combined capitalization of more than $168 billion, as demonstrated in Exhibit 4-1. Additionally, JLC, the equity member, currently has approximately $220 million in available capital commitments readily available to invest in the project. Therefore, the team provides more than enough financial capacity to deliver your Smart City program from start to finish.

EXHIBIT 4-1

	Qualcomm	Jacobs	JLC	Zyter*	Total
Debt (if Any)	$15.7B[1]	$3.4B[3]	--	$44.68M[6]	$19.1B
Capitalization	$149.78B[2]	$18B[4]	$399M[5]	$353M[7]	$168.5B

**Financials are for Zyter's parent company, Infinite*

1. Debt outstanding as of February 2021.
2. Market capitalization as of May 2021.
3. Debt outstanding as of May 2021.
4. Market capitalization as of May 2021.
5. Assets under management and total awarded capital commitments to date.
6. Debt outstanding as of May 2021.
7. Total balance sheet capitalization as of December 2020.

Audited financials for Qualcomm, Jacobs, JLC, and Zyter can be found in Tab 10, Financial Statements.

Qualcomm

- Talent force of 41,000+
- $23B in revenue
- Recognized by Fortune's Change the World List for the revolutionary societal impacts of 5G

Jacobs

- Talent force of 55,000+
- $14B in revenue
- No. 1 in Fortune's 2020 World's Most Admired Companies

JLC | MJE-Loop Capital Partners

- $399M in assets
- 100% minority-owned and controlled
- SEC registered investment adviser

Zyter

- Talent force of 10,000+
- $500M in revenue
- Recipient of IT World Award in the "Hot Technology & Solution of the Year, Information Technology Cloud/SaaS" (2019)

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Program Organization Chart and Staff Resumes

A well-structured, well-governed delivery team with proven ability to implement all facets of a Smart City program—from planning to long-term operations within our in-house team capabilities—provides the City of New Orleans a single point of accountability and transparency. Our longevity in the market and corporate financial strength contribute to the team's confidence that we can be the partner the City needs to meet the program's objectives, maintain stakeholder confidence, and drive on-time, high-quality performance with exceptional safety and security.

Our key personnel are 100% committed to the City. Beginning on Day 1, they will facilitate a fully integrated team dedicated to your vision.

Proven Delivery Team for On-Time Performance and Exceptional Quality, Safety, and Security

Our integrated program delivery organization brings best practices from around the world and local delivery to support your Advanced Broadband and Smart City Systems program (Exhibit 4-2). Our team organization encompasses the following core delivery roles:

- Our formidable **management team** comprises our Program Manager and Local Principal, each with a penchant for delivery excellence and problem solving, tested and demonstrated in their roles delivering major programs with scopes that have never been done before for the City of New Orleans.
  - A world-class collaborator and lifelong New Orleans resident, Program Manager Kevin Ferguson will leverage his expertise managing the startup and delivery of $2.2 billion in infrastructure program for the Recovery School District (RSD) in New Orleans to deliver this program on schedule, within budget, and with stellar safety and security. Through his recent program experience with RSD and previous role with the City as Project Manager with the Capital Projects Administration, **Kevin has a proven track record of obtaining stakeholder buy-in and interagency cooperation and the necessary experience with citywide delivery, process knowhow, relationships, and City functional knowledge to successfully deliver all aspects of your program.**
  - An Orleans Parish resident and a known, trusted ally in New Orleans, Local Principal Amanda Gaze will apply her **experience directing more than $400 million in complex infrastructure for SWBNO** in the past 5 years to ensure our team delivers to your complete satisfaction. She frequently partners with local municipal government organizations, with direct experience with FEMA, SWBNO, OCD, DPW, and Levee Boards, coordinating across multiple departments and agencies.
- Providing a vital cross-section of programmatic roles needed to deliver every facet of this program—from digital inclusion, cybersecurity, stakeholder management, and field services to project controls and financial management, sustainability, and risk management, **our on-demand program support team** will work closely with key staff to maintain program momentum, cost, and schedule requirements for the life of this contract.
- As industry leaders, our **task managers** will work in a fully integrated fashion to ensure each program task meets or exceeds performance measurements, aligns with the program vision, and optimizes value to the City. We have structured our task managers to align with each program element: Broadband Connectivity; Smart City Applications, including Streetlights, Water, Traffic Management and Mobility, and Kiosks; City Command and Control Center; Operations and Maintenance; and Training Program/Knowledge Transfer.
- Composed of internationally recognized leaders in smart technologies, our **Smart City Advisory Board and subject matter experts** will play a vital role in shaping and helping you achieve your Smart City aspirations.

This comprehensive delivery team is supported by a deep bench of architectural, engineering, technology, and specialty consultants to deliver the full range of services required for this program (Shared Subject Matter Expert Resources), including cloud architecture, data analytics, quality management, civil, electrical, mechanical, geotechnical, environmental, I&C/SCADA, cost estimating, inspection, and health and safety.

EXHIBIT 4-2. ***Organization Chart***

Our delivery team's organizational structure is highly functional and addresses program-level direction, defines clear lines of communications, delineates an effective reporting structure, and most importantly, enables day-to-day execution of thousands of project-level tasks within the program.

Local Principal
Amanda Gaze[2]

SPV – Smart +Connected NOLA

City Advisory Board
CIO
Utilities Director
Sewerage & Water Board
IT Department
DPW
NOHSEP
LADOTD
Others

Program Manager
Kevin Ferguson[2] ★

Smart City Senior Advisors
Digital Solutions: Raja Kadiyala[2]
Smart City Applications: Sanjeet Pandit[1] ★
Funding/Financing/Monetization: Andrew Kim[3] ★
Network Design and Plan: Ashok Tipirneni[1]
Cybersecurity: Adi Karisik[2]
Data Analytics: Charles Ramsay[2]
Cloud: Suresh Mandava[4]
Infrastructure: Mark Jernigan, PE, PMP[2] ★
Digital Inclusion/Equity: Jo Danko[2]
City Platform: Alok Kumar[4]

Programmatic Functions

Sustainability/ Resiliency:	Risk Management:	Program Portal:	Digital Inclusion:	Stakeholder Management:	Cybersecurity:	Project Controls:	Field Installation & Commissioning:
Jason Bird[2]	Kevin Ferguson[2]	Pankaj Patel, PMP[2] ★	Victoria Johnson[2] ★	Kevin Ferguson[2] ★	Susan Howard, CISSP[2] ★	Josephine Pittman[2]	Rodney Carpenter[2] ★

City Command and Control Center
Task Manager: Srinivasa Samudrala[4] ★

Broadband Connectivity
Broadband Connectivity **Task Manager:** Mehmet Yavuz, PhD[6] ★
Fiber: Scott Stokes[2] ★
Standards & Design: Bob Elsinga[2]
Radio Frequency Design: Brian White[6] ★
Network Engineer: Scott Fox[2]
Network Integration: Ron Mansmann[2]
Permitting: Elizabeth Calvit[2]
Installation: Malone Electrical[15]
Fiber Installation: Grady Crawford[13]

Smart City Applications

Streetlights **Task Manager:** Laura Glaser, PE, LC, LEED[2] ★
Lighting Analysis: Laura Glaser, PE, LC, LEED[2], Simi Burg[8]
Lighting Master Plan: Laura Glaser, PE, LC, LEED[2], Simi Burg[8]
Architectural Lighting: Simi Burg[8]
LED Lighting & Controls: Alexander Bilchinsky[11]
Permitting: Elizabeth Calvit[2]
Light Installation: Malone Electrical[15]

Traffic Mgmt & Mobility **Task Manager:** Kris Milster, PE, PTOE [12] ★
ITS: Emily Weigand, PE[2]
IoT Sensors & Cameras: Shay Glickman[12]
Backend IT Design: Uriel Katz[12]
Permitting: Elizabeth Calvit[2]
Installation: Malone Electrical[10]
Virtual TMC: Thomas Cooper[12]

Kiosks **Task Manager:** Jessica Burton[9] ★
Site Survey: Monica Stochl[2]
Geotechnical: Curt Basnett, PE[2]
Permitting: Elizabeth Calvit[2]
Installation: Malone Electrical[10]

Water **Task Manager:** Joe Ball[2] ★
Water Metering: Josh Braman, PE[2]
Flood Management Strategy: Tonja Koob Marking, PE, CFM[7]
Water Quality: Rich Giani[2]

Ongoing Operations & Maintenance
O&M **Task Manager:** Jalendra Sannashetty[4] ★
Network Operations: Jalendra Sannashetty[4]
Partner Management: Kevin Ferguson[2]
Asset Management – CMMS: Robert Poche, CMRP[2]
Field Services: HD and Associates[14]

Training Program/ Knowledge Transfer
Training Program/ Knowledge Transfer **Task Manager:** Joy Swenson[2] ★
Stakeholder Meetings: Bill Rouselle[5]
City and Citizen Training: Daymara Mesa[2]
Connectivity & Solutions Trainer: Daymara Mesa[2]

LEGEND
★ Key Personnel
1 Qualcomm
2 Jacobs
3 JLC
4 Zyter
5 Bright Moments (DBE)
6 Celona
7 Gaea (DBE)
8 HLB (DBE)
9 IKE
10 ILSI (DBE)
11 Juganu
12 NoTraffic
13 Grady Crawford Construction
14 HD and Associates (DBE)
15 Malone Electrical (DBE)

Shared Subject Matter Expert Resources
IoT Solutions Architect: Guruprasath Venkatraman[4]
Cloud Architect: Hrudaya Kommareddy[4]
Deployment Automation: Suresh Chatla[4]
Lighting: Yossi Bechor[11]
Data Analytics: Michael Brown[2]
Data Privacy – PII : Trevor Giles[2]
Scheduler: Emre Bolukbasi[2]
Quality Manager: Heather Layrisson, PE[2]
Engineering Manager: Michael Decoteau, PE[2]
Construction Manager: Lee Long[2], Denny Brestle, PE[2]
Field Inspectors: Pierre Charbonnet[2], Walter Raffield[10]
GIS: Eduardo Rendon[2]
Procurement Manager: Jesse Weaver[2]
Permitting: Elizabeth Calvit[2]
Document Controls: Norma Santiago[2]
Cost Estimating: Ralph Myers, CGC[2]
Civil: Jarrod Tramonte, PE[2], Ruhan Isim,PE[10]
Mechanical: Roy Snover[2]
I&C/SCADA: Jeff Handwork[2]
Geotechnical: Curt Basnett, PE[2]
Environmental: Cassie Kerrin, PG[2], Tim Smith[2]
Health & Safety: Kenneth Bennett[2]

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Deep Bench Strength and Staff Diversity Enable Us to Deliver All Program Phases

Deeply rooted in the City of New Orleans, our program office is located steps away from the City's offices. Our team has 30 professional services staff right here in New Orleans who are part of the Louisiana team of 120; our global bench strength numbers more than 100,000 staff worldwide – ensuring the full-time staff needed to meet program challenges and critical needs.

Key Personnel

On the following pages, we introduce our team leader, Kevin Ferguson and the qualities that make him the ideal candidate to lead this effort, followed by brief biographies for the identified key personnel. Detailed resumes for key personnel and qualifications matrix for all other staff identified on the organization chart can be found in Tab 7.

Kevin Ferguson – Program Manager and Risk and Stakeholder Management

A New Orleanian through and through, Kevin Ferguson brings his 26 years of multidisciplinary experience leading complex infrastructure programs to your Smart City program. He has worked as the project manager for the City of New Orleans Capital Projects Administration and currently serves as the program manager of the $2.2-billion FEMA-funded Capital Improvement Program for the Recovery School District. His responsibilities include the design and construction of educational facilities along with stakeholder management, community outreach, grants management, and risk management. He brings experience in program and project management, contract/claims administration, CPM scheduling, cost estimating, change order negotiations, design review, quality control, and project administration--all essential to the success of this endeavor. Additional details on why Kevin is the best person to lead your program can be found in Exhibit 4-3.

Sanjeet Pandit – Smart City Senior Advisor: Smart City Applications

Sanjeet is Qualcomm Technologies' Global Head of Smart Cities, responsible for carrier and ecosystem relationships in this domain. With more than 20 years of expertise in the telecom industry, he specializes in the areas of Smart City design, creation of smart verticals, digital transformation, and go-to-market strategies, creating an experience that benefits public-private domains and citizen engagements. He has worked and created relationships with the Smart City ecosystem partners, resulting in multiple Smart City projects globally.

- Has developed and deployed various Smart City revenue models in association with ecosystem partners, resulting in a win-win situation for all parties
- Working with Gwinnett County, GA, and Jacobs, used Qualcomm enabled cellular connected smart meters and analytics to identify water leaks on customers' property and reduce non-revenue water; advanced metering infrastructure enabled detection of consumption, safety, and resilience
- For the City of New York's LinkNYC project, he was Qualcomm's project manager and wireless technology expert to implement citywide smart digital infrastructure, repurposing pay-phone infrastructure to provide smart connectivity solutions and help bridge the digital divide by providing fast, free municipal Wi-Fi

Proposed Program Manager Kevin Ferguson is committed to providing the same leadership on this Smart City program as he did for the $2.2 billion RSD program in New Orleans; Kevin is committed to and passionate about making a difference on the landscape of the city he loves.

Kevin Ferguson - Program Manager

EXHIBIT 4-3

Local Leadership Enables Strong Delivery

As a long-time resident of New Orleans, with deep roots in the community, Kevin has strong connections with New Orleans, and he has devoted his career to rebuilding and strengthening his home city. He is an experienced program manager with neighborhood-level connections and close relationships with city hall, but, most importantly for Kevin, this project is a way to give back to New Orleans.

Kevin's knowledge of design and construction practices has proven to maximize interest in and competitive bidding for programs he leads, so that the best firms are engaged. Kevin has the experience with citywide project delivery, process knowhow, relationship building, and City functionality needed to lead implementation of this important initiative. His qualifying attributes include:

- **Home grown and a current resident, Kevin is a Tulane University graduate who understands the city and its communities.**
- Project manager for the City of New Orleans Capital Projects Administration, bringing hands-on experience delivering work at the City.
- Managed the $2.2B multi-facility RSD rebuilding program that included elements of **bridging the digital divide, community outreach, coordinating with the myriad of city agencies,** and coordinating with and managing multiple subconsultants and contractors.
- A personal commitment to making New Orleans a great, equitable city with opportunities for all.
- **Demonstrated ability to work with/coordinate with various City Departments** to streamline efforts and gain efficiency.
- Cross city experience brings in-depth understanding of numerous community groups and advocates for digital access for all.
- Proven ability to lead a large, complex program involving engineering, stakeholder management, project controls, risk management, funding, sustainability, QA/QC, permitting, construction, and startup enhances opportunity for success.
- Track record of maintaining on-time, on-budget, high-quality delivery that meets City standards, is DBE compliant, and obtains stakeholder and community buy-in

What This Project Means to **Me**

"My New Orleans roots began on Urquhart between St. Roch and Franklin in a shotgun duplex that my mother and her six siblings grew up in. As a child, I would spend summers with my grandmother in that same duplex soaking up all the richness of the neighborhood and culture of the city. It had such an impact on me that I ran back to its arms for college at Tulane to spend some of my most formative years embraced by its ambiance. I've always loved this city, so when the opportunity presented itself to help with the post-Katrina recovery, I packed my bags and my family and came back.

This project is an opportunity for me to continue giving back to the city that has given so much to me. Our job as professionals who live, work, play, grow and prosper in any community is to leave it better than you found it. My time with Jacobs leading the school rebuilding program has been a great avenue to walk that out, and I see the Smart City Program as part of that continuum."

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Mark Jernigan, PE, PMP – Smart City Senior Advisor: Infrastructure

Mark brings deep expertise in project and program management and delivery of public infrastructure. His extensive experience on public works projects includes roadways, bridges, drainage, flood risk reduction structures, and water and sewer systems. Of particular relevance, he was the City of New Orleans' Director of Public Works for 6 years, responsible for overseeing maintenance and management of city streets, curb space, bridges, signalized intersections, traffic and regulatory signage, minor drainage system, and the streetlight system.

- Served as the City of New Orleans' agency lead for public works-related Smart City initiatives, including a city-wide LED streetlight conversion program, and managed construction of projects involving roadway reconstruction, green infrastructure, drainage improvements, and traffic signal upgrades
- Coordinated emergency response/recovery efforts at the federal, state, and local levels for Hurricanes Katrina, Rita, Gustav, Ike, and Isaac; 2011 Mississippi River Flood Event; and 2016 New Orleans Canal Street Tunnel Collapse
- 20-year military career included serving as Deputy Commander and Chief of Staff, New Orleans District, U.S. Army Corps of Engineers, responsible for overseeing more than $15 billion of civil works construction

Andrew Kim – Smart City Senior Advisor: Funding/Financing/Monetization

Andrew has 20 years of utility and infrastructure finance, investment, and asset management experience, leading and managing investments in projects with direct connectivity to municipalities and public end-users. In the past 3 years, he led numerous investments on behalf of JLC in projects throughout the U.S. focused on providing services and benefits to municipalities and the communities they serve. Previously, he led energy investment efforts in the Americas for Goldman Sachs Infrastructure Partners and was an original team member in JPMorgan Asset Management's infrastructure platform.

- Familiar with custom, state-of-the-art project structures designed to address the complex needs of customers, vendors, investors, and policymakers, while managing risk for all parties.
- In Louisiana, led JLC's investment in smart water meter installations in several parishes, which have generated significant revenue for the municipalities as a result of having access to real-time usage data
- For East Aurora, IL, JLC invested in the upgrade of lighting, ventilation, and HVAC equipment at 16 schools; JLC's financing was a unique alternative, enabling the municipality to avoid large upfront capital outlays

Pankaj Patel, PMP – Program Portal

Pankaj's expertise includes a major focus on the design, development, and implementation of portals and performance dashboards for large, multiyear capital improvement programs. He has successfully implemented management information systems for municipal water and wastewater utilities covering performance monitoring, O&M, asset management, accounting, and administration. He is experienced in implementing IT/IS infrastructure for large utilities and selecting and implementing tools to address information needs for the entire program life cycle.

- Over 30 years of experience in program management information systems (PMIS), with expertise in requirements analysis, business process mapping, system architecture design, and managing system development, including developing performance dashboards using Dundas dashboard and Microsoft Power BI platforms
- Implemented PMIS portals for the Fresno (CA) Water Capital Improvement Program, the National Science Foundation's Arctic Research Support and Logistics Services Program, Allegheny County (PA) Sanitation Authority's stormwater program, and the DelhiMumbai Industrial Corridor and Smart Cities Program

- Designed and developed program performance dashboards for the Qatar 2022 FIFA World Cup Program and the Rio 2016 Olympics Program

Victoria Johnson – Digital Inclusion

Victoria leads Jacobs' social value solutions practice, providing expertise in innovative and equitable solutions associated with federal, state, and municipal government agencies' large infrastructure programs. In partnership with leaders nationwide, she provides program management and executive advisory services for infrastructure-focused equity initiatives, including strategic planning, capital improvement, social procurement and supplier diversity, and inclusive federal and state legislation advocacy.

- Appointed to a national Industry Recovery Panel to advise the Biden Administration and Congress on federal recovery policies, including how infrastructure investment can create and deliver enduring social justice through job creation and inclusive economic development
- As program manager/workforce development consultant, supported development of the City of Atlanta Department of Watershed Management's Water Equity Roadmap and works with the Commissioner's management team to increase opportunities for unserved communities
- Played a leadership role in developing the Louisville (KY) Metropolitan Sewer District's Water Equity Roadmap to advance economic inclusion among vulnerable communities. Worked with MSD's executive leadership to develop and implement the utility's first Community Benefits policy and program, which provides education, funding, and training opportunities in workforce development to local citizens

Susan Howard, CISSP – Cybersecurity

Susan's cybersecurity system experience spans municipal, federal, utility, and private-sector facilities and infrastructure, including highly sensitive military and industrial systems. She is an expert in industrial control systems cybersecurity for Smart City components, including transportation systems (electronic fare systems and automated vehicles/connected vehicles [AV/CV]), public utility sector (water, wastewater, and electric utilities), and private sector (advanced facilities, data centers, and health care).

- As Security Operations Center Manager for the North American Electric Reliability Corporation/ Critical Infrastructure Protection environment, worked to protect electric grid resources and managed a staff of network and cybersecurity engineers
- Managed network, cybersecurity, and telemedicine programs and staff in healthcare IoT and network cybersecurity and telemedicine at UNM Health
- For the Honolulu Area Rapid Transit light rail system, was cybersecurity lead for implementing a next-generation, account-based fare collection system that introduces secure open architecture, account-based electronic fare payment, and supports interoperability between bus, rail, and paratransit, and integration with partners such as bike share

Rodney Carpenter – Field Installation and Commissioning

Rodney specializes in managing the construction/installation and commissioning of utility projects for federal, state, institutional, and municipal clients, including the Sewerage and Water Board of New Orleans. Early in his career, as a microwave telecommunications facilities repair technician in the military, he gained a strong foundation in electronics and communications and has continued to build his expertise in those areas. His project experience also includes underground utilities and infrastructure, industrial and commercial buildings, central heating and cooling plants, and power generation and distribution.

- More than 30 years of experience managing construction, installation, testing, startup, and commissioning of utility systems and equipment for public- and private-sector clients
- For SWBNO, served as construction manager on multiple power generation and distribution system improvement projects, including system testing and placement into service

- Managed the delivery, installation, integration, commissioning, and demonstration testing of new turbine generator systems and associated auxiliary equipment on two project sites for a Midwest utility client

Srinivasa Samudrala – City Command and Control Center Task Manager

A business and technology leader in Smart Cities, IoT, digital transformation, analytics, cloud, design thinking, user experience (UX), and technology, Srinivasa is proficient in building and running strategy, delivery, and innovation teams in Smart Cities, digital, edge, cloud, IoT, and AI. He has integrated 90+ devices from over 40 different partners into the Zyter Ecosystem, enabling rapid deployment of digital solutions, including smart operations, asset tracking, logistics, wayfinding, and touchless experiences.

- Expertise in architecting, designing, implementing, and deploying anything as a service (XaaS) and enterprise application integration (EAI) systems (front end and back end) for web, mobile, social, digital, and IoT
- Responsible for Zyter SmartSpaces, a cloud-agnostic, end-to-end Smart Spaces solution driven by IoT and analytics, for multiple verticals like Smart Cities, communities, safety and security, logistics, and other functions
- Was responsible for overall architecture, development, delivery, and support of Verizon's Smart Cities Platform for multiple customers and cities across the globe, including working with Verizon and cities to help monetize their Smart Cities implementations

Mehmet Yavuz – Broadband Connectivity Task Manager

Mehmet is the co-founder and CTO at Celona, where he provides the technology vision for the networking platform for enterprise 5G, delivering an end-to-end private 5G solution in CBRS band. With 24 years of experience in the telecommunications industry, he has a proven track record of driving new technology initiatives from concept to commercialization, with numerous Smart City and commercial field deployments. Previously, as VP of Engineering at Qualcomm Corporate R&D, he led many technology initiatives from concept to commercialization, including 5G cellular data networks and network densification with small cells, wireless VoIP services, self-organizing networks, and cellular/Wi-Fi interworking.

- Technology leader in 4G and 5G cellular wireless and IoT technologies specializing in CBRS private networks
- Led technical and field teams across 50+ field deployments of CBRS LTE/5G networks; expertise in field deployment of enhanced cellular features, including MIMO, self-organizing networks, neutral host networks, and IoT use cases
- Led 10+ Smart City and K-12 remote learning deployments, with extensive experience in RF design, coverage and capacity planning, field validation, and performance optimization of CBRS LTE/5G networks

Scott Stokes – Fiber

Scott is skilled in telecommunications network planning, design, permitting, construction, and commissioning fiber optic and wireless telecommunications networks. He has overseen the production of network design, engineering drawings, and construction documents for thousands of miles of fiber-optic plant across the U.S., including service to Smart City installations. In New Orleans, as engineering manager, Scott was responsible for the network upgrade and deployment of new broadband high-speed data service for Cox Cable.

- More than 30 years of experience in engineering, planning, design, and operation of telecommunications networks, including leading teams of technicians, engineers, construction managers, and installation crews
- Program manager for designing and permitting the fiber routes of "FiberCity" networks in five cities to provide 1-GB fiber to the premises (FTTP) service to residential and non-residential buildings and selected Smart City points

- Engineering manager for a Cox Cable fiber network upgrade project spanning the Las Vegas, NV, metro area, with 1,200 fiber route miles, 2,500 fiber junction locations, and 4 new fiber hubs; increased capacity for residential, commercial, and medical data, casino and hotel circuits, school networks, and military-dedicated circuits

Brian White – Radio Frequency Design

Brian has more than 24 years of wireless experience with both indoor and outdoor deployments. His expertise includes client device interoperation, access point backhaul networking, and overall systems integration for deployment orchestration and management system information workflows. He is a Certified Professional Installer (CPI) for CBRS private cellular base station and has broad experience with corporate enterprise, university/K-12, and municipal wired and wireless networking, including municipal agencies, Fortune 500 companies, and regional universities and school districts.

- Provided systems engineering for a wireless LAN indoor/outdoor deployment at the University of Washington, providing ubiquitous indoor and outdoor wireless coverage throughout the university's Seattle campus and satellite campuses
- As Director of Systems Engineering, led a private LTE outdoor deployment on a California university's 250-acre campus to support outdoor learning locations, campus security communications, and potential smart building applications
- For the Seattle Police Department, was consulting systems engineer for a project involving a vehicular communications network for police vehicles to enable operational data to be uploaded when vehicles returned to the station, as well as support camera surveillance in various locations

Laura Glaser, PE, LC, LEED – Streetlights Task Manager

Laura specializes in all aspects of lighting, with a strong background in lighting design and LED technologies. Her expertise includes power distribution for low- and medium-voltage systems, energy-savings analysis, arc-flash analysis, and lightning protection design. She has designed lighting for diverse types of projects and infrastructure, including transportation, industrial, and commercial facilities, and developed citywide lighting standards.

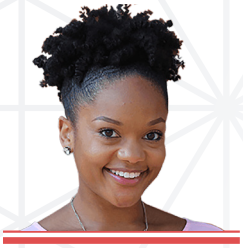
- A Lighting Certified Professional (National Council on Qualifications for the Lighting Professions) with 23 years of experience in lighting design, including project management for Smart City applications
- For the Florida Turnpike Enterprise's SunTrax Autonomous and Connected Vehicles Test Facility in Orlando, led the electrical design for the ITS, LED roadway lighting, and LED landscape lighting designs and evaluated the design of smart LED street lighting
- Project manager and subject matter expert for the City of Peachtree Corners, GA, Smart City IoT solutions project, which consisted of installing cameras, digital displays, access points, and more than 300 parking sensors for a smart parking app that enables motorists to locate available parking spots in the town center

Kris Milster, PE, PTOE – Traffic Management and Mobility Task Manager

Kris has more than a decade of experience in traffic engineering and Smart City related systems, including leading multiple programs and synthesizing national best practices as an ITS/traffic operations engineer with the Federal Highway Administration (FHWA). He is the founder and past chair of the Smart Communities standing committee of the Institute of Transportation Engineers (ITE).

- A Certified Professional Traffic Operations Engineer (PTOE), he led NoTraffic's three most-recent smart mobility installations and has been responsible for planning, designing, and constructing ITS projects, as well as leading advanced deployments of advanced video analytics, connected vehicles, and AI
- While with FHWA, he managed the federal ITS Program in Florida and was involved in more than a dozen innovative ITS projects, ranging from multimodal integration and adaptive system control systems projects to severe-weather detection and parking management systems
- Project manager for landside ITS for Dubai's Al-Maktoum Airport expansion, focused on implementing a communications network, dynamic message signs, microwave detection sensors, lane-control signs, and smart parking, parking management, and ticketing systems

Jessica Burton – Kiosks Task Manager



Jessica manages kiosk implementation project tasks and coordinates with city partners and internal associates for IKE Smart City. She is experienced in cultivating and navigating relationships with City officials and departments, business improvement districts, destination marketing organizations, and other stakeholders to implement kiosk networks customized to meet each city's objectives.

- Experienced leader of IKE kiosk project implementation across several cities, driving the process from site selection to installation, content management, and maintenance
- For the City of Berkeley, CA, has worked with stakeholders to install up to 30 kiosks in optimal locations for maximum public use, and serves as day-to-day client contact to maintain the IKE Smart City content management system (CMS) and coordinate community messaging and art content on the kiosks
- Worked closely with City of Cleveland stakeholders, including the Planning Commission and Mayor's office, to manage an upgraded kiosk network, working with the Downtown Cleveland Alliance, Destination Cleveland, and others to curate local content

Joe Ball – Water Task Manager

Joe is Jacobs' solution architect and technology subject matter expert for smart water metering solutions for municipal government entities. An advanced metering infrastructure (AMI) expert and project manager with 21 years of experience, he has worked with water utilities across the U.S. and internationally to design and deploy technology to improve operational efficiency, reduce water loss, and reduce costs. He currently manages the Sewerage and Water Board of New Orleans' (SWBNO's) project to evaluate, procure, and implement an AMI solution.

- Partners with utility personnel to select the right technology solutions through feasibility studies, cost-benefit analysis, procurement, vendor evaluation, and negotiations
- Member of the Jacobs AMI team providing tender specification, tender proposal evaluation, and program management for the Singapore Public Utilities Board's 300,000-meter AMI demonstration project, including developing an AMI system operations training program for utility staff
- Led the replacement of water meters and meter interface units (MIUs), installation of AMI network infrastructure, installation of leak sensors, and O&M of the City of Lancaster, PA's AMI network. The City estimated it would save $200,000 per year on reduced water loss alone

Jalendra Sannashetty – O&M Task Manager

Jalendra is skilled in leading information technology networks and related systems to develop and maintain high-performing operations and organizations. He has more than 20 years of experience managing technology solutions, including system implementation, asset management, and systems integration. He specializes in bringing diverse teams together to accomplish project goals on time and within budget on multimillion-dollar technology solutions projects and programs, increasing organizational efficiency and productivity. Jalendra promotes cross-organizational teamwork and has built a reputation for efficiency, organizational stability, and, high-quality service.

- Diligently coordinates and works with agencies and stakeholders regarding hardware and software operations, upgrades, and replacement to ensure a high level of system availability and reliability
- Served as Program Director for IoT and Smart City and smart mobility programs, including smart campus, parking, security, transit, stadium, construction, and factory applications
- Responsible for project management and strategic and tactical implementation of a 24/7/365 network operations center (NOC) command center

Joy Swenson – Training Program/ Knowledge Transfer Task Manager

Joy has managed major process improvement projects, strategic planning efforts, and community outreach programs for public agencies, government entities, and utility service providers, including current capacity-building work for SWBNO. On many smart technology deployment efforts, she has assured that the programs are designed with users in mind so that people are able and willing to learn and adopt new solutions with minimal resistance.

- 30 years of international experience designing and implementing initiatives to increase employee and operational performance, cross-functional collaboration, and innovation
- Is an adept facilitator and trainer of employee groups who has developed instructional materials for implementing improvements in operations and procedures, with recent work developing strategies for utilities to transform their business operations through the use of smart technologies
- In New Orleans, leads the AMI deployment program team's organizational transformation and customer engagement activities, ensuring that the SWBNO achieves the full benefit of its technology investment, including implementing a staff capacity-building plan to optimize the City's use of the AMI capabilities

Demonstrated Capacity and Experience to Provide End-to-End Solutions and Future Proofing

As pioneers in fiber optic and 5G networks, predictive analytics, cybersecurity, IoT, automation, artificial intelligence, integrative solutions, and smart technology funding and monetization—our team provides end-to-end services that will enable the City to meet today's challenges, while nimbly adapting to the ever-changing landscape of technological innovation and disruption. Our holistic services provide for a technically sound solution that fully integrates and interconnects hardware and software, is interoperable across multiple platforms, prioritizes privacy and data security, and will be future proof and future ready for reliable, resilient, and sustainable operations—even as technology continues to evolve and new applications are integrated into the initial system.

Exhibit 4-4 illustrates the breadth of our team's experience to perform the wired, wireless, and Smart City tasks as specified in the RFP. Not only do we bring the best practices and lessons learned from these global installations to the City of New Orleans, but we bring a unique combination of capabilities all within one consortium for immediate and long-term performance success.

Leveraging global best practices and local expertise, we'll partner with you to deliver flexible, adaptable, and scalable smart technology solutions and create a new paradigm for how to achieve, operate, and evolve a successful Smart City.

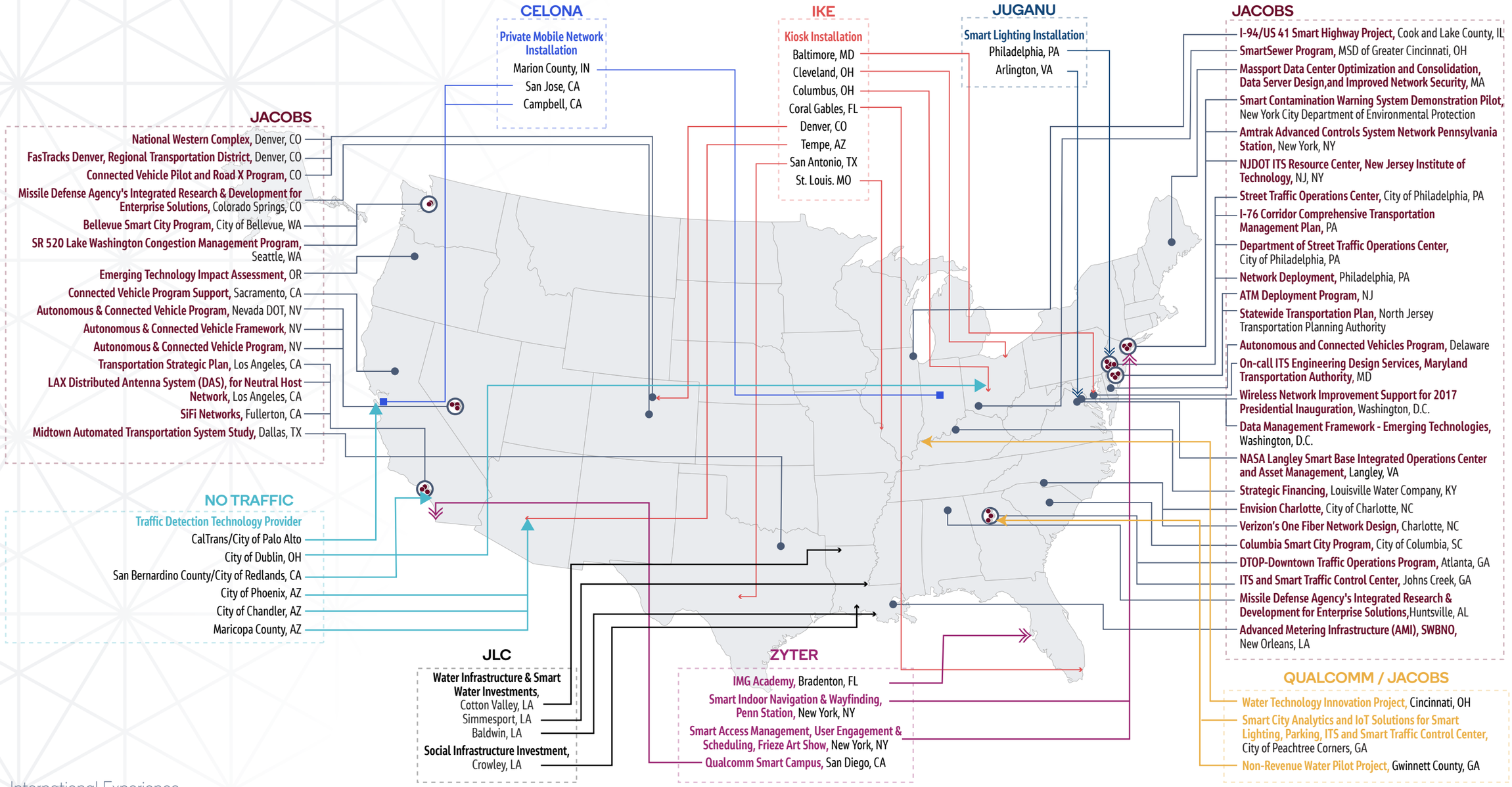
Unparalleled Insight into the City Offers No Learning Curve and Ability to Hit the Ground Running

The Smart+Connected NOLA team brings more than three decades of success working in partnership with the City and local Disadvantaged Business Enterprise (DBE) firms to improve our built and natural infrastructure—facilitating a faster, better, and more efficient implementation of a connected, secure, and sustainable Smart City. We know how to work with the City to secure timely decisions and necessary infrastructure permits, and how to gain support of stakeholders to make this program a success because our team members have done it before (Exhibit 4-5). Proposed Program Manager Kevin Ferguson is a former project manager for the City of New Orleans Capital Projects Administration and proposed Senior Advisor Mark Jernigan is a former Director of Public Works for the City of New Orleans.

Our team's combined experience offers the following valuable insight that no other team can offer:

- Unique understanding of the City's efforts to implement a city-wide network by virtue of being **actively involved in development of the 2015 Broadband Master Plan for the City of New Orleans** and the City's selection of Foresight Group to complete the high-level (conceptual) design for the City's institutional fiber network.
- Direct expertise in the permitting and construction requirements for the installation of fiber, kiosks, cellular towers, and other infrastructure in the public right of way **acquired from developing the sections in the City's municipal code that currently describe the permitting process requirements and standards** and creating the user's guide for the issuance of permits for work in the City's right of way.
- Hands-on experience in managing the operation and maintenance of the City's streetlight system and **planning, implementing, and overseeing the City's LED streetlight conversion program** in 2013-2014, that successfully converted over 40,000 streetlights to LEDs, saving the City more than 40% in energy costs.
- First-hand knowledge of the City's existing traffic management infrastructure, traffic demands and associated challenges, Complete Streets Program, and potential opportunities for Smart City innovations learned from being responsible for **oversight of the operation and maintenance and capital improvements to the City's traffic management system and street network.**
- Intimate perspective on potential opportunities for Smart City improvements to stormwater management and resilience for the City gained through primary **oversight of the City's minor drainage system,** to include its operation, maintenance, repair, rehabilitation, and capital improvements.

EXHIBIT 4-4. *Global Expertise Brings Best Practices and Innovative Ideas for New Orleans*



International Experience

JUGANU
Smart Lighting Installation
- **Benito Juarez Municipality,** Mexico
- **Ma'alot Tarshiha Municipality,** Israel
- **City of Or Yehuda,** Israel
- **Friendship Bridge,** Paraguay-Brazil
- **Municipality of Kalamata,** Greece
- **Lighting Management System,** Villa Nueva, Guatemala

JACOBS
- **Autonomous and Connected Vehicle Program Support,** Scotland
- **SPaTS Framework - Next Gen Smart Motorways,** United Kingdom
- **Vehicle Informed Asset Management,** United Kingdom
- **Planning - EV Charging,** London, UK
- **Impacts of Autonomous and Connected Vehicles on Congestion,** United Kingdom
- **Manchester Managed Motorways Innovative Corridor Improvements,** Manchester, UK
- **Philips CityTouch Streetlight Management System Lighting Installation,** Cardiff, Wales
- **East Sussex Highways ITS Upgrades and Systemwide Asset Management, Improvement, and O&M Services,** UK
- **Cheshire East Highways ITS Upgrades and Systemwide Asset Management, Improvement, and O&M Services, SCADA Pilot Project,** CUC, Saipan
- **Smart Mobility Autonomous and Connected Vehicles Roadmapping,** Riyadh, Saudi Arabia
- **Silicon Oasis,** Dubai, United Arab Emirates
- **Masdar City Infrastructure Program,** United Arab Emirates

ZYTER
- **Mobile-Based User Experience, Hyde Park Winter Wonderland,** London
- **End-to-End Fan Engagements and Smart Applications, Solheim Cup,** Perthshire, Scotland
- **Smart Campus, SonKim Land, HCMC,** Vietnam
- **Smart Energy Management, Uttar Pradesh Power Corporation Limited,** India

137_NWOSC_3

» Demonstrated proficiency in successfully planning and delivering capital projects and programs from the City perspective, with an **inside view of the City's systems and expectations for managing projects** and the ability to apply the lessons learned from this experience to support delivery of this program.

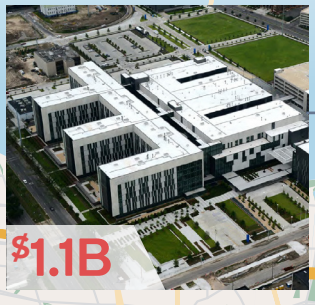
» Unparalleled understanding and knowledge of both our team's world-class knowledge, technical expertise, and experience (private sector) and the **City's values and culture** (public sector) and the ability to leverage our combined strengths and resources, bringing the best of both worlds to bear to successfully delivery this program.

EXHIBIT 4-5. *Jacobs track record of success in New Orleans and Louisiana*

Proven Capabilities to Deliver Large Program and Mega Projects in New Orleans and Louisiana

We will leverage our local knowledge and local staff experience of successfully delivering iconic, first-of-a-kind, as well as large, complex programs and projects, in New Orleans and throughout Louisiana to secure timely decisions, necessary infrastructure permits, and support of stakeholders to make this program a success.

Other large complex projects in Louisiana:
CPRA Sediment Diversion Program: $2B
and Baton Rouge SSO Program: $1.6B
both in Baton Rouge



University Medical Center for State of Louisiana
Division of Administration
$1.1B

Recovery School District
federally funded vertical building Project

$2.2B

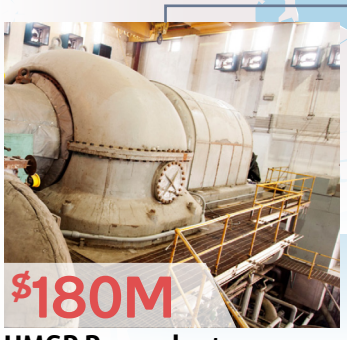
Master Planning
at Louis Armstrong International Airport

100+ wireless Macro sites throughout Louisiana for Sprint (now T-Mobile)

100+ small cell sites throughout Louisiana for Mobilitie

$700M

Katrina/Rita Hurricane Reconstruction Program
for Louisiana Army National Guard



$180M

HMGP Powerplant Retrofit Program
federally funded complex power program

$72M

Katrina Related Water Resources Program
federally funded complex power program

>$45M

Advanced Metering Infrastructure (AMI) Program
strategic implementation of smart meters to SWBNO's water system

$40M

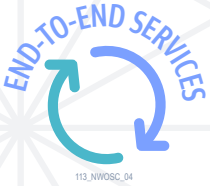
Power Modernization
design and installation of modern industrial generation and power frequency conversion for SWBNO

Jacobs has **successfully delivered more than $2.5 billion** of **infrastructure in New Orleans** over the past decade.

101_NWOSC_6

As described in Tab 1, Consultant's Profile and Submittal Letter, the firms that make up our team bring highly experienced personnel, technology expertise and know-how, history with the City, and a spirit of commitment to the New Orleans community. Most importantly, every member of our team has delivered local and global solutions aligned with the RFP, as featured in rest of this section and highlighted in Tab 1.

Featured Project Descriptions



The project descriptions included in this section showcase our team's expertise in all aspects of your priority initiatives—Broadband Connectivity; Smart City Applications, including Streetlights, Water, Traffic Management and Mobility, and Kiosks; Operations and Maintenance; and Training Program/Knowledge Transfer, as well as overall Program Management, City Command and Control Center, and public-private partnership delivery. The projects listed below immediately follow with references for each project provided in Tab 8, References.

1. Smart City Internet of Things (IoT) Solutions, City of Peachtree Corners, GA (Qualcomm/Jacobs)
2. Non-Revenue Water Pilot Project, Gwinnett County, GA (Qualcomm/Jacobs)
3. Orleans Parish Schools Rebuilding Infrastructure Program, Recovery School District, New Orleans, LA (Jacobs)
4. Various Infrastructure Programs/Projects, Sewerage and Water Board of New Orleans (SWBNO), New Orleans, LA (Jacobs)
5. Los Angeles International Airport (LAX) Four-Carrier Distributed Antenna System for Airport-Wide Neutral Host Network, Wireless Carriers, Los Angeles, CA (Jacobs)
6. LinkNYC, New York City, NY (Qualcomm)
7. Penn Station Smart Wayfinding and Smart Campus Solutions, New York City, NY (Zyter)
8. Qualcomm Smart Campus, San Francisco, CA (Zyter)
9. Private Mobile Network, Marion County Public Schools, Indianapolis, IN (Celona)
10. Lighting and Public Safety Improvements, Illumex, Benito Juarez, Mexico (Juganu)
11. Traffic Detection Sensor and Traffic App Installation, City of Chandler, AZ (NoTraffic)
12. Citywide Smart Kiosk Deployment, City of Cleveland, OH (IKE)
13. LaGuardia Central Terminal B Redevelopment, Port Authority of New York & New Jersey, New York City, NY (JLC)

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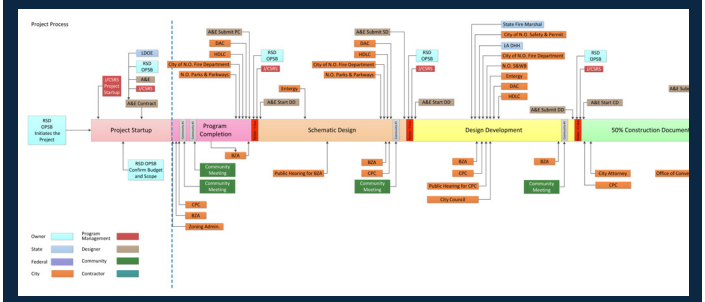
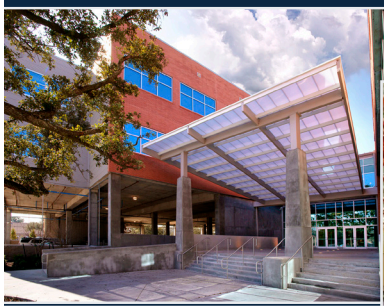
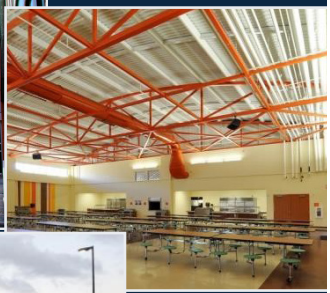
We Bring a **Thorough Understanding** of the Multiple Agencies Involved in Permit Review in **New Orleans**

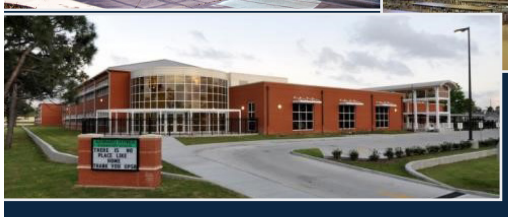
As the complex infrastructure program for the Recovery School District in New Orleans began to ramp up and the project output reached an average of two projects per month, it became apparent that we needed to really understand how all of the authorities having jurisdiction (AHJs) exercised their oversight when it came to the individual projects. To continue the rapid pace of project delivery, we met with every AHJ to discuss how reviews and approvals could be expedited as much as possible to meet the goals set by the Louisiana Department of Education and Orleans Parish School Board.

Our design management team set meetings with AHJs including Safety & Permits, DPW, DPP, DAC, CPC, BZA, HDLC, VCC, Entergy, SWBNO, SFM, and DHH to solicit their input on how we could work together to move these projects along as quickly as possible. After spending a few weeks meeting and gathering the information, our team developed a project flow chart that identified every touchpoint by every agency during the life of a project from conception through final completion.









Smart City Internet of Things (IoT) Solutions | City of Peachtree Corners, Georgia

Why This Project?

This project demonstrates Qualcomm's and Jacobs' past and current success in collaborating to provide Smart City program services similar to those required by the City of New Orleans.

Relevance to the City

- Since 2017, we have worked with City of Peachtree Corners on various Smart City elements, including smart lighting, smart parking applications, Wi-Fi connectivity, traffic signal installation and maintenance, and a city command and control center
- In 2019, we developed a Smart City app for citizens to access city services
- Most recently, in 2021, we are implementing a commercial cellular vehicle to everything (CV2X) radio communication system with connectivity among sensors, traffic signals, pedestrian crosswalks, and connected vehicles to provide a safer travel experience
- Jacobs' smart lighting design enables the City to monitor and control new LED lighting, increasing safety and providing cost savings

Description

The newly formed City of Peachtree Corners wished to enhance resident and customer experiences and increase safety with state-of-the-art Smart City technologies. To do so, the municipality needed to identify all assets located in rights of way; however, because its data was outdated, it needed a fast, accurate, and economical tool for asset inventory and analysis.

"…We selected Jacobs Engineering for these smart city and transportation projects, as they brought a level of experience through internal team members, and external partners to provide world class technology and integration skills that were unmatched in other proposals… Jacobs was chosen because they brought a holistic approach to the problem we were facing… We have been very pleased with the experience and ability of Jacobs to perform these integrations of new technology, that have helped solve real issues for our community, and we look forward to continuing our relationship with Jacobs into the future."

—Brandon Branham, Assistant City Manager, City of Peachtree Corners

Smart City scope elements include:

- LED lighting: 15 LED lighting nodes
- Parking: 251 IntelliSite Smart Parking sensors
- Cameras: 7 security cameras
- Digital signage: 7 digital displays
- Internet gateway/WiFi: 7 access points
- Command and control center analytics platform
- Smart asset management: more than 35,000 assets captured through a comprehensive geospatial inventory and cataloging program, more than doubling the inventory of the previous database and enabling efficient tracking and management of built assets, enhanced planning, and improved public safety

Solutions

Jacobs applied photo imaging and surveying technology to measure distance by illuminating a target with a laser light (LiDAR) to compile a comprehensive asset catalog, helping the City refine and focus its management strategy. Although this technology was used to produce aerial views for years, no jurisdiction in Georgia had used it from the ground level.

We are serving as the program manager for a proof-of-concept project for Smart City solutions, such as parking (251 parking sensors), cameras, digital signage systems, internet access (Wi-Fi gateways), and a command and control center analytics platform.

Curiosity Lab at Peachtree Corners is a first-of-its-kind, publicly funded, living laboratory providing a real-world test environment to advance next-generation intelligent mobility and Smart City technology. It includes a Smart Mobility Dashboard integrating CV2X connectivity, dedicated short-range communications (DSRC) technology, video surveillance, Smart LED Lighting, advanced traffic analytics, and automation supporting the City's innovative and autonomous shuttle service, Ollie. The Curiosity Lab is North America's first real-world testing environment available free of charge.

Our team is also working with Peachtree Corners to develop a smart citizen mobile application centralizing resident access to all city-related actions and services—as opposed to a different application for every function. This app includes parking, weather, emergency contacts, news, dining and entertainment, transit info, and issue-reporting modules. This was first Smart City app developed to provide Smart City services to its citizens, **and we will leverage this experience for the City of New Orleans.**

Results

Thanks to the innovative, relatively new asset cataloging process, the City is capturing assets and using the technology to design road projects, sidewalk projects, and create asset replacement schedules. Residents can use the data via GIS to view street-level imagery and see where municipality assets are relative to their property.

Jacobs' smart lighting design enables the City to monitor and control new LED lighting, **increasing safety and providing cost savings.** The technology's smart parking sensors allows drivers seeking parking to know the number of available spaces in the parking garage and on the surface streets at Town Center. Wi-Fi connectivity enables the City to monitor the lighting and parking technology and provides public Wi-Fi to the community. The Wi-Fi landing page offers a calendar of city events, a listing of local eateries, information on things to do, and regularly updated information about safety during road closures/ weather events.

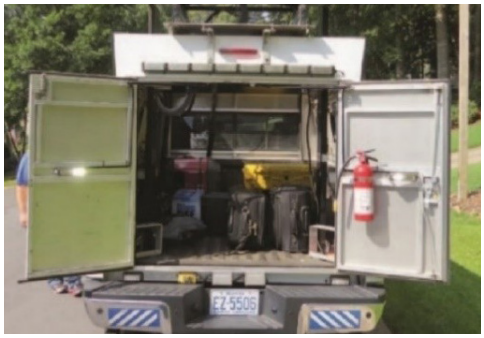
The CV2X system increases pedestrian and vehicular safety, contributing to the city's Vision Zero goal of zero accidents. It connects sensors, traffic signals, pedestrian crosswalks, and connected vehicles to provide a safer travel experience through the corridor. Deploying CV2X infrastructure in the Curiosity Lab corridor helps evaluate connected and autonomous mobility (CAM), develops industry partnerships, and improves shared understanding of the requirements, costs, and challenges to deploying such infrastructure, informing planning for at-scale roll-out.

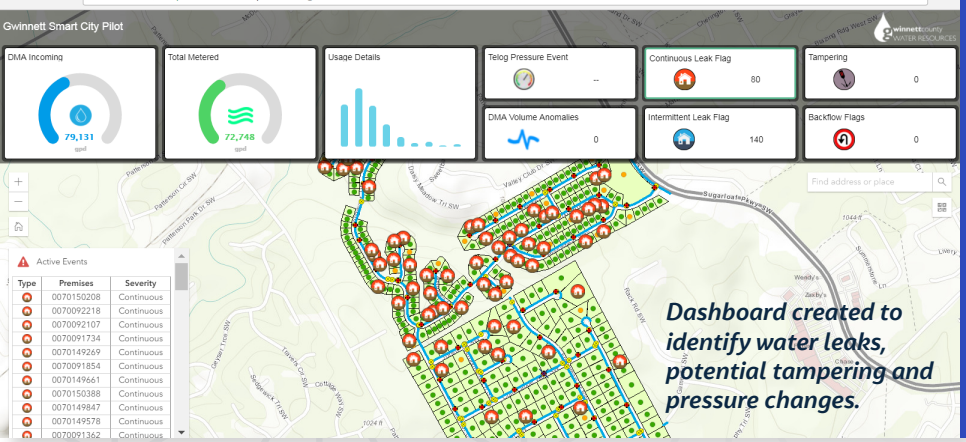
Awards

In 2019, the City received a **Smart 50 Award** in the "Mobility" category by Smart Cities Connect, which recognizes communities that are **developing and adopting smart technology solutions** to enhance their communities and better serve their citizens.

Also in 2019, the City was recognized for its redevelopment efforts, receiving the **Metro Atlanta Redevelopment Summit (MARS) Award** for **Curiosity Lab** at Peachtree Corners. The award recognizes outstanding redevelopment efforts in the region.

The American Council of Engineering Companies recognized Jacobs and the City of Peachtree Corners with a **2017 National Recognition Award** for our partnership's innovative application **of advanced technology for infrastructure and asset management.**





Non-Revenue Water Pilot Project | Gwinnett County, Georgia

Why This Project?

This project demonstrates the success of the Qualcomm/Jacobs partnership in providing smart infrastructure in a way that benefits the community and city agencies and solves serious issues while saving the municipality and its customers money.

Relevance to the City

- Performed by Qualcomm/Jacobs partnership where we provided engineering communication technology and implementation services for this Smart Water pilot innovation project, using cellular communications to transfer data from the field
- Identified and funded a water-related Internet of Things (IoT) project using cellular communications for data transfer from the field
- Integrated advanced metering infrastructure (AMI), pressure sensors, and external weather data to provide insight into causes of non-revenue water and to forecast demand
- Developed business intelligence architecture for the pilot project that collected the data, processed it using big data analytics, and provided visualization tools (e.g., dashboard, graphs)

Description

Gwinnett County is working on methods to control non-revenue water—a worldwide problem resulting from leaks, water theft, inaccurate meters, and other causes. The goal is to reduce non-revenue water in the county, controlling costs for the water utility and its customers while protecting scarce water resources.

The project revolves around integrating the county's GIS web mapping of water customer locations, historical usage, and real-time water meter sensor feeds as a foundation for a custom dashboard where county staff can readily assess the balance between water delivery and consumption across the pilot area.

Efforts focused on identifying and reducing non-revenue water delivery to reduce the utility's cost, improve water resources management, improve system operations, and provide cost savings for the customer. The study isolated a district metering area (DMA) comprising 506 residential meters and used state-of-the-art technology, including AT&T LTE cellular certified devices and Qualcomm's chipsets and ultrasonic meters. It also included installing hydrant pressure sensors in the study area.

Solution

Jacobs and Qualcomm provided engineering communication technology and implementation services for this Smart Water pilot innovation project in Gwinnett County, using cellular communications to transfer data from the field. The joint team developed the pilot project, integrating AMI, pressure sensors, and external weather data to provide insight into the area's main causes of non-resource water and, potentially, to forecast demand. The systems note incidences of pressure changes, backflow, and meter tampering to assess and quickly respond to water loss or theft. Equipment installations started in July 2017, with the pilot project completed in July 2018.

The project team then developed business intelligence architecture for the pilot project, collecting the data, providing big data analytical processing, and developing visualization tools (e.g., dashboard, trending graphs) to help translate the information for easy comprehension and response by the utility. The U.S. EPA and the project team also conducted a workshop with the Gwinnett County Department of Water Resources (GCDWR) staff to discuss response protocols for backflow and meter tampering incidents. The workshop results contribute to national guidance for the industry.

The dashboard Jacobs developed enables GCDWR to note trends and identify anomalies in water use or pressure. GCDWR can then use this information to communicate with customers regarding identified water leaks, in turn enabling customers to reduce their water cost by corrective action related to broken pipes in vacant homes or irrigation head, faucet, or appliance leaks.

The custom dashboard and web mapping enable users to view interactive, time-series graphs, ranking and identifying top water consumers and summarizing their own usage patterns. In addition, through the real-time monitoring system, the dashboard provides alerts for system leaks, pressure fluctuations, meter tampering, and backflow locations.

This was first innovation project identifying leaks in the water distribution systems. Qualcomm provided the latest communication technology to transmit data from IoT sensors to the visualization tools for performing details analysis to identify areas of water leakage.

Results and Benefits

The pilot project demonstrated that using AMI can provide a positive impact on the community through early detection of leaks on the customers' side of the meter; this demonstrates the utility's good-faith commitment to help customers reduce their water bills. Additionally, integrating AMI meters with sensors measuring pressure and temperature provides the GCDWR team valuable insights into overall system operations and integrity. The resulting data has been useful to the County in determining the root cause of non-revenue water use and taking action to correct it.

U.S. EPA uses the study results to evaluate the system's applicability to overall water security and resiliency.

> "Jacobs is a trusted and long-term partner, and I would recommend them for the City of New Orleans Smart City Program. They proactively brought an innovative, 'smart' solution, including funding, to evaluate non-revenue water in a pilot area. For this first-of-its-kind project by a utility, we collaborated with Jacobs to integrate AMI with other data streams to identify and reduce water loss. What was really useful to me was the customized dashboard Jacobs developed. This interactive dashboard processes data analytics and displays information in an easy-to-understand way, which improves communication with our citizens as well as county leadership. We were able to quickly identify potential leaks and work closely with our Field Operations Division, Customer Service staff, and the customers themselves to address them."
>
> *—Steve Seachrist, PE, Project Manager, Gwinnett County Department of Water Resources*

Orleans Parish Schools Rebuilding Infrastructure Program | Recovery School District, New Orleans, Louisiana

Why This Project?

The Recovery School District Program demonstrates how deeply connected Jacobs is within the New Orleans communities, as trusted, caring project leaders. It also demonstrates our ability to work closely with the relevant agencies having jurisdiction over project elements for the Smart City project and our deep, relevant knowledge of City processes.

Relevance to the City

- Led by proposed Program Manager Kevin Ferguson, who is committed to providing the same leadership on this Smart City program; Kevin is committed to and passionate about making a difference on the landscape of the city he loves
- Providing expert project management/construction management delivery for a $2.2-billion, complex infrastructure program similar to that required for this project, here in New Orleans
- Coordinating directly with the City's Department of Public Works, Parks and Parkways, and Sewage and Water Board of New Orleans (SWBNO), bringing that experience and relationships to bear for this project
- Providing master planning support services, design management, construction management, project controls, community outreach, field inspection services, and claims and litigation support
- Providing detailed community outreach through DBE partner Bright Moments—well-known and trusted by the City and all the communities

Description

Jacobs, in a joint venture partnership, has provided facilities condition assessment and program/construction management services for the post-Katrina rebuilding of the Orleans Parish School System since 2007. Our scope of services for this $2.2-billion infrastructure program in the City of New Orleans includes master program and project budgeting and scheduling, design management, grants management, scope validation, construction management, project controls and reporting, closeout, and post construction management. Our project management/construction management services, relationships with relevant agencies and communities in the City, and robust, thorough community outreach are most relevant to this Smart City program's needs.

Solutions

An important element of our ability to complete this work was intensive, proactive communication and collaboration with the various agencies having jurisdiction within the City, including Public Works, Parks and Parkways, and SWBNO. To maintain project progression, we worked directly with these agencies, notifying them of every project before it entered the pipeline. We collaborated with them to make sure all elements were approved and permitted in plenty of time to maintain the schedule. This approach enabled us to move quickly and accomplish project objectives without delays in reviews and approvals. It also helped us build strong relationships with the agencies—a strong benefit to you in making sure we have similar agency review and schedule success on your Smart City program.

We advanced our partnership with the community under this contract by continuing to develop mentor-protégé agreements between local large and small businesses, including proposed teaming partner Bright Moments. Our team implemented practical educational workshops with local small and disadvantaged businesses to facilitate growth and increased participation in the program.

Our personnel diligently applied lessons learned to provide a smooth transition from construction completion to school openings by creating pre-opening protocols. We proactively established communication protocols with charter operators for refurbishment projects in active schools.

Because each neighborhood has its own leadership, communication style, and personalities, we engaged Bright Moments, a community partner familiar with all neighborhood interactions, to help navigate communication. Deeply rooted and well-respected in the community, Bright Moments knows community leaders, activists, and government. We intend to bring them on for this Smart City project as well, with similar goals and methods to connect with and engage the community in completing this major project.

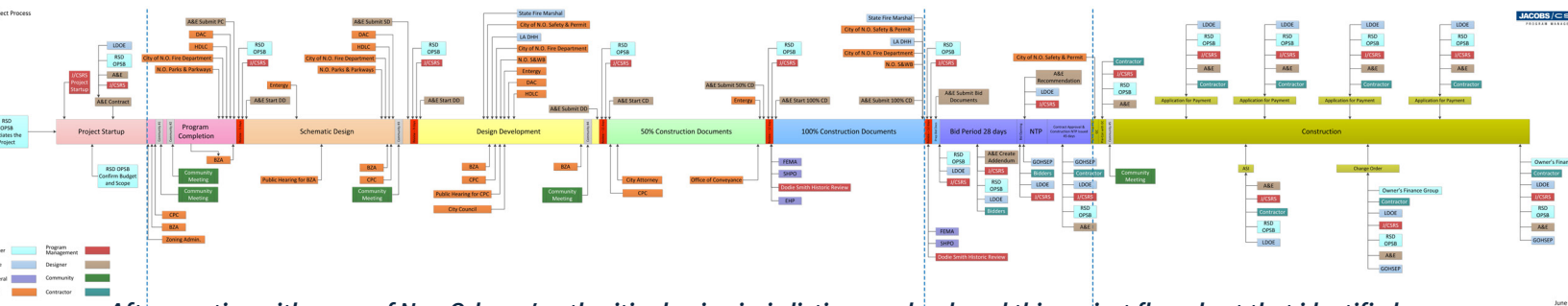
In fact, our community outreach is a key component of this contract—in part mandated by FEMA through its grant process—and in large part because of our commitment to keep communities aware of project progress. We introduce each project to the neighborhood, informing them of activities and how they will be affected. Another meeting introduces the contractor to the community. The team provides a hotline for community members or stakeholders to report any issues or concerns directly to the project team, helping mitigate complaints or calls to City Hall. Together, the meetings and hotline keep concerns going straight to us and the contractor, where we catalog the complaints, isolate the area, and mitigate quickly, before the issue escalates.

Early on, Kevin attended all community meetings to help the community members connect a face to the program leadership team. He spoke at the meetings and often shared in delivering presentations. Kevin's community relations director, Larry Jordan, coordinated with Bright Moments to develop the community relations program, while Kevin supported the program and gave a face to the project leadership, helping develop a strong connection with the community. This is another vital element benefitting your Smart Cities program. Knowing the communities already trust and can relate to Kevin provides for continued relationship building, ultimately leading to stronger community support and engagement around the program and how it will benefit the City overall.

Results

"The on-site Jacobs staff and executive leadership responsible for the RSD program have consistently met our expectations and those of RSD's extensive network of community stakeholders. The positive relationships we've established with the Jacobs team, and the quality work they continue to deliver are critical to the success of our program."

– Annie Cambria, Chief Operating Officer, RSD Education Facilities Development



After meeting with many of New Orleans' authorities having jurisdiction, we developed this project flow chart that identified every touchpoint by agency during the life of the project.

Various Infrastructure Programs/Projects | Sewerage and Water Board of New Orleans (SWBNO), New Orleans, LA

Why This Project?

Like the Smart City project, this program to install critical infrastructure in the City of New Orleans requires close coordination with multiple stakeholders and agencies—demonstrating we know how to operate in and succeed in this ecosystem. In addition, our advanced metering infrastructure (AMI) project for SWBNO is the largest Smart City project undertaken in the City to date. Because we're already doing the kind of work required under this contract, our team is most qualified to identify synergies between SWBNO AMI and the Smart City project to harness significant value and gain from applying lessons learned.

Relevance to the City

- Understanding the drivers and success factors of delivering in New Orleans through key programs like the AMI project and SWBNO power system master planning and power modernization
- Demonstrating capability with installations similar to underground fiber under the power plant retrofit program by assessing and installing miles of underground conduit for feeders
- Demonstrating our deep history with, connections to, and understanding of New Orleans communities and needs thanks to our more than 30 years of work with SWBNO; we are committed to your success

Description

Jacobs has supported SWBNO and City of New Orleans for more than 30 years, including numerous relevant aspects such as AMI and power system improvements and modernization. Our strong working relationship with SWBNO, and others—a relationship built over decades—is prevalent through these multiple iconic projects, reinforcing our ability to work with SWBNO during your project to coordinate any elements affecting their systems or requiring their review or input. This wide range of projects also helped connect us with the City itself—including your drainage system and its impact on the communities and neighborhoods SWBNO serves.

Scope

Some of our most relevant work with SWBNO is detailed below.

AMI

Our team is supporting SWBNO on a major smart technology project to provide AMI capabilities. The project entails financing option identification, large-scale asset survey, strategy development, vendor selection and procurement support, and technology and architecture recommendations now in the first phase of development. The technology implemented in this project is anticipated to have significant synergy with the solution offered for your Smart City project and can be leveraged to add value to both the City and SWBNO.

The processes of strategizing, developing, performing community outreach, and installing this infrastructure has a strong parallel to the Smart City program—we have been competitively selected to perform this and are already underway with delivery in New Orleans.

Power Master Plan Study

Jacobs developed and evaluated alternatives for power generation and distribution system improvements supporting the water, sewer, and drainage systems powered by the Carrollton Power Plant. The original, highly complex power distribution system extends to numerous pumping stations throughout the City. The study identified the optimal strategy to improve long-term reliability, resiliency, efficiency, and sustainability of electric power to these systems. The developed alternatives identified millions of dollars in annual operating expense savings for SWBNO. Having this strong plan in hand, with quantified financial and reliability benefits, the City and SWBNO successfully secured millions of dollars in funding. A third of the modern power assets identified in the master plan are already in construction, within a year of completing this plan. This shows we understand how to develop a strong plan leading directly to implementation and improvement for the City of New Orleans.

Emergency Response Program

Significant outages in the SWBNO stormwater drainage system due to August 5, 2017, flooding highlighted key vulnerabilities requiring immediate action. Of the 120 drainage pumps within the system, 18 were out of service, ranging from the largest drainage pump sizes to smaller, constant-duty pumps. Within four days, we helped augment the SWBNO team with industry experts and local small and disadvantaged business firms, providing more than 20 additional resources focused on mitigation.

Our flood modeling experts immediately used hydraulic HEC-RAS and EPA Stormwater Management Model (SWMM) models previously developed by SWBNO and the City's consultant to support key decision making while the drainage system was not at full operational capacity. These modeling activities helped answer a series of what-if questions enabling SWBNO and City leaders to respond to this flooding event and perform a consequence assessment to improve future response to flood emergencies and flood damage assessments.

Specifically, delivering this work has created an unparalleled understanding of the city's drainage system and needs, better than anyone else outside of SWBNO. This benefits the City by staying apprised of what we're working with as we undertake this complex installation effort that interfaces with SWBNO assets; we deeply understand the value added by implementing the Smart City solution.

Retrofit Power Plant Hazard Mitigation Grant Project (HMGP)

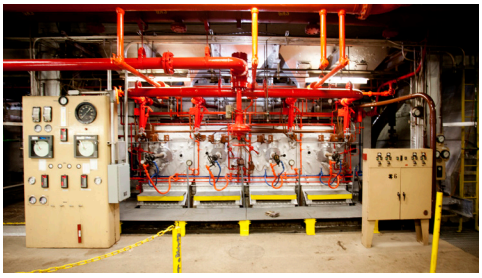
This major effort involves several interrelated projects to improve the Carrollton Water Plant's power plant. Our scope has included procuring and installing new 60-Hz switchgear and transformer equipment to expand the interconnection to Turbine 6, supporting additional system loads. Other projects include installing a large network of 60 Hz underground distribution feeders and emergency fuel storage tanks and refurbishing the Oak Street Pump Station.

Jacobs provided program management and select design services and is providing services during construction. The total installed program cost is estimated in excess of $180 million. Overall, it demonstrates our capability to manage a major, complex project with multiple, concurrent tasks and numerous moving parts to control, just like the Smart City program.

Results

The full implications of our work with SWBNO mean we understand delivering in the City of New Orleans to support smooth, thorough, thoughtful work on the Smart City project, including:

- Thorough understanding of working with the City and various federal, state, and municipal authorities who will be involved in the Smart City project
- Deep, unmatched knowledge of critical underground systems and utility assets, which will require key interface management as we work on this project
- Directly demonstrated ability to perform the work required under your contract, developing and implementing your Smart City program and infrastructure



Los Angeles International Airport (LAX) Four-Carrier Distributed Antenna System for Airport-Wide Neutral Host Network

| Wireless Carriers, Los Angeles, California

Why This Project?

This project involves one of the largest deployments of a Neutral Host Distributed Antenna System (DAS) in the country. Experience deploying neutral host technologies is important for the connectivity solutions we provide the City of New Orleans.

Relevance to the City

- Comprises components similar to this project
  - **Broad scale design and implementation of cellular coverage**
  - **Coordination and integration among multiple carriers and providers**
  - **Permit management and environmental planning**
  - **Fiber optic and wireless communications implementation (4G, 5G, and Wi-Fi)**
  - **Neutral host network**
- Implements a transformational initiative to provide cutting-edge cellular coverage across all nine terminals and 128 gates at LAX
- Provides future-proofing for 5G, including developing systems to seamlessly convert to 5G coverage with minimal equipment modifications, while keeping in mind future opportunities for expansion and managing/reviewing confirming equipment enables 5G coverage to extend across airport terminals and that the numerous remote radios are interconnected to head-end rooms.
- Serving as program manager responsible for overall management and implementation of program

Description

This transformational initiative is providing cutting-edge cellular coverage across all nine terminals and 128 gates at LAX. It requires partnership among the four major U.S. wireless carriers (Verizon, AT&T, T-Mobile, and Sprint) for successful installation of the wireless communications network throughout the airport. The new, four-carrier DAS installation may also be used by Los Angeles World Airports (LAWA) and the City of Los Angeles for certain public safety, emergency management, and airport operational purposes. The DAS and subsequent improvement to cellular services are estimated to generate nearly $2 million in annual licensing fees and $200,000 in revenue from rent, with an annual increase estimated at 3 percent.

Solutions

Jacobs is providing overall management and implementation of the program, including the following elements relevant to the City of New Orleans Smart City program.

Program Management/Integration

As program manager, Jacobs coordinates the design initiatives and requirements between the four wireless carriers and combining these requirements into one complete design. Jacobs is the sole point of contact between the wireless carriers and LAWA. We also currently manage the progress of multiple individual contractors (e.g., radio frequency [RF] designer, original equipment manufacturer, architect-engineer, installer/general contractor, and integrator), confirming their adherence to airport policies and construction standards. Once the individual phases near completion, Jacobs will oversee the testing and integration of the individual network components to meet the minimum coverage requirements set forth by LAWA.

Our team directly employs RF engineers to provide individual reviews, balancing the design and coordinating with each of the wireless carriers to meet their specific RF design objectives and standards. We also coordinate with multiple, large capital improvement airport projects to ensure installation of new equipment does not disrupt ongoing operations and that the new equipment is properly phased.

Small Cell Permit Management and Environmental Planning/Permitting

LAX operates within a complex permitting environment. In addition to airport-specific agencies and county/city agencies having various jurisdiction, LAX was constructed over several decades, resulting in building materials varying in age. This poses a challenge, as the materials exist at different stages of compliance throughout the airport. As a result, we review all design plans and construction plans/project specifications to identify potential hazards and to ensure these documents adhere to U.S. EPA and local Department of Environmental Protection (DEP) requirements.

5G/Fiber and Wireless Communications

With the introduction of 5G radio technologies into cellular networks, the need for data management and enhanced data throughputs have greatly increased. We designed this project to initially deploy coverage using 4G LTE (long-term evolution) technology. Our design will seamlessly migrate all systems to include 5G coverage with minimal equipment modifications, while keeping in mind future opportunities for expansion.

We also manage and review the DAS fiber-optic network design and communications network equipment to ensure 5G coverage will extend across airport terminals, and the numerous remote radios are interconnected to head-end rooms.

Results

The program is enabling LAX to implement a high level of connectivity across the airport to serve passengers, airlines, concessions, and other airport systems and organizations across nine terminals and 128 gates. At the same time, it's helping LAX stay ahead of grown and change with easy conversion to 5G and an eye toward future developing technologies.

LinkNYC | New York City, New York

Why This Project?

The LinkNYC project demonstrates our capabilities to manage and contribute to effective kiosk network implementation, from vendor selection through implementation and deployment. It also demonstrates our ability to incorporate robust features, from free community Wi-Fi to wayfinding and emergency information broadcasting, providing valuable community services that bridge the digital divide.

Relevance to the City

- Network and kiosk digital system design and installations across a major metropolitan area
- Coordination with partner companies and city agencies
- Coordination with city services, including emergency services
- Features and benefits the City is also seeking, including bridging the digital divide, providing economic and social benefit to the community, increasing safety, and generating revenue
- Environmental benefit through reuse and upgrade of pay phone infrastructure

Description

New York City is implementing a plan to deploy digital kiosks replacing the city's iconic and ubiquitous pay phones with new digital communications kiosk systems—called links. The goals of the LinkNYC program are to:

- **Bridge the Digital Divide:** LinkNYC brings the world's fastest, **free municipal Wi-Fi** to millions of New Yorkers, small businesses, and visitors. It **spans the divide between people of various physical, technical, and financial abilities** to connect all New Yorkers
- **Create Jobs:** CityBridge is committed to establishing a facility for local production in New York City, ensuring the Link structures will be manufactured in the five boroughs. The program is expected to create 100-150 new full-time manufacturing, technology, and advertising jobs, as well as an estimated 650 support jobs.
- **Increase Public Safety:** City agencies will be able to communicate in real-time with the public with more specificity and relevance. Links are provided with backup power to ensure service even during a power outage.
- **Support the Community:** CityBridge will engage with New York City community groups — including nonprofits, academic institutions, business improvement districts, think-tanks, etc. — to ensure that LinkNYC is supporting the entire City.
- **Generate Revenue:** The LinkNYC platform is funded through advertising revenues at no cost to taxpayers and it is projected to generate more than $500 million in revenue for the City over the next 12 years.

Solutions

Qualcomm was one of a consortium of companies—CityBridge—selected to roll out this implementation. Each kiosk features multiple technologies from Qualcomm to power the digital displays (advertising and announcements), including a built-in Android tablet (e.g., VOIP calling, maps) and a 1-gigabit Wi-Fi access point, providing all users in a 150-foot range with free Wi-Fi using the Qualcomm Wi-Fi chip. These kiosks have a small footprint of less than a foot wide and nearly 10 feet high. Up to 250 devices could use a given point at the same time without diminishing service. Qualcomm supported implementation of the LinkNYC project from an end-to-end perspective, including bringing together the vendor, enabling the technology, user platform, installation, and deployment.

These links offer 24-hour, free, 1-gigabit Wi-Fi connections; free calls to anywhere in the U.S.; touchscreen displays with direct access to city services; maps and directions for tourists; and cellphone charging stations. They also provide direct connections to emergency responders and can broadcast city alerts during emergencies, such as hurricanes.

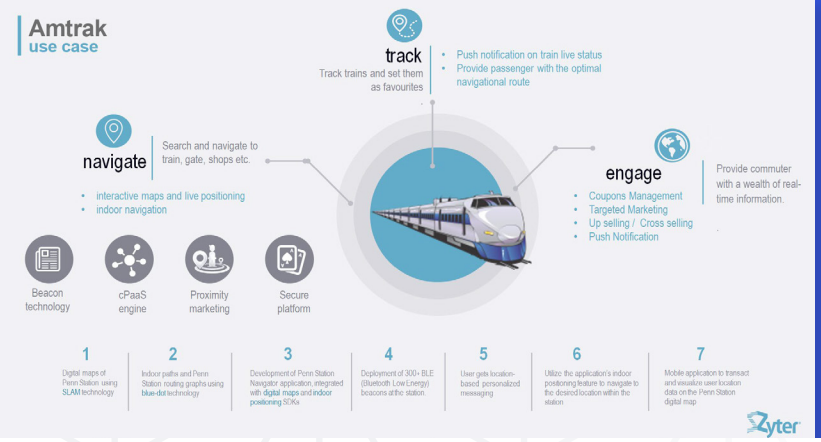
These efficient digital kiosks provide a bridge across the digital divide—one of the main goals as expressed by NYC Mayor Bill de Blasio in trying to make a fairer and more just city.

Results

To date, the program has provided:

- Planned links: 7.5k
- Boroughs with active links: 5
- Registered users: > 1 million
- Total sessions: 100 million

The systems are proving useful for those seeking information and requiring Wi-Fi and data services—and even to charge their cell phones. The kiosks provide easy information access to users, including city events and, if needed, emergency information and connection to emergency services, increasing safety where the kiosks are installed.



Penn Station Smart Wayfinding and Smart Campus Solutions | New York City, New York

Why This Project?

As one of the largest and busiest transportation hubs in the U.S., serving more than a half-million people each day in the nation's most populous city, Penn Station is a microcosm of busy urban areas like downtown New Orleans. As such, this project demonstrates our team's ability to deploy, operate, and maintain smart solutions, including IoT, enhance mobility and provide multiple benefits to a major city's citizens, visitors, and businesses.

Relevance to the City

- Successful deployment of smart technologies and an IoT smart spaces platform within existing urban infrastructure and facilities in a highly busy transportation center through which *more people than the entire population of New Orleans pass each day*
- Economic benefit for retail businesses and the City through digital marketing and monetization
- Free app provides a smart mobility platform, including wayfinding, for commuters and visitors
- System deployment and operation, including end-to-end cybersecurity, is consistent with New York City IoT Guidelines

Description

The project was initiated to implement smart wayfinding and smart campus services, including kiosks, in Penn Station. Following are key aspects of the project and Zyter's services:

- Development of Penn Station navigator app, integrated with digital maps and indoor positioning software development kits (SDKs)
- Deployment of more than 300 Bluetooth low energy (BLE) beacons
- Digital maps that use simultaneous location and mapping (SLAM) technology, and indoor paths and navigation using blue-dot technology
- App's indoor positioning feature enables users to navigate to their desired destination within the station
- Mobile apps for transacting and visualizing user location data on the Penn Station digital map
- Improves the customer travel experience with advanced wayfinding, while also supporting businesses throughout the station
- Zyter provides O&M services and is responsible for periodic platform upgrades and "5 nines" app availability

Solutions

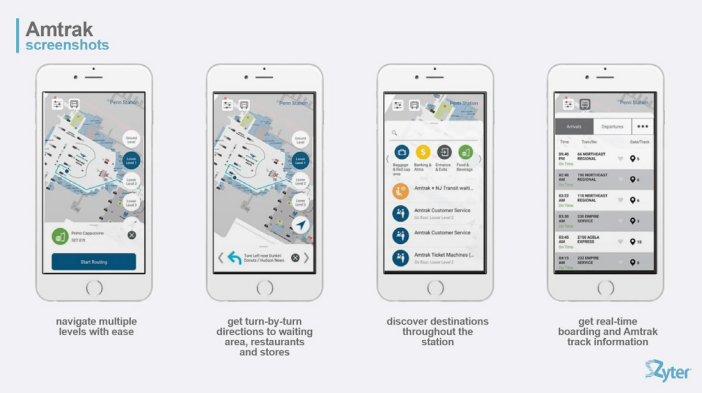
The wayfinding solution provides indoor navigation within Penn Station—enabling smart wayfinding in one of the largest and busiest transportation centers in the U.S., serving more than 600,000 passengers per day. The navigation is based on the location of the user and the location of the user's desired train. Zyter served as the prime vendor for delivering the smart indoor navigation and wayfinding solution, as well as creating upsell and cross-sell, experience-based, real-time location services. Zyter deployed 300+ BLE beacons to support the

wayfinding and worked closely with the labor unions at the station, including obtaining approvals for the types of data being integrated with the system. Zyter provided training to City management on how to operate the platform, including updating information and examining data regarding user behavior.

Zyter leveraged its smart campus platform to build and deploy a commuter engagement mobile app with personalized features, such as alerts based on individual schedules and proximity-based marketing based on individual preferences. A custom app also enables retail businesses to provide targeted advertising.

Results and Benefits

- Social benefit through free app that provides indoor navigation, interactive maps, and live positioning, enabling users to search and navigate efficiently to their desired train, gate, shops, etc.
- Smart mobility features provide local automobile traffic data and station train arrival/ departure status
- Users can track trains and set them as favorites—the app can push notifications on trains' live status and provide users with the optimal navigational route
- Graphs and heat maps provide crowd density, people movement, and usage analytics to City management
- The app engages users through location-based personalized messaging and enables coupon management, targeted marketing, and up-sell/ cross-sell opportunities through push notifications
- Monetization of station retail businesses—the client receives a share of the revenues generated directly through the promotions, targeted marketing, and coupon use



Qualcomm Smart Campus | San Diego, California

Why This Project?

This project demonstrates Zyter and Qualcomm's success working together to implement, operate, and maintain an integrated suite of smart solutions providing a broad range of services and functions.

Relevance to the City

- The smart campus encompasses thousands of employees and visitors, dozens of buildings, and multiple locations, constituting a real-life, real-time environment for demonstrating the ongoing use and benefits of many of the same Smart City services and infrastructure the City seeks.
- The project successfully demonstrates the team's capacity and experience to perform wired, wireless, and Smart City tasks as specified in the RFP. Similar to the City's requirements, the team deployed 5G service; Wi-Fi; kiosks; smart lighting, mobility, parking management, building and energy management, water, HVAC, and flood detection; security and video cameras; and other functions throughout numerous existing facilities across an expansive area.
- The comprehensive Smart City infrastructure improves services and security on the campus; enhances the user experience for visitors and employees; and reduces costs to the client, through savings in energy usage and increases in facility operations and management efficiencies.
- Cybersecurity; "5 nines" availability/reliability; and consistent with New York City IoT guidelines.

Description

The Qualcomm smart campus was developed as a microcosm of a Smart City to increase efficiency across multiple facilities and to demonstrate these smart technologies for public- and private-sector visitors who are considering implementing Smart City systems or elements in their own communities/spaces. This groundbreaking project features a 5G network and provides smart parking, shuttles, lighting, waste management, logistics, and networking; air quality monitoring; smart security and surveillance; building energy management; digital twin provision; and asset tracking at the Qualcomm HQ.

The project integrated 29 device types from 22 different device vendors into a single, open API platform that allows visualization on a "single pane of glass" across multiple verticals. These include multiple types of cameras, parking sensors, LiDAR, OBD-2 devices, air quality sensors, NB-IoT, and BLE trackers, HVAC, water and energy-use sensors, smart waste bins, and other devices and functions.

> **With 36 buildings, 25,000 employees, and hundreds of acres of land, the San Diego campus of telecommunications giant Qualcomm is almost a city in itself.** That made it the perfect testing ground for a suite of new technologies aimed at making spaces and cities smarter....The campus now has a range of systems in place that use sensors and analytics to optimize everything from energy use to parking. There are camera systems that use artificial intelligence to improve campus and building access and enhance security, systems that tap into sensors in HVAC systems to manage energy consumption, light poles that double as internet hot spots, and algorithms that deploy the company shuttle system based on real-time demand."
>
> *— Fast Company magazine, "This Corporate Campus Is Now a Mini Smart City," Dec. 12, 2020*

Solutions

Zyter implemented and deployed the Qualcomm smart campus solution, connecting multiple IoT devices and services from siloed applications to create an end-to-end solution. The solution included a command and control center for administrative teams, and mobile apps for users and system administrators. The smart systems involved are integrated to enable a more effective and efficient management of the smart campus.

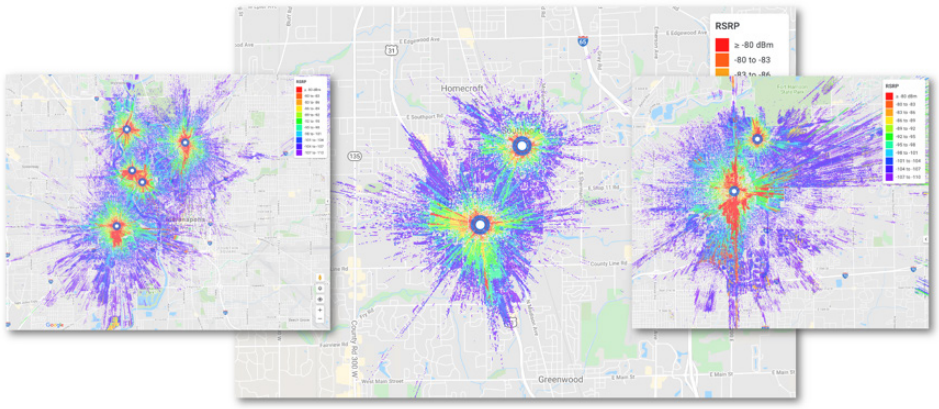
The command and control center is projected on a 3x3 video wall, enabling administrative teams to monitor every aspect of the campus and facilities from a central location. The team made mobile apps on iOS and Android available to employees and admin teams to provide contextual information and interaction, based on login and access control, which is determined by the role of the logged-in user. Zyter provided user training for Qualcomm admins/employees and staffs a support and maintenance desk.

- The system generates live alerts based on rules specified by the admin teams, correlated data across multiple systems to trigger alerts, and notifications on any device or platform. Smart cameras with built-in AI provide services that include automated entry, based on license plate recognition for cars and facial recognition for people; unauthorized entry response; threat detection; masking and social distancing compliance; and assistance to personnel. The system enables the addition of more use cases through machine learning and an evolving AI engine. Live and historical analytics showcase the state of the campus before and after deployment of the solution, enabling potential customers to see the benefits of various elements of the smart campus solutions.

> "To exemplify IoT as a Service (IoTaaS) and bring to life a tangible proof point of the Qualcomm IoT Services Suite, we transformed a portion of our San Diego campus into a real-life use case of commercially available, end-to-end solutions....The goal is to help visitors reimagine and replicate the solutions across multiple industries to address the challenges and needs for particular spaces and communities."
>
> *—Sanjeet Pandit, Global Head of Smart Cities, Qualcomm Technologies, Inc.*

Results

- 25% improvement in efficiency in managing and operating the campus; 70% savings in lighting costs through luminosity control and other smart lighting solutions
- Capability to push real-time alerts and notifications across all devices
- Real-time and historical analytics that quantify cost savings and efficiency improvements from various Smart City components
- Demonstrated ability to achieve integration of nearly 30 IoT device types across more than 20 vendors into a unified smart platform
- Qualcomm's results from successfully implementing and operating the smart campus indicate that the City of New Orleans can benefit from similar deployments by being able to save money (such as from smart lighting), improve mobility and security in the city, gain revenue by monetizing data, and be able to better engage with and serve its citizens and visitors.



Private Mobile Network | Marion County Public Schools, Indianapolis, Indiana

Why This Project?

Celona's Marion County project demonstrates how our team succeeds in bridging the digital divide over a large area. From a scale perspective, it is one of the largest—if not the largest—outdoor private mobile network implementations in the U.S., where our team member provided similar efforts to those required for the City's Smart City design and implementation.

Relevance to the City

- Installed outdoor mobile networks similar to those required for this Smart City project
- Designed the same type of infrastructure to support a variety of Smart City systems powered by IoT infrastructure
- Has a main goal of maximizing social and economic benefits to the county
- Supporting the private mobile network in partnership with SBA Communications as the managed services partner, similar to the structure on this collaborative contract
- Via the SBA managed service, targeting specific quality and availability metrics for 5-9s operation, 24/7/365 support and maintenance, highest level of cybersecurity protocols, service level objectives for application and use case-specific network speeds, and ability to satisfy net neutrality requirements
- Partnering with SBA to ensure solution and best practices training are kept up to date for the technical engineering staff on the project, and remote operations are enabled via centralized command center that take advantage of Celona's open API libraries for any required technology integrations.
- Working closely with county officials and representatives to confirm technology enablement across the county follows the timelines put forward within a pre-defined project plan
- Validating coverage, capacity, and reliability of the wireless system given a set of critical applications and locations

Description

Students in the Marion County School District had varying levels of ability to access remote learning during the COVID-19 pandemic due to discrepancies in availability of broadband to students. To provide students equitable access to learning, Marion County undertook a pilot project providing broadband connectivity across six schools. Success in this pilot would lead to extending the benefit across the entire county.

Until recently, city-wide wireless deployments have been tackled with point-to-point or point-to-multipoint Wi-Fi or public LTE connectivity for all Smart City infrastructure. While these types of wireless technology platforms can work in some use-case scenarios, they often fall short when it comes to providing wide-ranging coverage with predictable throughput and latency numbers required by modern applications. They can also be cost prohibitive due to increased amount of data cabling required to support a high density of Wi-Fi access points or to cover the monthly billing cost for each device that might connect to a public LTE network.

Fortunately, counties, cities, and school districts now have access to the Citizens Broadband Radio Service (CBRS) spectrum available for commercial broadband use within the U.S. This gives school districts and/or local governments the ability to deploy a private LTE or 5G network delivering carrier-grade wireless

connectivity for any number of educational, Smart City development and public health/safety purposes. The benefits of building a private mobile network are:

- Low cost to design, deploy, and operate
- Full control over the network and devices that connect
- Guaranteed quality of service and privacy on a per-app basis
- Faster return on investment

Solutions

Celona is the technology provider for SBA's managed services team to install the outdoor private mobile network over more than 10 million square feet, extending broadband internet connectivity to students and helping accelerate remote learning initiatives.

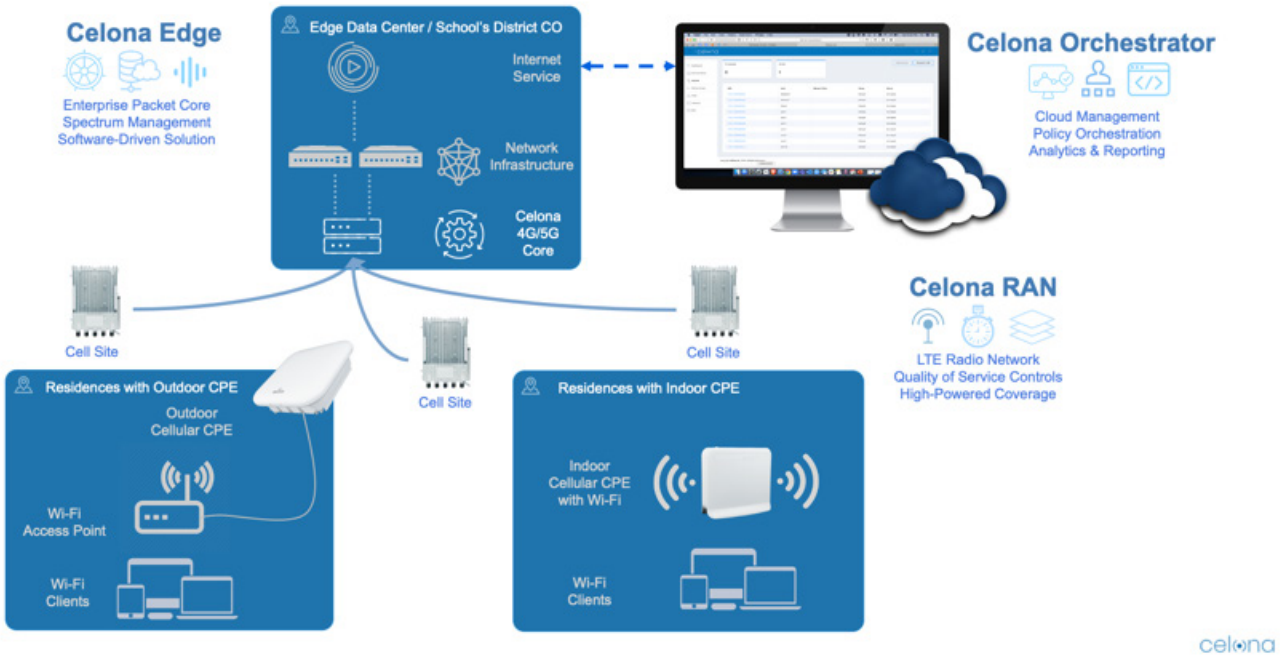
The network architecture is powered by Celona's unique MicroSlicing™ technology to integrate cellular wireless with any IP network backbone, simplifying adoption across multiple sites at scale. Celona MicroSlicing policies can be customized to guarantee specific throughput, latency, and packet error rate metrics on a per application basis, enabling a new generation of digital initiatives and critical applications to be onboarded on the same network infrastructure. Celona MicroSlicing policies can help identify mission-critical network streams, such as public safety voice communications. Network administrators can easily apply strict quality of service guarantees to this traffic, prioritizing this communication over all others.

As part of the solution, Celona provided:

- Outdoor Celona private mobile network providing dedicated broadband at student homes to offer reliable remote learning
- Unique Celona MicroSlicing™ technology to deliver guaranteed bandwidth and latency for Zoom video calls and other classroom apps
- County-owned network designed to support next generation of private connectivity needs and Smart City initiatives—such as video surveillance and public safety voice comms across the county—with guaranteed service levels enabled via dedicated MicroSlicing policies

Results

- The project addressed technical barriers hindering many students' access to quality e-learning, providing greater equity in the county
- The collaboration capitalized on a collective partnership between school districts and charter schools to drive earlier delivery at a lower cost
- This system provides more efficient use of public funds, with access to additional funding streams



Lighting and Public Safety Improvements | Illumex, Benito Juarez, Mexico

Why This Project?

Out of all the projects Juganu has done around the world, this one has similar climate, with temperature and humidity in the same range. That means we know how to select equipment customized to your environment. Also, we realize you are looking for a system to help provide a safer environment—and ours has numerous benefits other than responsive lighting, including **providing public Wi-Fi through a lighting hub.** Our system can help you provide environmental sensing capabilities you can turn on or off as desired, creating a customizable lighting system—enabling futureproofing and flexibility to adjust to your changing needs.

Relevance to the City

- This system, while providing efficient safety lighting, also helps city better respond to events or emergencies, with an ability to issue an alert within 10 seconds of detecting an issue
- The system bridges the digital divide by providing free public Wi-Fi through the system
- Unlike other systems, this can provide thousands of fixtures in one gateway, saving you money
- It is possible to incorporate third-party, IoT integration with the range of systems you are expecting to implement
- Our state-of-the-art smart lighting systems are 30% more efficient than what is specified in the RFP, with a warranty better than what the City requires, all while exceeding initial delivered lumens and lumens per watt requirements
- Juganu's systems and support can help make the city safer without making people feel their privacy is being invaded
- The project included greenfield deployment and a central command and control center, with our ongoing participation for maintenance

Description

The municipalities of Miguel Hidalgo and Benito Juarez in Mexico City are home to over 700,000 people, as shown in the table below. Although largely residential, the municipalities are the most densely populated in Mexico City, and include financial and cultural centers, a host of public spaces, sporting facilities, and cultural institutions. There is also high traffic due to the major public transportation hubs, including the airport. Transport comprises dozens of major roadways, alongside smaller roadways, which feed into boulevards.

Municipality	Population	Area
Municipality of Miguel Hidalgo	372,889	26.96 sq mi (69.8 km2)
Municipality of Benito Juarez*	385,439	10.28 sq miles (26.62 km2)

**Benito Juarez is one of the most densely populated areas, with 13,537 inhabitants per km2, or 1.3 times that of Mexico City's average.*

A lack of lighting around parks and transport hubs meant residents of the two municipalities felt unable to travel safely after dark. This had an impact on commercial activity and businesses.

The municipalities shared many challenges, which prompted them to look for solutions to their lighting, resident safety, and maintenance challenges:

» Outages – the municipalities' conventional lighting system repair was reactive. Under the previous system, a problem in the lighting was fixed only after residents reported an outage, or if maintenance team was in the area on patrol.

- Time lag between problem and repair – there was no proactive way to identify a fault at a system level. This heightened residents' concerns about safety.
- Cost savings – the municipalities were looking to reduce their expenditure and maintenance costs and implement an energy-efficient solution.
- Multifunctionality – the municipalities hoped that, while enhancing safety in areas where the public expressed unease, such as transportation hubs and parks, the system would also improve the districts' CCTV capabilities.
- Compliance – the system required Norma Official Mexicana (NOM) certification—a set of standards and regulations the Mexican government requires for a range of products and services. Electrical products must comply with additional standards, such as energy efficiency and lighting levels, as part of Mexico's smart cities initiative.

Solutions

Juganu provided solutions for the Municipality of Benito Juarez, implementing an all-in-one solution to manage the security issues through closed-caption television (CCTV) surveillance and smart lighting. The team also provided improved resource light management and enabled installation of public Wi-Fi. Juganu's system of light fixtures doesn't just turn on and off by sensor; with cameras, sensors, counting capabilities, and a network connectivity and control capability—known as FOAM—the equipment has a wide range of sensors able to be applied as desired and turned on an off as needed. For example, built-in environmental sensors can pick up noise and air quality data and report it to help manage emergencies or events.

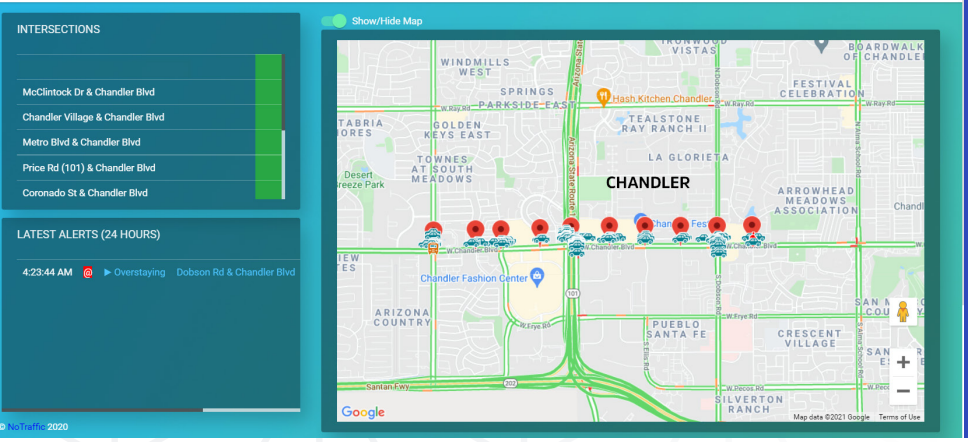
As a lighting system, the Juganu solution increases lighting in public spaces, such as parks and transport hubs, while significantly reducing energy use. It provides the municipality complete, remote control of local lighting needs. It also provides public, free Wi-Fi access throughout the installation areas. At the same time, thousands of lighting fixtures can be installed on one gateway, providing the lighting needed at minimum expense. The project has prompted a second phase, where we are providing 5,000 additional fixtures and cover five more parks to continue recovering public spaces.

Near real-time monitoring control is possible through the impressive capabilities of Juganu's FOAM network grid. Each unit has an embedded light sensor, enabling FOAM to automatically dim and brighten lights in accordance with illumination data. Other benefits of the system include:

- Enhanced security provided by embedded cameras in light fixtures helps the municipality respond to events
- Quick and easy interfaces, with unmatched reliability and scalability
- Quick and easy set-up, with self-optimized network traffic

Results

- Between 50% and 70% energy savings compared to the previous technology
- Increased security, enabling increased activity (businesses staying open later at night), and benefitting the local economy
- CCTV video surveillance and Wi-Fi access
- Cost-effective solution, with one fiber optic cable for a large area, rather than multiple cables to each installation
- Potential for gradual implementation (neighborhood by neighborhood)
- Ability to connect to a luminaire or issue an alert within 10 seconds of that light's system picking up an issue; this is highly important to maintain safety



Traffic Detection Sensor and Traffic App Installation | City of Chandler, Arizona

Why This Project?

This project demonstrates our team's smart traffic technology capabilities on a system involving many of the same challenges you face in the City of New Orleans. The technology handles the range of commuter congestion, freight movements, pedestrian crossings, bicyclists, transit operations, and special events, as well as the need for evacuation routes in case of emergencies.

Relevance to the City

- Installed 40 NoTraffic AI edge-based traffic detection sensors with traffic app platform along Chandler Blvd corridor
- Reduced delays and congestion reduction, including system delays reduced by 35% on a corridor with many similar challenges to yours
- Served as traffic detection technology provider and prime contractor: We know how to design these systems and apply them to your unique, challenging projects, providing installation design around various installation challenges
- Developing and maintaining a similar long-term relationship and commitment on this long-view project
- Providing training on site for city operators; 24/7/365 support and monitoring
- Augmented their traffic control center to integrate this system
- Providing reporting and traffic analysis to the city
- Providing additional management options for a system already being well managed; the City can see even better results where operations can't be actively managed

Description

The Maricopa Association of Governments wished to test NoTraffic tech by placing it in highly complex, challenging systems. The City of Chandler was looking for ways to reduce traffic delays; although it already had robust active traffic management, it wanted better control over conditions outside the norm, such as congestion, events, accidents, and other unexpected situations requiring better vehicle detection. The original intent was to optimize timing of traffic lights based on actual traffic to help reduce delays, with an additional goal of reducing pollution.

The City selected the Chandler Boulevard corridor for the project due to the high volume of vehicles, high-traffic variability, and significant vehicle detection issues. Efficient operations on this corridor are critical, as it serves as the City's primary connection to Arizona Highway 101 for major employers such as Intel, Microchip, and Bank of America, and Chandler Fashion Village—a major commercial center.

Solutions

NoTraffic was the technology provider and prime contractor for the project. The NoTraffic project manager oversaw installation of 40 NoTraffic AI, edge-based traffic sensors all along the Chandler Boulevard corridor, providing a well-managed network to help meet highly demanding traffic management requirements.

The NoTraffic technology solution provides full situational awareness of traffic situation at all times, rather than basing traffic lighting and management on a fixed time period or situation. It tracks every object that comes through the intersection—not just automobiles, but bicycles, pedestrians, trucks, and transit vehicles—to provide a thorough understanding of the intersection throughout everyday situations at all times. This optimizes traffic management through enabling decision making based on the entire network rather than just one element or other. It also provides insight into safety challenges from minor accidents and near misses as well as major accidents, helping provide a full profile of changes to mitigate a wider range of accident causes.

The Chandler corridor, while very well managed, has a lot of issues with pedestrians, bicycles, transit vehicles, events, accidents, and highway off-ramps. It is highly similar to the challenges facing the City of New Orleans—giving us extensive experience, lessons learned, and capability to meet your complex needs.

In addition, because of the long-term commitment to the project, we strive to develop a collaborative relationship with our partner, fully understanding all the challenges the city faces in improving traffic management

As a future option, information coming from the system can potentially be integrated into trip planning or travel time information through integration with other components, giving the City of Chandler options for supporting commuters and visitors with their transportation needs and plans.

Results

The effects of installing these smart traffic-light systems include:

- Reduced systemwide delay by 35% through traffic operations optimization, reducing travel times for all roadway users—from pedestrians and bicyclists to transit providers to individual commuters
- Chandler is using advanced traffic signal performance metrics and other data to better understand the corridor environment
- Rapid system recovery from accidents and other traffic incidents
- Resolution of persistent vehicle detection issues that caused major disruptions in traffic flow
- Real-time alerts to reduce accident response times and road maintenance issues
- Project was deployed on schedule and on budget
- No design changes
- City is now a design partner, looking forward to long-view relationship

Citywide Smart Kiosk Deployment | City of Cleveland, Ohio

Why This Project?

This project exemplifies our ability to overcome the typical challenges associated with implementing Smart City technologies, such as working with aging infrastructure, developing a private financing mechanism for public improvements, and managing cross-departmental coordination during multi-site due diligence, permitting and construction. The resulting innovative, financially sustainable network of Smart City kiosks, installed at no cost to the City, has served as a catalyst and a highly visible first public example for the City of Cleveland's developing Smart City strategy, which has now grown to include connected LED streetlights and surveillance cameras.

Relevance to the City

- Served as primary contractor delivering a turnkey network of IKE kiosks to the city, responsible for ongoing operations, maintenance, content management, and media sales
- Replaced outdated static kiosk network with IKE kiosks at no cost to the city or taxpayers
- Enhanced features and services available to the public, with decreased city maintenance and printing costs from the old static kiosks and increased advertising revenue for the city
- Allocated 100% of the City's revenue share from IKE to the City's Storefront Renovation Program, providing funding to small business owners to renovate retail spaces and cultivate commercial districts in neighborhoods outside central downtown
- Collaborated with public power agency to implement a wireless metering solution for the kiosks and integrate with the agency's billing system
- Partnered with local business improvement districts and destination marketing organizations like Downtown Cleveland Alliance and Destination Cleveland to curate local content and promote the city's major events, cultural institutions, and other attractions
- Bridging the digital divide: IKE kiosks include a free WiFi hotspot for all users within a 75-foot range of the kiosk, partly to make mobile integration features accessible to users who may have smart phones but cannot afford the recurring expense of a large data plan
- Maximizing economic benefit: these kiosks generate more revenue than the original static kiosks
- IKE has provided training to various city departments regarding kiosk features and access to an easy-to-use dashboard for centralized command and control and is providing operations and maintenance support

Description

In January 2019, the Cleveland City Council selected IKE to upgrade the City's outdated static kiosk network and enhance the service to residents while increasing the City's revenue. Since then, IKE Smart City has **replaced dozens of static wayfinding kiosks with IKE kiosks and deployed IKE kiosks** in several new locations to provide advanced wayfinding and digital information within the right of way. We work closely with several local stakeholders to manage the network in Cleveland. Our partners include stakeholders at the City, such as the city planning commission and the mayor's department of communications. We also partner with

local BIDs and DMOs like Downtown Cleveland Alliance and Destination Cleveland to curate local content and maintain an active presence in the local community by promoting the best that the city has to offer.

Solutions

IKE Smart City was the primary contractor for the delivery of a turnkey network of IKE kiosks to the City and is responsible for ongoing operations, maintenance, content management, and media sales. The IKE team secured City Council approval and all necessary permits, performed construction and installation, and continues to manage ongoing operations, maintenance, content management, and media sales for the IKE Smart City kiosk network.

Regarding greenfield deployment, this is Cleveland's first and only implementation of digital interactive wayfinding kiosks in the public right-of-way. IKE provided significant, cross-departmental coordination on permitting, construction, and ongoing operations, as well as coordination with outside organizations such as business improvement districts and destination marketing organizations.

To date, the team has installed a total of 47 IKE kiosks, with an agreement allowing for further expansion. The network currently spans downtown, the Warehouse District, Gateway District, Tower City, Playhouse Square, North Coast Harbor, University Circle, and other key neighborhoods. IKE Smart City is responsible for securing permits, performing construction and installation, and handling ongoing operations, maintenance, content management, and media sales. The team also created IKE's hardware, software, and content management system, making customizations specific to the City of Cleveland's needs. The team worked with the City's public power agency to implement a wireless metering solution for the IKE kiosks and integrate with the agency's existing billing system.

IKE Smart City's takeover and upgrade of the kiosk network has resulted in additional advertising revenues for the City. This revenue share is 100% allocated to the City's storefront renovation program, which provides funding to small business owners to renovate retail spaces and cultivate commercial districts in neighborhoods outside central downtown.

Results

- Acquired and replaced the city's outdated static kiosk network with IKE kiosks at no cost to the City or taxpayers
- Enhanced the features and services available to the public, decreased the City's maintenance and printing costs from the old static kiosks, and increased the city's advertising revenue
- Allocated 100% of the City's revenue share from IKE to the City's storefront renovation program, which provides funding to small business owners to help renovate retail spaces and cultivate commercial districts in neighborhoods outside of the downtown core
- IKE kiosks include **a free Wi-Fi hotspot for all users within a 75-foot range** to increase public Wi-Fi access and enable mobile integration features for users who may have smart phones but cannot afford the recurring expense of a large data plan; for example, a person can use the kiosk to find a job posting in the Jobs app, use the Wi-Fi hotspot to send job information to their mobile device via text or QR code, and open the employer's webpage on their mobile device without using their own data
- Digital kiosks **reduce environmental impact of** printed posters, provide transit and air quality information, and **provide social benefit** through access to important safety and emergency information, as well as wayfinding and access to Wi-Fi

> "Very excited about these interactive smart kiosks by IKE Smart City coming to Cleveland replacing the outdated Omni kiosks. Tons of features included. Big upgrade."
>
> *– Kerry McCormack, Cleveland City Councilman*

> "The new kiosks are just one of the ways we are working to ensure new investments and capital improvements provide opportunities for all citizens to have greater digital access."
>
> *- Frank G. Jackson, Cleveland Mayor*

LaGuardia Central Terminal B Redevelopment | Port Authority of New York & New Jersey, New York City, New York

Why This Project?

This project demonstrates our capability to size and structure major, complex P3 projects—and our ability to help you navigate them. It also shows our commitment to and capabilities in providing substantive opportunities for MWBE firms and to coordinating and motivating a large consortium of companies toward the same goal—yours.

Relevance to the City

- Providing expertise in sizing and structuring public-private partnership (P3) delivery of smart technology solutions—meaning we can help the City navigate the opportunities and pitfalls of P3 delivery for your project
- Adding value due to our experience working with other consortium members with a wide range of skills and responsibilities, all coming together to make your project work; we make sure everyone on the team is aligned to one common goal—just as we will for the City
- Promoting and creating opportunities for unprecedented minority- and women-owned business enterprise participation, similar to what you want on your program
- Promoting the new Terminal B, which boasts a fully sustainable design and innovative technology to deliver meaningful environmental benefits and utilities costs savings similar to those the City desires

Description

The project involves redeveloping LaGuardia Airport (LGA) Central Terminal B and managing the terminal's concession program in the terminal. The airport comprises four passenger terminals (A, B, C, and D); Terminal B is the largest, serving most of LGA's scheduled domestic airlines.

The original Terminal B faced a wide variety of challenges to airside and landside operations, as facilities had become outdated and inefficient based on current passenger and industry standards, were past their useful life, and were undersized for current and projected passenger demand. The original Terminal B opened to the public in 1964, designed with a capacity of eight million passengers annually. In 2019, Terminal B served approximately 15 million passengers. The terminal layout was designed prior to current standards for passenger and baggage screening, creating inefficiencies in these processes. The operational deficiencies in the existing Terminal B included, but were not limited to, insufficient hold room capacity, limitations on circulation, and outdated concessions offerings and amenities. Additionally, Terminal B was disconnected from adjacent Terminals C and D.

Solutions

JLC is a member of LaGuardia Gateway Partners, LLC consortium (LGP), the entity responsible for the project's design, build, finance, operations, and maintenance. JLC LaGuardia LLC, a wholly owned subsidiary of JLC Infrastructure Fund I L.P., is an equity investor in the project and indirectly holds a 5% equity stake. Key project components include construction of new Concourses A and B and a new arrivals and departures hall connecting to the new concourses via pedestrian bridges. The scope also includes constructing a new 3,100-space parking garage and a central hall between the new Terminal B and the future redeveloped Terminal C.

LGP has achieved a majority of the construction work milestones, including the public opening of the first seven gates in Concourse A, the arrivals and departures hall, the parking garage, and Concourse B. LGP has completed approximately 90% of the project, expected to reach substantial completion in 2022.

Because we are part of a P3 delivery consortium, the biggest value for us comes from taking a long view. As our returns only happen if our client's project is successful, we are motivated to make sure operators are following specific tech requirements and meeting obligations, and that construction occurs on schedule and budget. This benefits the client in two ways: it means we have the strong experience in P3 delivery to help guide clients through the P3 process, and it means our goal is the same as the client's goal, from beginning to end.

This also reflects our commitment to continuing to work with the city, structuring an agreement covering all the responsibilities to develop and implement this long-term vision. While we are directly committed to a 15-year term, we are contracted with NYC until 2050. Because the project takes a long view, we are committed to our long-term business relationship with NYC, as we are to the City of New Orleans.

Part of this general NY airports redevelopment initiative was maximizing MWBE participation. The mandate was is to provide MWBEs a chance to participate; we committed to this by allocating 30% of the consortium spend to MWBE firms—resulting in committing $680 million in contracts to those firms. This demonstrates we know how to make sure equity is part of the pie. In fact, JLC itself is 100% minority owned. It is important to us to make sure we work closely with equity investor partners to maximize MWBE participation.

Results

- This landmark project represents the largest public-private partnership in US aviation history to date.
- The new Terminal B increases the terminal's size from 835,000 square feet to 1.31 million square feet and is expected to increase LGA's capacity from 8 million to 17.5 million annual passengers.
- The project has experienced unprecedented minority and women-owned business enterprise (M/WBE) participation; LGP established a 30% M/WBE participation goal for design and construction work not self-performed by the design-build contractors, awarding awarded $683 million in contracts to over 280 M/WBE firms for design and construction services.
- The new Terminal B boasts a fully sustainable design and innovative technology that will deliver meaningful environmental benefits and utilities costs savings. The terminal incorporates several energy efficient solutions such as rooftop solar hot water systems, baggage handling system with permanent magnetic motors, LED lights and electric, gas, and water meters. The Institute for Sustainable Infrastructure awarded the project Envision Platinum, the highest level of recognition, for an industry leading approach to sustainability and resilience.

Tab 5 -
Implementation Plan

5 Implementation Plan

***A cost-neutral solution and timely implementation plan delivered to the City of New Orleans through an innovative public-private partnership*—This self-sustaining, cost-neutral approach allows the City to quickly implement a solution without investing up-front capital or allocating bonding capacity. Moreover, the City, through the proposed revenue sharing mechanism, may recognize additional annual income from third-party revenue streams not currently realized through the current infrastructure. Long-term affordability and sustainable operations and maintenance—essential to the viability of the system and its overall feasibility and success—are built into our implementation plan.**

Tab 5 Roadmap

Framework for World-Class Program Management 5-2

Program Planning 5-9

RFP requirements addressed:
Tasks, Timelines ..... √

Regulatory Compliance and Permitting 5-10

Program Execution Plan 5-10

Design Management 5-13

Construction Management 5-15

Program Phase-out Plan 5-17

Revenue and Monetization Model 5-17

RFP requirement addressed:
Revenue Plan ..... √ (Tab 2)

The City of New Orleans Smart City program presents a unique opportunity to implement the various improvements using a programmatic approach for greater efficiency and standardization of quality city-wide. As discussed earlier in Tab 2, Adequacy of Solutions and Soundness of Approach, **Smart+Connected NOLA delivery partner Jacobs offers the City the additional advantage of being the program delivery manager, responsible for integrating all aspects of this complex program into a holistic, turn-key solution** with low life-cycle costs and innovative applications of existing and new technologies.

Qualcomm and Jacobs bring the vision and strategy that are essential for our Smart+Connected NOLA team. Program implementation and project delivery must go hand-in-hand—you cannot achieve one without the other. Your program manager must share your vision, strategy, culture, and delivery processes—including sound governance, dispute resolution, decision-making, transparency, and performance oversight.

While there are similarities between the New Orleans Smart City Program and other Smart City programs, every program—and every city—is unique. Our first task will be to align our program management approach with the City of New Orleans' unique structure, policies, and processes and—most importantly—your Smart City vision, goals, and objectives as shown in Exhibit 5-1. These goals and objectives are critical to the City's continued growth and prosperity as they embody your vision for a sustainable future.

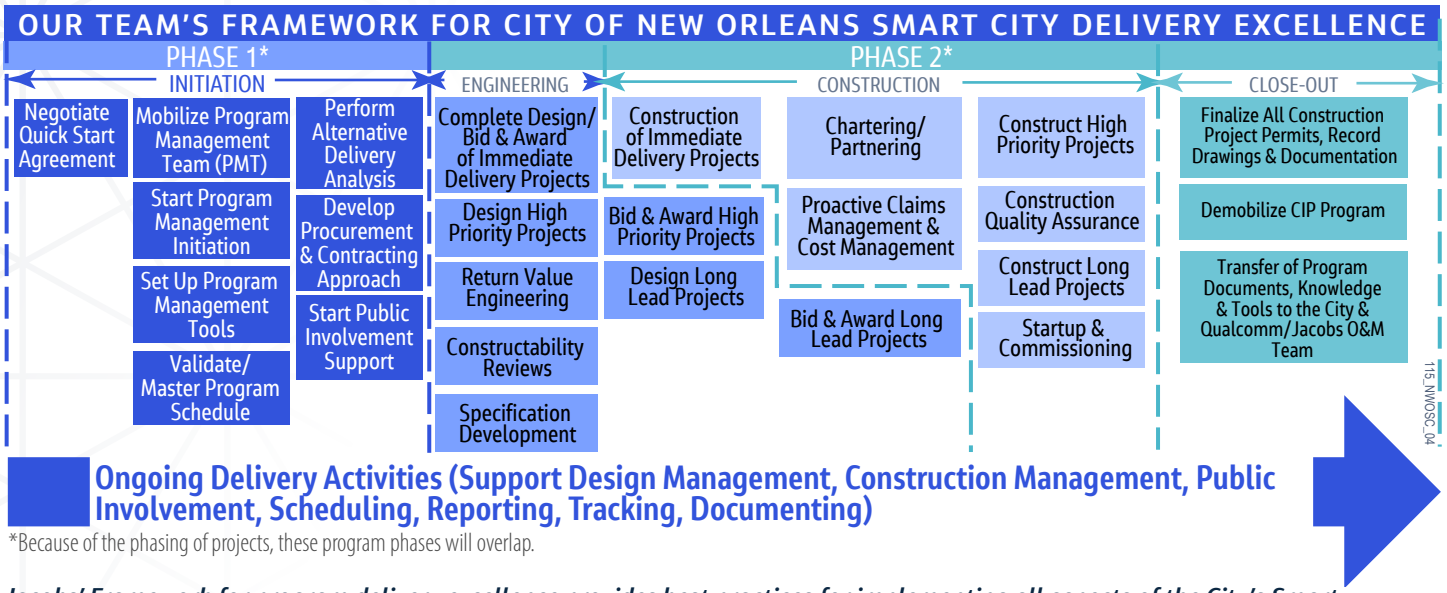
Building on this alignment and working in partnership with the City, we will develop a strategy for project implementation that encompasses the required policies and procedures, lines of authority, and decision-making processes that promote program transparency and world-class performance.

EXHIBIT 5-1. ***The City's vision is integrated with proven strategies for program delivery, performance, and continuous improvement.***

Framework for World-Class Program Management

To ensure sound, efficient delivery of the City of New Orleans Smart City Program, the City requires the services of a local, proven program manager. As one of the world's leading program managers, the Smart+Connected NOLA team brings world-class capabilities for managing your program. Our program management processes and tools have been honed on some of the world's most complex programs.

The Smart+Connected NOLA team brings a successful history of delivering more than $3.8 billion of infrastructure in New Orleans over the past decade. We will leverage our local knowledge and experience of successfully delivering large, complex programs and projects in New Orleans and throughout Louisiana to secure timely decisions, necessary infrastructure permits, and support of stakeholders to make this program a success.

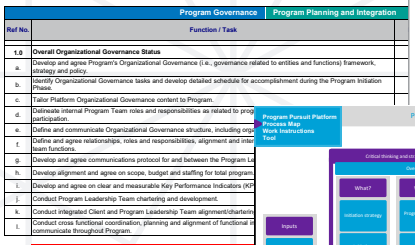


*Because of the phasing of projects, these program phases will overlap.

Jacobs' Framework for program delivery excellence provides best practices for implementing all aspects of the City's Smart City Program.

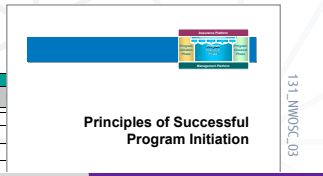
EXHIBIT 5-2.

Jacobs Program Initiation Guide



Ref No.	Function / Task	Program Governance	Program Planning and Integration
1.0	**Overall Organizational Governance Status**		
a.	Develop and agree Program's Organizational Governance (i.e., governance related to entities and functions) framework, strategy and policy.		
b.	Identify Organizational Governance tasks and develop detailed schedule for accomplishment during the Program Initiation Phase.		
c.	Tailor Platform Organizational Governance content to Program.		
d.	Delineate internal Program Team roles and responsibilities as related to pro participation.		
e.	Define and communicate Organizational Governance structure, including org		
f.	Define and agree relationships, roles and responsibilities, alignment and inte team functions.		
g.	Develop and agree communications protocol for and between the Program Le		
h.	Develop alignment and agree on scope, budget and staffing for total program		
i.	Develop and agree on clear and measurable Key Performance Indicators (KP		
j.	Conduct Program Leadership Team chartering and development.		
k.	Conduct integrated Client and Program Leadership Team alignment/charterin		
l.	Conduct cross functional coordination, planning and alignment of functional t communicate throughout Program.		

Red: Not started/behind
Yellow: In process
Green: Complete



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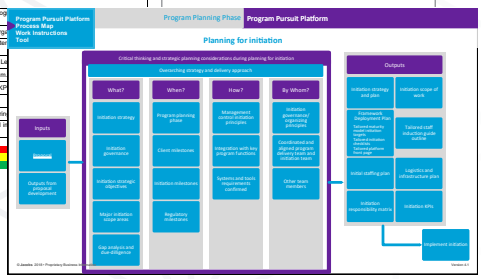

Working in partnership with the City, the Smart+Connected NOLA team is prepared to move quickly to develop and implement a program-specific framework using the following best practices and tools established by Jacobs' Program Management Center for Excellence:

- **Program Initiation Guide**—provides critical concepts, checklists, outlines, and other tools to facilitate rapid and successful program initiation (Exhibit 5-2).
- **Program Management Delivery Platform**—establishes already developed and proven standards, processes, guidance, and tools to effectively and consistently initiate and deliver the program with the framework (Exhibit 5-3).

EXHIBIT 5-3.

Program Management Delivery Platform

Assurance Functions

Health & Safety/Wellbeing | Environment | Quality | Security | Sustainability | Legacy

Planning and Intergration

- Governance
- Delivery Strategies & Plan
- Performance Management
- Risk Management
- Program Controls
- Estimating
- Change Management
- Document Management

Delivery Systems

- GIS Mapping
- Plans and Studies
- Design/Engineering Management
- Construction Management
- Commercial /Procurement
- Integration
- Configuration/Asset Management
- Operations and Maintenance
- Communications/ Stakeholder Engagement
- Capacity Development/ Training

Services

- Administrative Services
- Finance and Accounting
- Human Resources
- IT Management and Operations

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External Links

Client Site | Program | TBD

Internal Links

Program Vision | Organizational Charts | Acuity | Program Reports | Maturity Model

EXHIBIT 5-4.

Jacobs Acuity Performance Dashboard

133_NWOSC_02

- **Acuity Program Management Portal**—uses commercial, off-the-shelf applications for establishing an information portal and management tools for visualizing, managing, and accessing program data (Exhibit 5-4).
- **Program Maturity Model and Scorecard**—provides an assessment tool to evaluate our team's leadership and progress in developing and effectively implementing the program. These tools and our Framework for Program Delivery Excellence, which identifies the critical activities for program planning, engineering, construction, and startup/commissioning, will help the City's program get off to a quick start and meet scheduled milestones with high-quality deliverables (Exhibit 5-5).

EXHIBIT 5-5.

Program Maturity Scorecard - Post Initiation

LEGEND	FUNCTIONS													
OPTIMIZING: Team continually focused on advancement and improvement **MANAGED:** Internalized in team **DEFINED:** Effectively communicated to team **REPEATABLE:** Processes established **INITIATED:** Basics complete / Inconsistent use N/A – Not Applicable **Program Name**	Organizational Governance	Management Controls	Program Assurance	Delivery Strategies & Plan	Program Controls	Change Management	Risk Management	Performance Management Framework	Document Management	Delivery Systems	Administrative Services	Finance and Accounting	Human Resources	IT Management and Operations
INSTRUCTIONS – For each Review Date, list in this column: **DATE** Current Phase of Program Development/Delivery (e.g., Initiation/Execution/Closeout) Review Purpose = (e.g., Self-Assessment, Program Review) Name of Lead Reviewer	***INSTRUCTIONS FOR RATINGS – Shade entire box (below) with color based on questionnaire results to show status of function.***													
DATE Current Phase of Program Development/Delivery Review Purpose = Enter Review Purpose Name of Lead Reviewer														
DATE Current Phase of Program Development/Delivery Review Purpose = Enter Review Purpose Name of Lead Reviewer														
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Our program management delivery framework uses a common and adaptable set of tools, processes, and approaches.

Rapid Program Mobilization

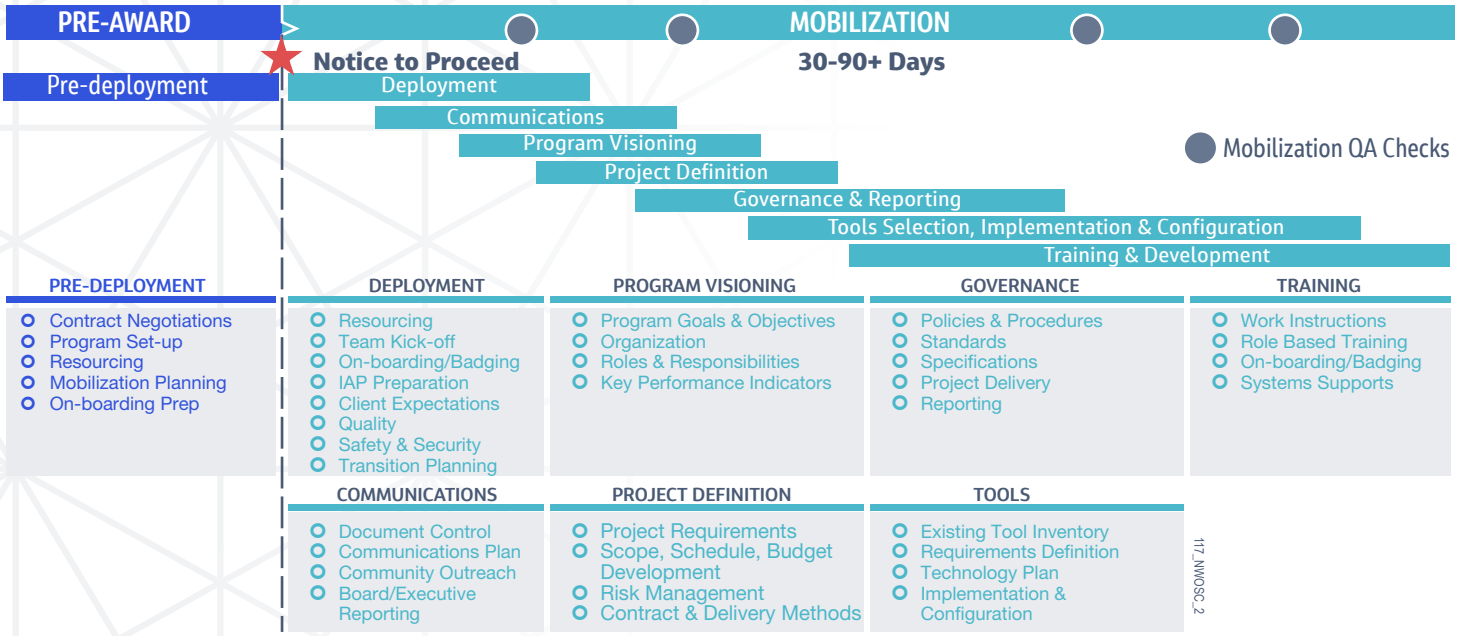
Through partnership and collaboration with the City, during the first 30+ days of the program, we will align and implement the processes and tools essential to achieve early program success, continuous progress, and a strong finish. **Our mobilization team will be led by Kevin Ferguson,** leveraging his more than a quarter century of experience guiding public and private sector organizations. His experience includes managing the New Orleans $2.2-billion Recovery School District Program for more than 10 years. A successful program manager, Kevin has the proven ability to successfully delivery infrastructure programs in New Orleans.

Kevin will be supported by a carefully selected team of local and global staff to launch the program and get the City of New Orleans Enterprise Long-Term Evolution (LTE) network, lighting, traffic management and kiosks program underway. This experienced team will work collaboratively with the City so that your objectives and schedules are understood, scopes and budgets are validated, project controls are tailored to meet your long-term needs, and program standards for design and construction are ready for implementation.

Our team's mobilization and rapid deployment on mega programs and projects worldwide, including Louisiana, provides proven strategies to jump start a project.

As shown in the program initiation schedule in Exhibit 5-6, we will begin the integration process immediately upon notice of selection. Smart+Connected NOLA will work closely with the City to confirm your program needs, allowing us to meet your more immediate needs while ensuring we are aligned with your longer-term Smart City Program goals.

EXHIBIT 5-6. *Our rapid mobilization plan puts the processes and tools in place to meet your immediate resource needs while aligning with your long-term program requirements.*



END-TO-END SERVICES

During program initiation, the following activities will be implemented to immediately begin key work and achieve "quick wins" to gain stakeholder confidence:

- Deployment of an integrated, high-performing team
- Governance structure that complements the City's lines of authority
- Single, unifying program controls system
- Community business enterprise (CBE) engagement
- Digital inclusion strategy
- DBE participation in delivery
- Expedited delivery of critical path projects
- Plan for community engagement and stakeholder participation

Our approach to these activities and the value they bring to the City's program are briefly described next.

Development of an Integrated, High-Performing Team

The high-functioning, integrated Smart+Connected NOLA team has the proven ability and capacity to deliver the City of New Orleans Smart City program's system improvements within budget and schedule. **Our integrated team has a strong sense of purpose and unity, which is essential to delivering the program improvements.** Creating this integrated team requires careful planning and coordination to lay the foundation for a culture of teamwork, ethics, stewardship, and a solution-driven "one team" organization (Exhibit 5-7).

EXHIBIT 5-7.

Coordination and teamwork with you will be essential to program success. Regardless of corporate affiliation, we will collaborate with all program participants and build trusting, productive relationships. We will use several mechanisms to encourage this spirit of partnership, as described next.

Program Management Office Set-up

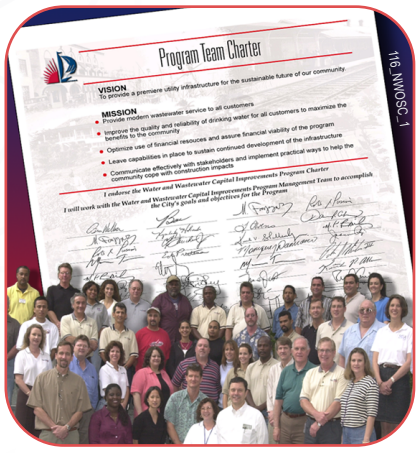
To expedite mobilization of our team, key staff are prepared to either work in the City of New Orleans office or out of our program management office located at 1555 Poydras Street in New Orleans (Exhibit 5-8). The New Orleans office has more than enough space to accommodate the Smart+Connected NOLA team. The walking distance from our office to the City of New Orleans' office and to City Hall makes our team accessible to the City's offices for meetings and reviews.

EXHIBIT 5-8. ***Jacobs' New Orleans office has more than enough space to accommodate the Smart City team members not residing in the City's office.***

Chartering to Align the Team

The Smart+Connected NOLA team approaches the City of New Orleans Smart City initiatives with an open mind and a commitment to partnering with the City and other stakeholders to identify the best solutions for meeting goals and objectives. To this end, one of the first activities will be a chartering session with the City and our team to clearly define program goals, responsibilities, and processes and procedures. The outcome of this session will be a signed charter in which program participants agree to program goals and their individual responsibilities.

Schedule, cost, and quality expectations will be confirmed during the chartering session, as will the coordination of work as this will require consistent and disciplined interface and management. We will also document how the City currently communicates critical project information and will discuss reporting parameters moving forward with the program.



The program charter aligns team members to a common goal and purpose, focusing the work effort.

During program initiation, we also recommend a workshop with the City and other program stakeholders to begin building a fully integrated team. At this workshop, we will address program challenges and considerations, as well as scope, goals, expectations, roles, and responsibilities. The workshop will be a critical first step in fully engaging the leadership from our various organizations in developing the overall delivery plan for the City's program.

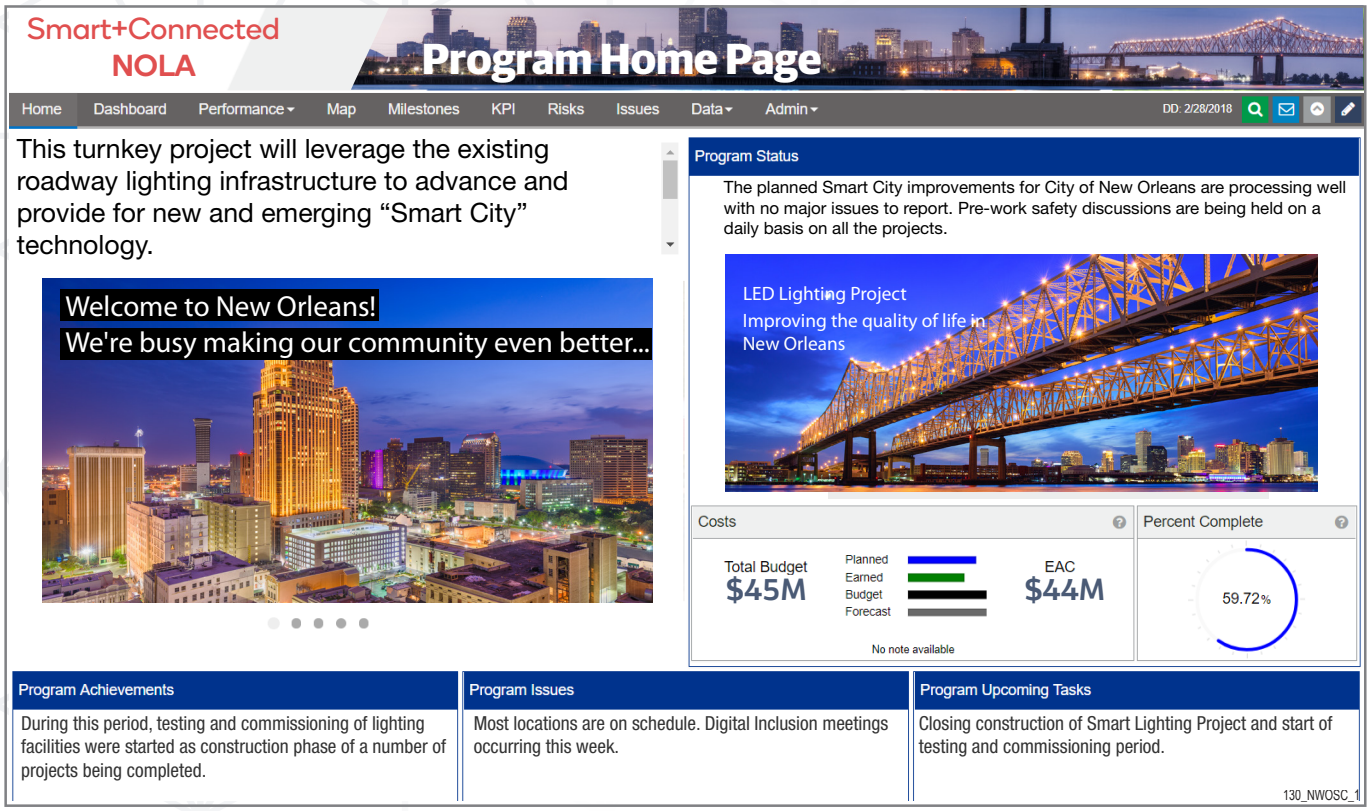
Communication Promotes Collaboration

Communication is the key to success for any program, large or small. Consistent communication and coordination move projects forward, facilitate collaboration and teamwork, and promote a true "one team" mindset. We will work closely with the City to understand your existing communications and coordination program. Our experience shows that successful programs employ a multi-faceted communications plan that integrates program stakeholders in the following ways.

Regular program meetings.
Regular coordination and status meetings are held at mutually agreeable intervals for the program as a whole and for specific projects. Status reports, meeting minutes, and action item lists are maintained and distributed in accordance with the communications plan. Thorough documentation of key decisions and actions, including decision making with key stakeholders can also be posted on a web-based portal that can be accessed by the City and other authorized team members (Exhibit 5-9). To avoid the possibility of miscommunication, this interaction follows a "chain of command" scenario established with the City at the outset of the program.

Development and distribution of program- and project-level reports. Through our experience on past programs, we understand that the types and frequency of reports are driven by the City's unique needs and the requirements for the Smart City program. In addition to weekly project meetings with your staff, successful programs could include the following reports: weekly progress status reports, monthly status reports, quarterly progress reports,

EXHIBIT 5-9. ***The Acuity Program Management Portal will serve as the central repository for program information, providing the City with access to real-time information 24/7.***



and special reports, as needed. The weekly reports help identify, address, and track project issues and include items such as schedule updates, an action item log, and a decision tracking log.

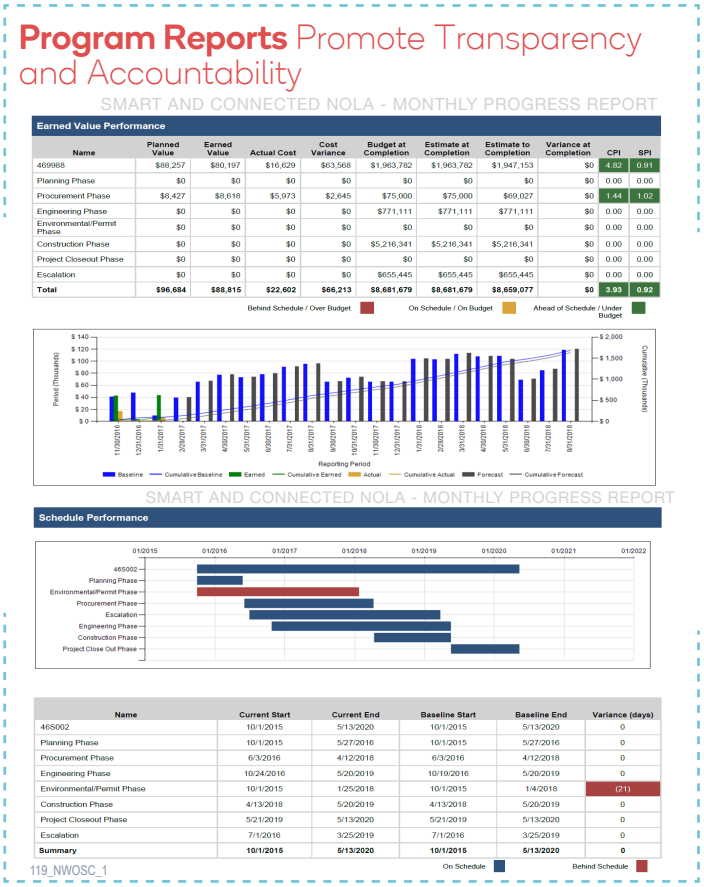
We will use Jacobs' Acuity Program Management Portal to allow access to reports, metrics, and other program performance information. Acuity will facilitate transparency with the City regarding program performance at any given time (Exhibit 5-10).

Capacity building within the City's organization. Throughout the program, we will provide continuous knowledge transfer, working side-by-side with your staff, hosting informative brownbag sessions, and providing on-the-job training. On-the-job transfer of knowledge and tools will facilitate our performance as a high-functioning team and will strengthen the City's in-house delivery capabilities for future Smart City initiatives.

Single, Unifying Program Controls System

Operating as an integrated team in the oversight and delivery of the Smart City program increases the need for a single, unifying program controls system. An effective controls system is critical to the

EXHIBIT 5-10. ***Program- and project-level reports will keep stakeholders apprised of progress at all levels of the City's organization.***



successful delivery of the benefits of the program. Jacobs' experience has shown us that one key to successful management of an integrated program team is a robust program controls system (PCS) that integrates with the Acuity dashboard.

Early in the program, our program controls experts will identify the controls needed to manage program scope, schedule, documents, budget, and funding.

Our program controls experts are knowledgeable in all commercially available software and will apply a proven process for identifying the system best suited to the program. For most large programs, we recommend a fully integrated, web-based PCS using off-the-shelf software.

A web-based system will facilitate ease of use by the program team. Our team's secure, easy-to-use Acuity portal seamlessly integrates with any standard project management software and provides a single location from which program participants can access and view real-time program and project information, reports, software applications, and other concession-related information from virtually any location.

The integrated PCS is effective, user-friendly, and scalable to support the following program needs:

- **Scope —** Development of the scope of work and detailed basis of design definitions and project-specific design and design specifications must proceed with precision. Acuity can be used to collaboratively develop and review the scope of work, work breakdown structure (WBS), basis of design, design standards, governance, workflows, and other processes and procedures.
- **Schedule —** Acuity can be used to present and manage schedules, from conceptual design through closeout, and prepare sound baselines that are cost- and resource-loaded, as well as the critical path method (CPM) of scheduling to build the detailed logic that connects activities. The rolled-up construction schedules will be measured against the current approved baseline schedule.
- **Documents —** Effective document control enhances productivity by providing the robust search functionality needed to find specific information in project files. Acuity links to a dynamic document control system that catalogs documents in an easy-to-retrieve repository, typically accessed through SharePoint.
- **Budget —** Program and project budgets will be controlled by first establishing a validated baseline budget and then implementing project budgeting and bid strategy. Program leadership will meet regularly to review all aspects of the budget and schedule to identify risks and to manage program costs and contingencies in a collaborative forum.
- **Costs —** Cost and work breakdown coding structures will enable the program team to report at multiple levels within and outside the organization, as well as seamlessly align with the City's financial and procurement systems to ensure accurate and timely reporting.

Tailored Acuity dashboards make the information generated by the PCS easy to obtain and view. Properly designed dashboards track turnaround time for all permits, requests for information (RFIs) and submittal documents, cost and schedule impacts for approved and pending change orders, schedule performance, programming, noncompliance notices, claims, and safety.

Implementation of Critical Path Projects

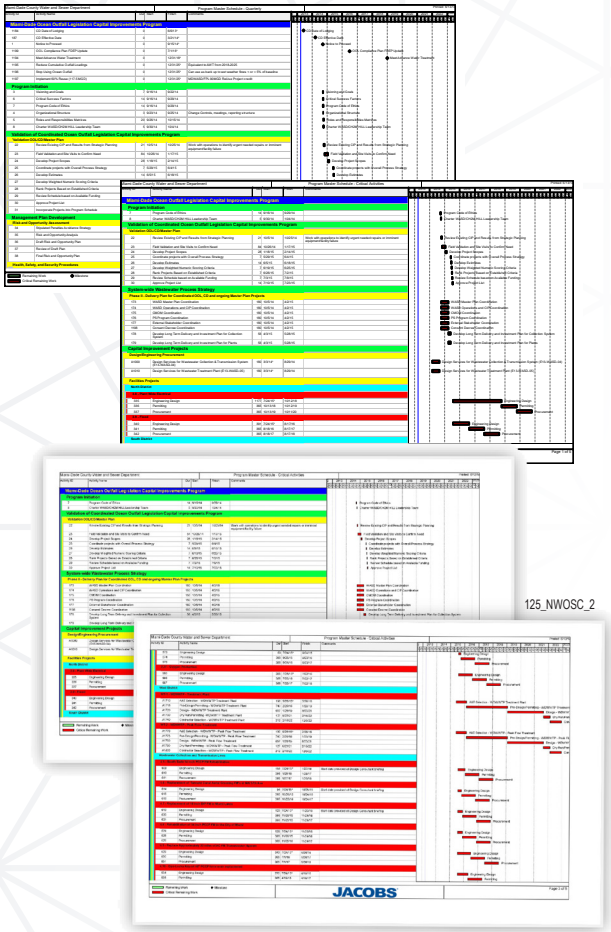
While expediting the program has advantages, an important part of any program is making sure that limited resources are being applied to the highest priority projects. The identification of critical path projects—focusing on those that most directly affect successful delivery of the program—is critical.

Critical path projects can then be expedited through the application of specific program processes.

Throughout this process, the engineers, estimators, construction personnel, equipment vendors, and operators work as a team to focus on expedited delivery of the critical path projects. The City is fully engaged with design development and, through progressive estimating activities, can make informed decisions regarding changes as the design progresses.

$5.7B Ocean Outfall Master Program Schedule Demonstrates Our Scheduling Experience

- **Programmed 28 projects valued at $4.1B** (2014-2025), including 49 critical path activities
- **Integrated $1.6B in Consent Decree projects** (81 projects through 2027) into the OOL schedule for more efficient delivery, including 148 additional critical path activities



Our team has the proven ability to implement controls systems for the largest programs.

Program Planning

Program planning is an essential task as it lays the groundwork for a successful program. Upon notice of selection, we will begin pre-planning activities to ensure we are ready to begin immediately upon receiving the notice-to-proceed (NTP). During program planning, the Smart+Connected NOLA team will perform a variety of services to get project delivery underway. These services include a review, validation, and development of the program baseline schedule and program execution plan.

Project Validation

Working with the City, we will prioritize and sequence the projects within the Smart City program based on the evaluation criteria you consider most important. These criteria will be collaboratively developed with the City and will reflect your fundamental vision and goals for the program. The evaluation criteria will provide a baseline for comparing the relative contribution of each project toward meeting your program objectives.

To yield sound results from the evaluation process yields, the criteria will have the following attributes:

- **Linked to vision, goal, and values.** Criteria are linked to the City's vision, goals, and values and articulate what is important for the program to accomplish.
- **Digital inclusion strategy.** Criteria are linked to impact on increasing digital inclusion.
- **Non-redundant.** Criteria do not address overlapping aspects of performance.
- **Independent.** Accomplishment of one criterion is not dictated by any other criterion.
- **Comprehensive.** Criteria cover all key goals for improvement.
- **Separate from cost.** Cost in this initial evaluation matrix can bias the analysis of a project's true contribution to the City's vision.

Each project will be evaluated against the stated goals of the City and the schedule will be adjusted to balance the shortest possible critical path with the projects that have a high priority for completion based on the evaluation and input from the City.

Program Schedule

Development of the master program schedule is an early priority as it provides the framework for project delivery at both a programmatic and project-specific level. The WBS defines the codes and levels for subconsultants, third-party consultants, and contractors so that they can develop their own schedules. All these schedules are then summarized—or rolled-up—into the master program schedule, providing a detailed summary of project and program status information at any point in the program.

The program baseline schedule and individual project schedules are updated periodically—usually monthly—or as required by the City. The master

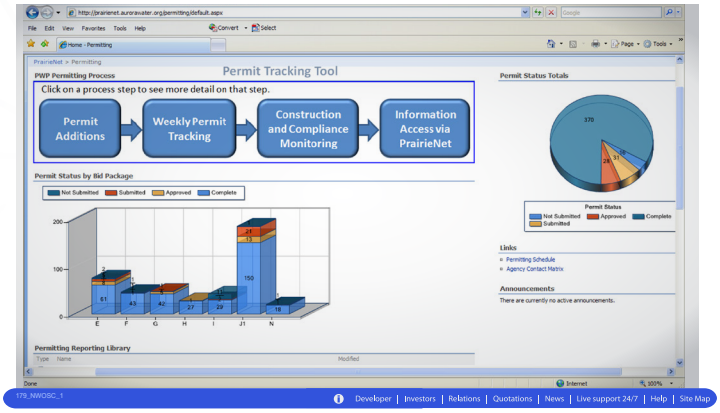
program schedule is regularly compared with the updated project schedules to determine if the program and projects are progressing on schedule. **We have developed a master program schedule for the Smart City program, which can be found in the following page (Exhibit 5-11).** Working with the City, we will refine this schedule so that it reflects the final WBS and the City's expectations for the program.

Regulatory Compliance and Permitting

With more than 30 years of infrastructure development experience in Louisiana, Jacobs has provided permitting coordination for virtually every agency in City of New Orleans, including Department of Public Works, U.S. Army Corps of Engineers, Southeast Louisiana Flood Protection Authority – East, Louisiana Department of Transportation and Development, Coastal Protection and Restoration Authority, and various City and State agencies.

Navigating the permitting process efficiently is key to the successful delivery this program. To expedite the permitting process, early during each project, we share our work plan and delivery schedule with the City's dedicated permitting team and OSS to achieve the required approvals and ensure major milestones are met. **Throughout each project, we conduct regular meetings with the** City's dedicated permitting team **to satisfy questions regarding project status and to better coordinate construction efforts, avoiding schedule delays.**

Because hundreds of permits will be required for the program, tracking permit status and deadlines will be essential to keep the program on schedule. **To expedite permit tracking, the Smart+Connected NOLA team can track permit status on the Acuity program management dashboard, using visual alerts to ensure permits are received in a timely manner.**



Program Execution Plan

Our team's alignment with the City's goals and expectations will ensure the services we provide meet your unique needs and that they address the challenges and opportunities inherent in implementing this Smart City program. The outcome of the program initiation will be memorialized in a detailed Program Execution Plan (PEP), which will provide the details for how we will support the City.

Franchise Agreement

- "Fast Pass" to permitting
- Allows for up to a 15-year agreement

Engineering & Design

- Utilize existing infrastructure (dark fiber, spare conduit) installation
- Leverage other planned project work (streets, sidewalks, etc.)
- Site restoration
- Comply with DPW
- Utilize PIMS to manage permitting, installation, outreach, & site restoration progress

Permitting

- Centrally manage permit process utilizing dedicated SME
- Utility/Service Cut Permit required for all installations in public right of way
- Permit application submitted and processed through One Stop Shop (DPW, SWBNO, DPP, & VCC)

Installation

- Goes beyond using Louisiana One Call
- Schedule around special events, weather events, historical elements, Oak tree roots, vandalism, coordinate with: DPW, SWBNO, ONE, & Council

O&M

- Actively participate in Louisiana One Call (811)
- Monitor operations & condition of assets
- Look for opportunities to expand services portfolio
- Be prepared for & respond to storm events
- Be active & engaged in the community

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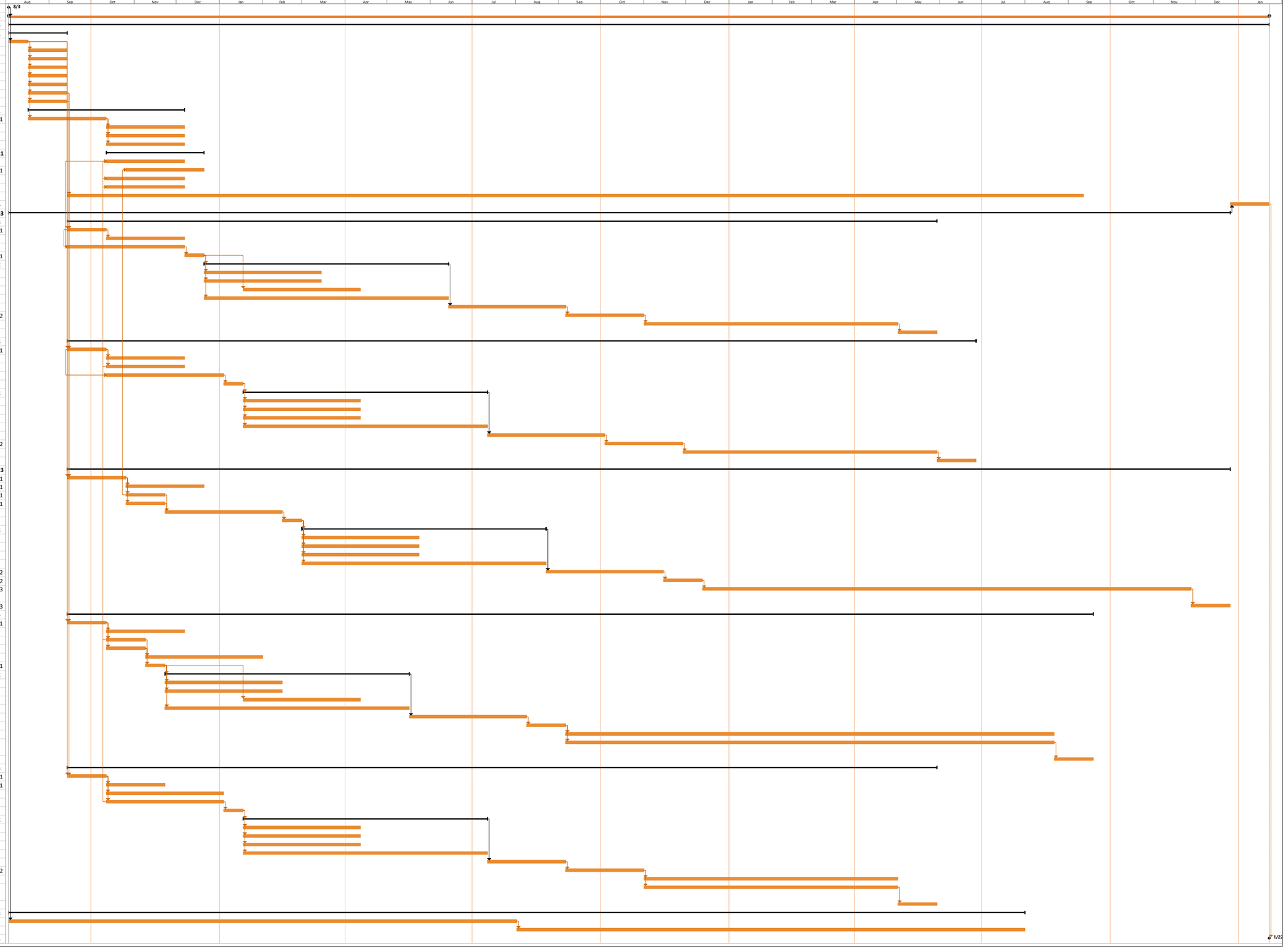
Our local team works daily with City agencies, providing an in-depth understanding of the City permitting process for roadway and building construction.

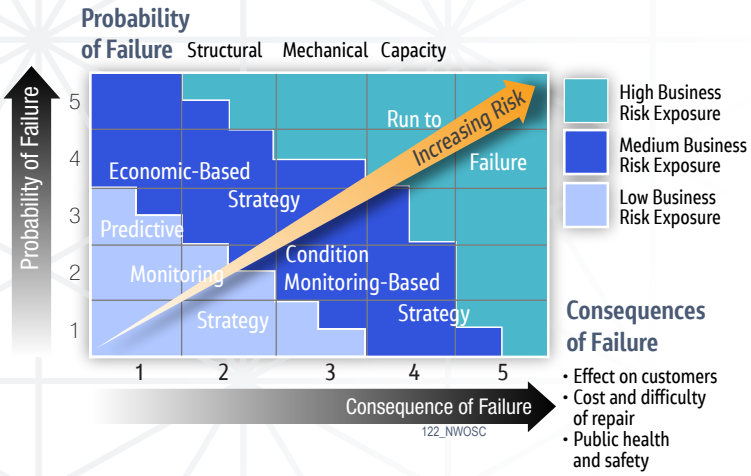
EXHIBIT 5-11

ID	Task Name	Duration	Start	Finish
1	Assumed NTP	0 wks	Tue 8/3/21	Tue 8/3/21
2	Smart+Connected NOLA Program	129 wks	Tue 8/3/21	Mon 1/22/24
3	**Program Management**	**129 wks**	**Tue 8/3/21**	**Mon 1/22/24**
4	**Program Fast Start Implementation**	**6 wks**	**Tue 8/3/21**	**Mon 9/13/21**
5	Mobilize Program Staff	2 wks	Tue 8/3/21	Mon 8/16/21
6	Program Governance Plan	4 wks	Tue 8/17/21	Mon 9/13/21
7	Program Controls Plan	4 wks	Tue 8/17/21	Mon 9/13/21
8	Acuity Program Management Tool	4 wks	Tue 8/17/21	Mon 9/13/21
9	Quality Management Plan	4 wks	Tue 8/17/21	Mon 9/13/21
10	Risk Management Plan	4 wks	Tue 8/17/21	Mon 9/13/21
11	Cyber Security Plan	4 wks	Tue 8/17/21	Mon 9/13/21
12	Sustainability and Resiliency Plan	4 wks	Tue 8/17/21	Mon 9/13/21
13	**Digital Inclusion Plan**	**16 wks**	**Tue 8/17/21**	**Mon 12/6/21**
14	Development of Implementation Strategy	8 wks	Tue 8/17/21	Mon 10/11/21
15	Staff Training on Solutions	8 wks	Tue 10/12/21	Mon 12/6/21
16	Stakeholder Outreach	8 wks	Tue 10/12/21	Mon 12/6/21
17	Plan Implementation	8 wks	Tue 10/12/21	Mon 12/6/21
18	**Stakeholder Management**	**10 wks**	**Tue 10/12/21**	**Mon 12/20/21**
19	Meetings to Present LTE	8 wks	Tue 10/12/21	Mon 12/6/21
20	Meetings to Present Lighting	8 wks	Tue 10/26/21	Mon 12/20/21
21	Meetings to Present Kiosks	8 wks	Tue 10/12/21	Mon 12/6/21
22	Meetings to Present Traffic Solutions	8 wks	Tue 10/12/21	Mon 12/6/21
23	**Program Management and Administration**	104 wks	Tue 9/14/21	Mon 9/11/23
24	**Program Management Closeout**	**4 wks**	**Tue 12/26/23**	**Mon 1/22/24**
25	**Technology Design and Implementation**	**125 wks**	**Tue 8/3/21**	**Mon 12/25/23**
26	**Fiber Network**	**89 wks**	**Tue 9/14/21**	**Mon 5/29/23**
27	Site Survey	4 wks	Tue 9/14/21	Mon 10/11/21
28	GIS	8 wks	Tue 10/12/21	Mon 12/6/21
29	Preliminary Design	12 wks	Tue 9/14/21	Mon 12/6/21
30	Agency Reviews	2 wks	Tue 12/7/21	Mon 12/20/21
31	**Permitting**	**25 wks**	**Tue 12/21/21**	**Mon 6/13/22**
32	DPW	12 wks	Tue 12/21/21	Mon 3/14/22
33	DPP	12 wks	Tue 12/21/21	Mon 3/14/22
34	Vieux Carre Commission	12 wks	Tue 1/18/22	Mon 4/11/22
35	SWBNO	25 wks	Tue 12/21/21	Mon 6/13/22
36	Final Design	12 wks	Tue 6/14/22	Mon 9/5/22
37	Network Cyber Security	8 wks	Tue 9/6/22	Mon 10/31/22
38	Installation	26 wks	Tue 11/1/22	Mon 5/1/23
39	Commissioning	4 wks	Tue 5/2/23	Mon 5/29/23
40	**LTE Network**	**93 wks**	**Tue 9/14/21**	**Mon 6/26/23**
41	Site Survey	4 wks	Tue 9/14/21	Mon 10/11/21
42	GIS	8 wks	Tue 10/12/21	Mon 12/6/21
43	RF Analysis	8 wks	Tue 10/12/21	Mon 12/6/21
44	Preliminary Design	12 wks	Tue 10/12/21	Mon 1/3/22
45	Agency Reviews	2 wks	Tue 1/4/22	Mon 1/17/22
46	**Permitting**	**25 wks**	**Tue 1/18/22**	**Mon 7/11/22**
47	DPW	12 wks	Tue 1/18/22	Mon 4/11/22
48	DPP	12 wks	Tue 1/18/22	Mon 4/11/22
49	Vieux Carre Commission	12 wks	Tue 1/18/22	Mon 4/11/22
50	SWBNO	25 wks	Tue 1/18/22	Mon 7/11/22
51	Final Design	12 wks	Tue 7/12/22	Mon 10/3/22
52	Network Cyber Security	8 wks	Tue 10/4/22	Mon 11/28/22
53	Installation	26 wks	Tue 11/29/22	Mon 5/29/23
54	Commissioning	4 wks	Tue 5/30/23	Mon 6/26/23
55	**Smart Lighting**	**119 wks**	**Tue 9/14/21**	**Mon 12/25/23**
56	Site Survey	6 wks	Tue 9/14/21	Mon 10/25/21
57	GIS	8 wks	Tue 10/26/21	Mon 12/20/21
58	Lighting Master Plan	4 wks	Tue 10/26/21	Mon 11/22/21
59	Architectural Lighting Strategy	4 wks	Tue 10/26/21	Mon 11/22/21
60	Preliminary Design	12 wks	Tue 11/23/21	Mon 2/14/22
61	Agency Review	2 wks	Tue 2/15/22	Mon 2/28/22
62	**Permitting**	**25 wks**	**Tue 3/1/22**	**Mon 8/22/22**
63	DPW	12 wks	Tue 3/1/22	Mon 5/23/22
64	DPP	12 wks	Tue 3/1/22	Mon 5/23/22
65	Vieux Carre Commission	12 wks	Tue 3/1/22	Mon 5/23/22
66	SWBNO	25 wks	Tue 3/1/22	Mon 8/22/22
67	Final Design	12 wks	Tue 8/23/22	Mon 11/14/22
68	Lighting OT Cyber	4 wks	Tue 11/15/22	Mon 12/12/22
69	Installation and Management of Traffic during Installation	50 wks	Tue 12/13/22	Mon 11/27/23
70	Commissioning	4 wks	Tue 11/28/23	Mon 12/25/23
71	**Smart Traffic**	**105 wks**	**Tue 9/14/21**	**Mon 9/18/23**
72	Site Survey	4 wks	Tue 9/14/21	Mon 10/11/21
73	GIS	8 wks	Tue 10/12/21	Mon 12/6/21
74	Lighting Master Plan	4 wks	Tue 10/12/21	Mon 11/8/21
75	Architectural Lighting Strategy	4 wks	Tue 10/12/21	Mon 11/8/21
76	Preliminary Design	12 wks	Tue 11/9/21	Mon 1/31/22
77	Agency Review	2 wks	Tue 11/9/21	Mon 11/22/21
78	**Permitting**	**25 wks**	**Tue 11/23/21**	**Mon 5/16/22**
79	DPW	12 wks	Tue 11/23/21	Mon 2/14/22
80	DPP	12 wks	Tue 11/23/21	Mon 2/14/22
81	Vieux Carre Commission	12 wks	Tue 1/18/22	Mon 4/11/22
82	SWBNO	25 wks	Tue 11/23/21	Mon 5/16/22
83	Final Design	12 wks	Tue 5/17/22	Mon 8/8/22
84	Traffic OT Cyber	4 wks	Tue 8/9/22	Mon 9/5/22
85	Virtual Traffic Management	50 wks	Tue 9/6/22	Mon 8/21/23
86	Installation and Management of Traffic during Installation	50 wks	Tue 9/6/22	Mon 8/21/23
87	Commissioning	4 wks	Tue 8/22/23	Mon 9/18/23
88	**Smart Kiosk**	**89 wks**	**Tue 9/14/21**	**Mon 5/29/23**
89	Site Survey	4 wks	Tue 9/14/21	Mon 10/11/21
90	GIS	6 wks	Tue 10/12/21	Mon 11/22/21
91	Geotechnical and Civil Engineering	12 wks	Tue 10/12/21	Mon 1/3/22
92	Preliminary Design	12 wks	Tue 10/12/21	Mon 1/3/22
93	Agency Review	2 wks	Tue 1/4/22	Mon 1/17/22
94	**Permitting**	**25 wks**	**Tue 1/18/22**	**Mon 7/11/22**
95	DPW	12 wks	Tue 1/18/22	Mon 4/11/22
96	DPP	12 wks	Tue 1/18/22	Mon 4/11/22
97	Vieux Carre Commission	12 wks	Tue 1/18/22	Mon 4/11/22
98	SWBNO	25 wks	Tue 1/18/22	Mon 7/11/22
99	Final Design	8 wks	Tue 7/12/22	Mon 9/5/22
100	Kiosk OT Cyber	8 wks	Tue 9/6/22	Mon 10/31/22
101	Virtual Traffic Management	26 wks	Tue 11/1/22	Mon 5/1/23
102	Installation and Management of Traffic during Installation	26 wks	Tue 11/1/22	Mon 5/1/23
103	Commissioning	4 wks	Tue 5/2/23	Mon 5/29/23
104	**City Command and Control Center**	**104 wks**	**Tue 8/3/21**	**Mon 7/31/23**
105	Management of City Assets	52 wks	Tue 8/3/21	Mon 8/1/22
106	City APP	52 wks	Tue 8/2/22	Mon 7/31/23
107	Phase 1 Complete	0 wks	Mon 1/22/24	Mon 1/22/24



The PEP is developed to provide consistency in project execution, monitoring, communication, and controls, and they will be updated as needed throughout the program.

The PEP will be tiered documents developed at a programmatic level and then tiered on a project-specific level. This hierarchy of documentation will help ensure consistency when implementing the City's projects. The PEP will include plans for managing risk, change, quality, safety, and data, as described next. The PEP will also form the foundation for training all staff assigned to the program.



The City's assets will be managed from a holistic perspective, balancing cost with safety and customer satisfaction.

Risk Management Plan

The identification, quantification, and persistent management of program risks are critical to on-time delivery of the City's program. One of our key responsibilities will be developing and maintaining the register of program risks and mitigation measures, as well as opportunities for enhancing program delivery. Identified risks will be logged in the risk register, indicating the probability of their occurrence, their likely impact, and measures for their mitigation. Our risk management approach will include the following:

- **Aggressive and proactive risk management** initiated and completed at every program phase and project
- **Risk workshops held during the first 100 days** and throughout the life of the program to identify and screen potential risk events
- **Assignment of risk "owners"** tasked with developing risk response strategies and mitigation plans
- **Development of program- and project-level risk registers** to proactively manage risks and develop mitigation plans

Program risk will be evaluated in a multitude of ways—at the programmatic level, the project delivery level, and at the individual asset level. The effectiveness of our risk management processes and tools is demonstrated by the many complex infrastructure programs we have undertaken with immutable deadlines, such as the $14-billion 2012 London Olympic Games and $8.1-billion Dubai Expo 2020.

Quality Management Plan

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Jacobs is proud to be a certified International Quality Standard (ISO 9001) firm and emphasizes the highest quality on every project and program we undertake. ISO 9001 is endorsed worldwide and is a widely accepted standard system for implementing the pursuit of quality in various types of businesses.

ISO requires a company to maintain an internal quality program, which is audited at least yearly. This provides the City with assurance that we will deliver the highest quality services expected from a leader in the industry. Quality assurance/quality control (QA/QC) begins with our commitment to provide professionals who are experienced in all required disciplines, as demonstrated by our organization chart and resumes that appear in Tabs 4 and 7, Capabilities of Organization and Personnel and Key Personnel.

Quality Management Plan. As part of the program-wide quality management process, our team will prepare a program-level Quality Management Plan (QMP), which specifies responsibility for quality throughout the program. The objectives of the QMP will be to verify that:

- Systems and components fabricated and tested in manufacturers' facilities conform to the approved specifications, drawings, procedures, and instructions
- Structures, systems, equipment, and materials constructed and tested at the site conform to the specifications, drawings, procedures, and instructions

- Adequate documentation is provided to regulatory agencies to ensure code compliance and licensing requirements
- A system of QA oversight of the contractor's performance is provided to enforce concession provisions

The QMP establishes the processes and procedures that will be used to manage project quality.

QC Reviews. To provide quality through project delivery, we will administer QC reviews of all program activities to meet interim milestones and provide deliverables that are timely and technically accurate. This will help achieve program objectives and reduce the likelihood of problems with schedule, work product quality, and constructability issues.

Our QC reviews, performed by independent subject matter experts, will ensure:

- **Conformance to the scope and schedule of the concession.** Any variances noted in either will immediately be "red-flagged" to allow for development of recovery approaches under the Change Management Plan.
- **Compliance and use of all appropriate guidance, examples, and protocols.** This includes format and technical approach to provide compatibility with the work products of the other consultants.
- **Overall technical quality.** We will check each deliverable to make sure it is well documented, that the analysis adequately supports the conclusions, and that the conclusions are reasonable. If the conclusions do not pass this "reality check," a more detailed review will be conducted. Each deliverable from each consultant must withstand rigorous peer review.
- **Reviews of externally produced deliverables.** Reviews will be documented through a quality review form and closure must be reached on all review comments.

All of our deliverables for the City's program will be reviewed by independent subject matter experts selected from our firmwide roster of highly qualified professionals. Rigorous and consistent application of these quality paradigms benefits the City by ensuring that work is done correctly and conforms to the concession documents, improving the overall delivery of projects and activities under the program.

Design Management

By their very nature, Smart City programs involve numerous stakeholders that can impact design. **Integration of stakeholder input into facility designs is a challenge that Jacobs is well qualified to perform as the No. 1 Design Company (*Engineering News-Record*, 2020).** Our Program Manager, Kevin Ferguson, will coordinate and oversee the efforts of our multi-disciplinary design team so that we comply with the City's program goals and design standards as well as industry best practice standards. **We will also provide expert input regarding cost-efficient and practical design components that promote sustainability and resiliency.**

Establishment of Design Standards and Basis of Design

At program outset, we will work with the City to establish a unifying set of design standards for the program, to provide consistency and quality and reflect your guidance regarding strategic objectives. The following services are typically provided during project design:

- Basis of Design Reports (BODRs) for each project that consider all feasible alternatives by applying a life-cycle cost analysis
- Existing aboveground and underground utilities and sub-surface investigations in support of the BODR
- Development of design standards for 5G/small cell installation that control placement and aesthetics, while expediting the permitting process
- Provision of value engineering (VE) services to optimize selected alternatives
- Building Information Modeling Technology (3D, 4D, and 5D) in support of the final design effort
- System testing, as directed and necessary, to confirm specific design parameters
- Applicable procurement methods for required equipment
- Identification of the optimal delivery method based on the project criteria (e.g., design-bid-build, design-build) for preparation of the required construction bid documents and applicable regulatory permits
- Provision of design services during construction that include reviewing and responding to all contractor submittals, RFIs, claims, and final certification documents provided by the contractor

Clear Definition of Design Scopes

The best opportunity to control costs and save schedule occurs during design and begins with clearly defined scopes of work. Jacobs will validate scope-to-budget and define clear expectations and parameters for each project assignment and required milestone. We will also help prepare solicitations for services as needed that define scope, schedule, and budget expectations. In addition, our design staff will meet with project stakeholders to gain consensus on scope and validate that the necessary project elements are captured.

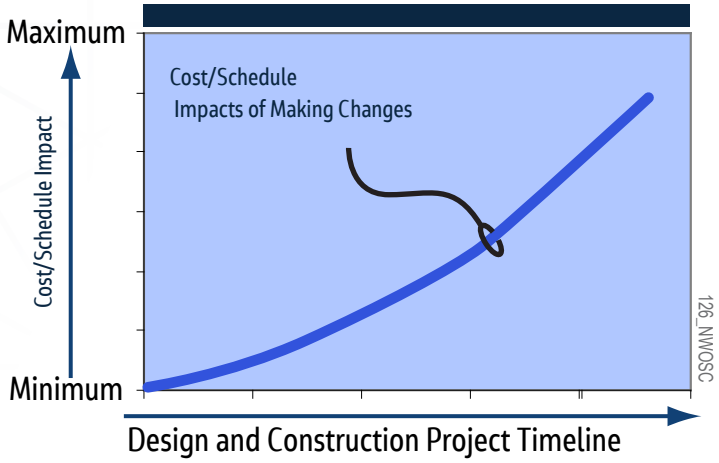
The development and use of standard specifications, design criteria, submittal requirements, operational parameters, stakeholder coordination, and jurisdictional and regulatory requirements will be clearly defined to limit excessive contingency cost build-up and reduce the risk of change orders.

Design Reviews through Key Milestones

Throughout the design process, our design team will schedule and attend regular meetings with the City and other key stakeholders to advise and decide on site use and improvements; selection of materials, building systems, and equipment; construction phasing; and constructability. Recommendations will be provided regarding the availability of materials and labor; time requirements for installation and construction; and factors relating to cost, including preliminary budgets, alternative designs, materials, and operating economics.

During each project design, the Smart+Connected NOLA team will provide review and oversight of scope documents, deliverables, and cost estimates; senior engineering evaluations; interpretation of contract documents; development and oversight of the program's QC procedures; and design and permitting activities. We recommend design reviews early in the design process, as changes made later in design are far more costly and time consuming (Exhibit 5-12).

EXHIBIT 5-12. ***Quality control review of project designs early in the design process will reduce the City's costs as changes made later during design are more costly.***

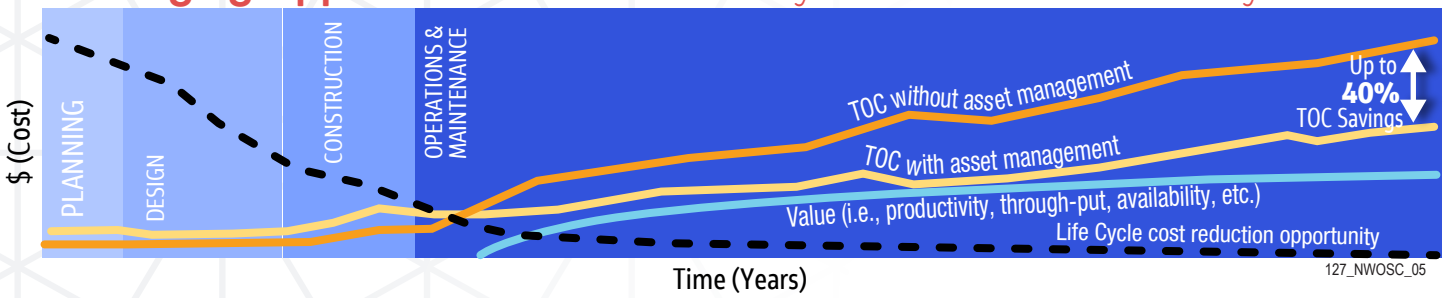


Value engineering (VE) encourages the development of innovative solutions that fulfill a project's function at the least cost. In the best interest of the City, we have expanded the goal of VE to not only reduce life-cycle costs, but also to expedite project schedules. A successful VE exercise depends on the ability of the VE professionals to clearly communicate tradeoffs among:

- Cost, flexibility, redundancy, and schedule impacts
- Cost and convenience
- Cost savings, innovation, and risk
- Initial capital savings and operational cost
- Potential for increasing the speed of delivery
- Building to best achieve the economic and rapid completion of the City's projects is the goal of our VE team

Constructability reviews make sure that technical requirements are met while minimizing redesign, reducing construction costs, expediting project completion, and reducing environmental impacts and long-term maintenance costs. Constructability reviews will be conducted in the earliest project design stages to clarify the design documents and to avoid conflicts, delays and added costs. Constructability reviews also measure the ease with which a project design can be built while complying with the drawings, specifications, construction schedule, QC requirements, and budget restraints. the City staff and other stakeholders will be encouraged to participate in these reviews.

Leveraging Opportunities to Reduce City of New Orleans' Life-Cycle Costs



The best opportunities to reduce life-cycle costs are during the planning and design phases of a project.

Life-Cycle Cost Analyses

To define the overall viability of the program in terms of financial, environmental, social, and technical viability, we will perform life-cycle cost analyses of the various options, factoring in the inherent savings of standardization and commonality. We will look for overall program efficiencies and economies of scale in design and construction. **We will also evaluate project phasing, construction staging, alternative delivery, and the use of shared construction resources to accelerate delivery.**

Jacobs has access to a catalog of value-based ideas and client-approved savings of $7.8 billion recorded in 2016 alone. We will track ideas submitted to and approved by the City for recycling across the program.

Addressing Impacts of Climate Change During Design

Similar to other coastal municipalities worldwide, climate change, sea level rise (SLR), and severe weather conditions are major concerns for City of New Orleans. The City is bordered on the south by Gulf of Mexico, with very little change in elevation in a region prone to extreme weather events, as demonstrated by Hurricanes Katrina and Zeta and others. Also, SLR has become more of a concern in recent years, and clients from across coastal Louisiana are relying on Jacobs to help them address these concerns.

Applying our experience with severe flooding in other parts of the country, such as the coastal areas of New York City, we are helping our clients like the City of New Orleans characterize their risks and develop a plan for the future.

Smart+Connected NOLA brings other unique strengths in local climate change to the City's program. **Our modelers worked in tandem with CLIMSystems—who maintains the most up-to-date climate change data in the world—to update the storm surge model in Biscayne Bay using the most recent projections of sea level rise available.** Model results such as these can be used to identify the most cost-effective means of hurricane hardening or otherwise protecting the City's new Smart assets.

Construction Management

Our primary focus during program construction will be to minimize the impacts related to construction through a broad suite of outreach tools, as discussed earlier in this section, and through various construction practices.

Smart+Connected NOLA's ability to provide full-service construction management (CM) services leverages the expertise of our in-house construction contracting group. **Our approach to CM is based on the experience gained from managing the New Orleans $2.2-billion Recovery School District and $1.6-billion Baton Rouge SSO Consent Decree Programs over the past 10 years.** From this experience, our construction management team understands the community's concerns related to construction impacts and has established successful working relationships with the stakeholders that could be involved in the construction permitting process.

Construction Management Plan

The Construction Management Plan (CMP) is the foundation of Jacobs' provision of CM services for the program. The CMP will be prepared by our Construction Manager, Rodney Carpenter. The CMP will be tailored to each project's scope and the

City's requirements, making it the "blueprint" for how the team will perform CM services and detailing individual roles and responsibilities to execute the scope of services.

The major elements of the CMP will consist of procedures covering construction contract administration, project records and documentation, safety management, change orders, claims avoidance, quality assurance, inspection, progress schedules, shop drawing management, transmittals, as-built records, updating and processing, and project startup/close-out.

Smart+Connected NOLA's construction experts also have extensive experience developing construction coordination plans, including an online construction management manual that can be quickly adapted to meet program construction management requirements. This manual was developed from numerous similar programs and construction management assignments and is currently being used on many of our major programs.

Construction Phasing

Because construction projects cause some level of disruption to traffic and other Smart City operations, a key activity is establishing the construction sequence and duration for each project in the construction documents. By doing so, the contractor can develop an efficient phasing and sequencing plan that best meets the project's requirements while reducing impacts to residents and businesses. **Construction scheduling information and roadway and lane closures will be coordinated through neighborhood specific meetings, which include the contractor and publicized using door knockers, program website, social media, and even going door to door to keep the public informed.**

Door knockers and other forms of communication will prepare residents and businesses when construction occurs in their area.

The goal of the designers will be to develop a set of construction documents that allows the contractor to produce a high-quality product in the least amount of time and with an acceptable amount of disruption to operations. Development of the construction documents for the Smart City program must also include important operational considerations related to lighting system operations. Thus, construction sequencing will be developed during the initial design phase, based on coordination with City operations staff and other stakeholders.

Maintenance of Traffic

When executing work in right-of-way and intersections, we will place significant emphasis on maintenance of traffic (MOT) as a critical feature of the project. It is imperative that the traveling public, whether in a vehicle or on foot, is safe in or near the project limits and that contractors and inspectors are equally protected.

We are also committed to minimizing the impact of construction on traffic flow and maximizing safety for workers. This will be accomplished by following the approved Traffic Control Plan and making recommendations for improvement, if necessary. Typically, the designer of record will provide a detailed Traffic Control Plan as part of the design package. The MOT will include layout of traffic patterns, construction signs, temporary barrier, temporary detours, and other traffic control devices.

The Smart+Connected NOLA team, with local disadvantaged business enterprise (DBE) partners, will assume review responsibility for MOT and will also impose responsibility on the involved contractors. Contractor operations will be closely monitored to ensure that access is maintained to those requiring access throughout the program. When portions of the construction work need to be performed during nighttime hours, the construction manager will monitor the location of lights and noise levels for compliance with noise ordinances and to minimize inconvenience to motorists, residents, and businesses within and/or adjacent to the project limits.

The construction manager, resident engineers, and inspectors will perform periodic quality assurance MOT reviews. Also, if heavy traffic conditions, accidents, and/or unforeseen emergencies occur, the appropriate subcontractor will be directed to temporarily cease operations and adjust MOT devices.

Construction Engineering and Inspection

Following the procedures and requirements outlined in the CMP and QMP, our construction management team will perform a broad range of inspection and quality control functions. The project resident engineers and field inspectors for each project will be thoroughly familiar with the plans and specifications and will be trained in the necessary field procedures prior to beginning construction. They will also receive full instructions on proper documentation and claims avoidance measures. Documentation will consist of field books, daily reports, photographs, videos, and all other appropriate means of record keeping.

The construction manager will maintain a staff of qualified inspectors familiar with all necessary aspects of program construction. Multi-disciplinary inspectors will be rotated among the various construction projects, minimizing cost.

Program Phase-out Plan

Upon the expiration of the public-private partnership (P3) Project Agreement, the City of New Orleans will have the option of either retaining the Smart+Connected NOLA team to continue to assume responsibility for operations and maintenance services, or the City and other stakeholders, such as DOTD, may want to assume management of the assets. If the second option is the case, Smart+Connected NOLA will work with the City and other stakeholders to develop a plan to phase out O&M of the assets

The purpose of the Phase-out Plan is to provide guidelines for the successful termination of service between Smart+Connected NOLA and the City. Adherence to the plan will result in a seamless exit transition. We recommend that the plan be developed for a minimum of 2 years prior to the end of the Project Agreement to allow plenty of time for the affected governments to procure the equipment and staff needed to take over asset management duties. The objective of the Phase-out Plan is to ensure:

- No deterioration in the quality of service to the City during the transition
- Full cooperation for the efficient and effective transfer of all managed assets to the City or successor contractor
- Provision of all appropriate material documentation, software, and records relevant to continued O&M of the assets to the City
- Minimization of transition costs
- Effective communication of the Phase-out Plan to all employees, as appropriate

The exit transition begins when the Smart+Connected NOLA team reaches successful completion. For planning purposes, the exit transition period is assumed to be 45 days. An exit transition manager and team (as appropriate) will be appointed by the Smart+Connected NOLA team to oversee the process.

Revenue and Monetization Model

Smart+Connected NOLA's revenue and monetization model is described in Tab 2, Adequacy of Solutions and Soundness of Approach Qualifications.

Tab 6 - **DBE**

DBE 6

Decades of success working in partnership with the City and local disadvantaged business enterprise (DBE) firms to improve our built and natural infrastructure—facilitating faster, better, and more efficient ramp up, collaboration, innovation, integration, and operation of a connected, secure, and sustainable Smart City. We understand how to work with the City to secure timely decisions, necessary infrastructure permits, and support of stakeholders to make this program a success. The Smart+Connected NOLA team brings a 30-year history of working in the City of New Orleans, during which time we have grown a substantial resource base of local staff, local knowledge, and local pride. In directly serving the City of New Orleans over the past 30 years, Jacobs has successfully delivered projects for a range of City agencies, including Sewerage and Water Board and Department of Public Works, as well as Orleans Parish School District.

Tab 6 Roadmap

DBE Inclusion in the Project Team 6-1

Past Performance Meeting DBE Goals and Complying with DBE Policy 6-4

RFP requirement addressed:
Past Performance ..... √

The Smart+Connected NOLA Team Technical Assistance and Support Services are Designed to Increase Participation and Build Capacity in the DBE Community 6-4

RFP requirements addressed:
DBE Goal and Quality of Proposal ..... √

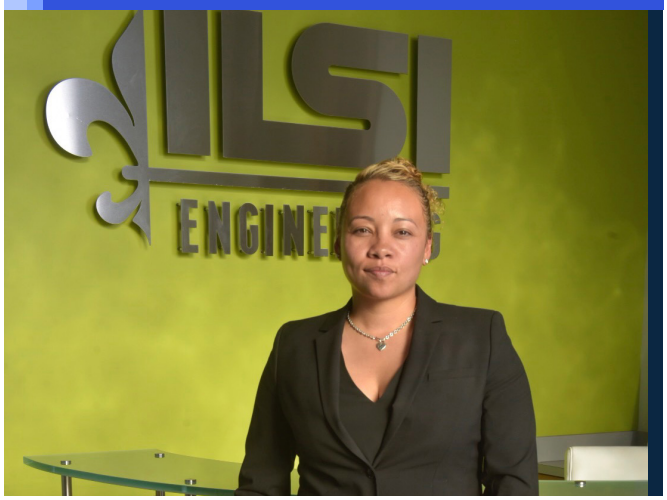
DBE Compliance Form-3 | DBE Participation Plan ..... √ (Tab 14)

DBE Inclusion in the Project Team

For the City's Smart City program (RFQ No. 1193), we are committed to sharing, at minimum, 35% of our project with our trusted DBE partners: Bright Moments, Gaea, HD and Associates, HLB, ILSI, and Malone Electrical. We have selected these DBE partner firms for their specific knowledge, experience, and past working relationships with our team and the City of New Orleans.

Beyond our own team's diversity and our Digital Inclusion Plan to bring equity to digital infrastructure in New Orleans, we are committed to leveraging the project to create community-based economic opportunity. We share the City's commitment

> "We are so excited to be teaming with Jacobs once again! We are proud to team with a company like Jacobs who treats us as a partner and not an afterthought. We have worked with many large companies in the infrastructure space, and because of that we are very selective & intentional about who we agree to do business with. The Jacobs team in New Orleans is a model of what successful Prime-Sub relationships can look like across this country."
>
> *- Iam Tucker, President/CEO/Owner of ILSI*



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Committed to Helping Emerging Business Grow and Thrive in Louisiana

Due to our existing reputation as being a true small business partner in Louisiana, we participated, by invitation only, and received an award from Governor Edwards in the inaugural Louisiana Economic Development Small Business Mentor-Protégé Program — the first of its kind in the state.

of maximizing DBE firms' participation in the project's success. We are prepared to implement techniques we successfully used elsewhere, such as implementing mentorship programs for growth in professional service capacity, offering training programs for local labor, using community outreach and engagement to inform residents and small businesses of opportunities, as well as communicating job creation to the public for greater awareness. Our team's steadfast commitment to building long-term relationships in the DBE community is reflected in the multi-faceted and organic approach we take to optimizing DBE firms' participation in meaningful roles through every aspect of the project.

Investing in and engaging with DBE firms is part of our team's corporate culture, and we are passionate about building meaningful partnerships with small and diverse businesses that provide value to our projects, our clients, and the communities we serve.

Our History Supporting Small and Minority Owned Businesses

Qualcomm is a longstanding and active supporter of programs that directly help close the digital divide, address social equity, and provide opportunities to learn and invent. The dramatic change of our world in 2020 presented significant challenges to small businesses, and Qualcomm recognized and responded to this challenge by offering the dynamic Qualcomm Small Business Accelerator Program. This program is designed to help small businesses transition to a mobile-first digital work environment, thrive in the new business climate, and prepare for success in the long-term. The comprehensive program was created to provide small businesses with products powered by Qualcomm Technologies solutions, collaboration tools, and technical and integration support, so the selected businesses can continue to maintain operations throughout the current global pandemic and beyond. As a part of this program, Qualcomm supported 33 businesses spanning healthcare, education, crisis response, arts, environmental services, and other industries; most identified as women-owned, minority-owned, and/or veteran-owned. Each small business received a unique variety of products and technical support valued at up to $25,000, based on identified need.

Jacobs has been deeply embedded in New Orleans for over 30 years with a strong commitment to supporting the community. We recognize the importance of providing diverse opportunities to growing businesses, and our commitment to providing these opportunities has been recognized numerous times.

Jacobs has delivered impactful mentor-protégé programs around the world with small and minority-owned business partners, but we are particularly proud to have partnered with Good Work Network in the greater New Orleans area to launch a mentor-protégé program for 12 high-performing minority and women-owned companies working in coastal restoration and water management. The Mentor-Protégé Program offered courses that provided the protégé firms with expertise in business planning, alternative financing, contracts, risk management, procurement, project management, quality, health and safety, and proposal writing. Companywide,

Jacobs ***committed more than $680 million to DBE firms in 2020,*** further demonstrating our commitment to small and disadvantaged businesses.

JLC Infrastructure (JLC) is committed to diversity and inclusion both in its workforce and in its procurement activities. JLC prioritized working with its portfolio companies to adopt diversity and inclusion approaches consistent with JLC's goals. ***As a 100% minority-owned and controlled business,*** the firm has a keen interest in supporting the growth and establishment of other minority-owned, women-owned, and other emerging market businesses. JLC and its portfolio companies regularly select qualified minority- and women-owned businesses (MWBEs) as vendors and partners to support its businesses, ***awarding over $680 million in contracts to MWBEs.*** MWBEs used as vendors and/or business partners by the firm include, but are not limited to, attorneys, contractors, insurance brokers, architects, financial advisors, and consultants.

JLC is currently an equity member of the consortium carrying out the redevelopment of LaGuardia Airport Central Terminal B. JLC's participation in the Terminal B project represents the first time in the State of New York's history that a MWBE has invested in a public-private partnership project. The Terminal B Project is a core component of the overall LaGuardia Airport Redevelopment Program spearheaded by Governor Andrew Cuomo. The program has witnessed unprecedented participation by MWBEs. Contracts awarded to certified MWBEs at the program have exceeded $1.5 billion—the largest for any public-private partnership project in New York State. LaGuardia Airport Central Terminal B P3 project expected to generate $2.3 billion in wages and stimulate $5 billion in local economic activity. JLC is also an equity member of the consortium awarded the John F. Kennedy International Airport Terminal 1 Redevelopment project, and the consortium has committed to strong inclusivity project participation goals.

IKE Smart City (IKE) has an extensive and proven track record of committing to and exceeding DBE/MWBE/MBE goals in the markets in which we work across all facets of our business. From home office team to manufacturing and field associates, IKE is dedicated to being intentional about diverse and inclusionary practices that broadly reflect the communities they serve.

Although there is no small business participation goal for Zyter's Michigan Statewide Automated Child Welfare Information Systems, Zyter has partnered with Certified Small Business partner Flairsoft as a core partner, contributing 20% of the project, providing application hosting and support services.

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As a best practice, IKE's primary delivery methodology is to use local, in-market DBE/MWBE/MBE vendors in the process of deploying the kiosk network. This involves utilities, civil engineers, construction/electrical contractors, and field maintenance. At the start, IKE searches the city's database of DBE/MWBE/MBE vendors to begin engagements for their work, ensuring our highest good-faith efforts to get this accomplished. Ultimately, these vendors have premier working knowledge of city infrastructure and an established reputation of their work in the market, which benefits all parties.

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Locally sourced and trained IKE maintenance crews in action in Coral Gables, Florida

EXHIBIT 6-1

Smart+Connected NOLA	Agency Name	Project Name	Completion Date	DBE Participation Achieved (vs. Goal)
Jacobs	Louisiana Dept. of Education Recovery School District	Rebuild New Orleans Parish Schools	Ongoing	30% (25% Goal)
Jacobs	Sewerage and Water Board of New Orleans	Hurricane Water Related Restoration Program (HRWRP)	2019	36% (35% Goal)
Jacobs	City of New Orleans DPW	Black Pearl Roadway Enhancement & Reconstruction	Ongoing	47.6% (Projected) (35% Goal)
JLC	Port Authority of New York & New Jersey	LaGuardia Airport Central Terminal B Redevelopment	Ongoing	30.2% (30% Goal)
JLC	Port Authority of New York & New Jersey	John F. Kennedy International Airport Terminal 1 Redevelopment	Ongoing	Project construction has not yet commenced
Zyter	Michigan Department of Health and Human Services	Michigan Statewide Automated Child Welfare Information Systems	Ongoing	20% (there is no small business goal for this program)

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Past Performance Meeting DBE Goals and Complying with DBE Policy

We understand inclusion is about more than percentages. We know through our past contracts that meaningful participation by individuals from DBE/MBE/WBE firms are the best metric of our inclusion success. Exhibit 6-1 illustrates our team's participation with the DBE program with the name of the project, the name of the public agency, the completion date of the project, and the goal achieved.

Our DBE Compliance Plan (DBE Compliance Form-3) in Tab 14 illustrates our partnerships and plan to continue meeting DBE participation goals in City of New Orleans' program delivery.

Our DBE Compliance Form 3 – DBE Participation Plan includes our commitment to 35% DBE participation through our proven DBE partners: Bright Moments, Gaea, HD and Associates, HLB, ILSI, and Malone Electrical.

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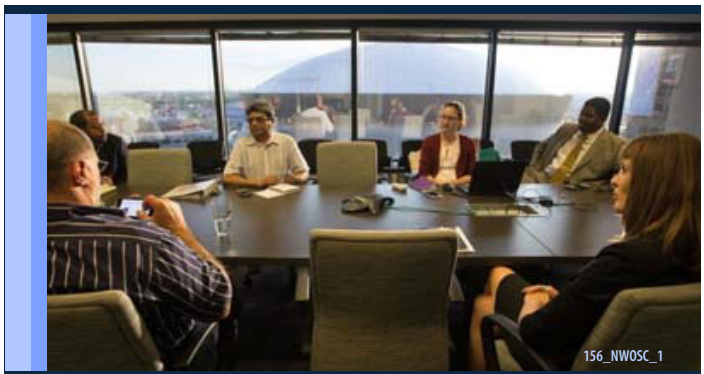
"Throughout our relationship with Jacobs, we have been treated with respect for our work, held accountable for high quality performance and have been consistently paid in a timely and efficient manner for the services we have provided."

Bill Rouselle, CEO of Bright Moments

The Smart+Connected NOLA Team Technical Assistance and Support Services are Designed to Increase Participation and Build Capacity in the DBE Community

Our team's proposed DBE Plan is specific to the project. We plan to work closely with the City of New Orleans' diversity leadership to achieve measurable and impactful results. Our team has managed DBE programs successfully with the three-step plan below to get the job done. Our proposed DBE plan objectives include:

- Maximizing participation at all levels
- Tailoring bid packages to local DBE industry
- Communicating opportunities early and fully
- Reducing barriers to entry
- Promoting capacity building
- Developing measurable metrics for accountability
- Monitoring and reporting to bring public trust



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Hosting our protégé DBE firms in a multi-week training course at Jacobs' offices, focused on skill building across a spectrum of business topics requested by our protégé firms.

We commit to supporting our DBE partners in an ongoing mentor-protégé relationship, similar to the model we adopted when receiving an award from LED and Governor Edwards for our mentor-protégé relationship with ILSI.

Our overall goal is to increase the number of local DBE firms doing business with the City of New Orleans. We propose the following *three steps to success* described next.

All strategies outlined above have been demonstrated by the overwhelming success of our past programs and projects in the City of New Orleans and across the U.S. Working with you, we will take this DBE plan to the next level of effectiveness to benefit not just DBE firms but the entire community.

Step 1 Planning

Working collaboratively with the City and using available reliable data such as a Disparity Study, we develop a comprehensive plan to optimize engagement of DBEs on every aspect of the project. The plan outlines and defines measurable goals, metrics, approach, project elements, and milestones and serves as the framework and measure of accountability throughout the project.

Step 2 Implementation

A. Proactive Outreach and Engagement: To maximize awareness and generate interest, we utilize various outreach strategies to notify, educate, and engage the local and DBE community in upcoming contract opportunities. Early outreach and engagement of DBEs is critical to success. Activities and strategies include:

- Analyze the availability of qualified DBE firms – both currently certified and certification eligible – to determine based on their capacity levels how they can most effectively be engaged, whether at the first-, second- or third-tier procurement levels.
- Correlate opportunities with available qualified firms and develop strategies to fill gaps, such as limited availability of trade specialties.
- Develop effective messaging to inform DBEs on upcoming opportunities and viable ways to be involved.
- Coordinate multiple communications vehicles to reach and engage the DBE community. These may include City-sponsored outreach events; partnerships with trade and certifying organizations, and media communications.
- Communicate to prime contractors the expectations for utilizing DBEs and support in successfully engaging DBEs.
- Foster better understanding of key challenges that DBEs encounter and how to help them overcome (i.e., prompt payment, bonding, insurance, pre-qualification, etc.).
- Schedule bid preview meetings early to allow adequate preparation time for DBEs.

B. Reducing the Barriers: Our staff identifies methods to reduce barriers that traditionally impede the success of DBEs. We consider these and other strategies, such as:

- Procurement strategies that promote engagement of all sizes and types of firms through creative bid packaging.
- Options to mitigate challenges related to bonding, insurance, and project financing/cash flow.
- Promote match-making events and other avenues to introduce DBEs to established contractors and foster relationships in anticipation of upcoming work.

C. Training and Development: Success is not achieved by simply exceeding numerical participation goals. Our team recognizes the value of sharing our expansive knowledge and experience with the local DBE community. In doing so, we promote capacity building and sustainable growth of capable local firms. Training materials may include:

- A customized DBE Training and Development Program to address issues and situations that are relevant and/or exclusive to the project.
- The course topics may include fundamental areas of construction and construction management and how to successfully do business in this project environment.
- The format may include lectures, group discussions, and hands-on demonstrations with proven business practices.
- Course materials are presented by a diverse team of subject matter experts.

Step 3 Monitoring, Reporting, and Compliance

Our team understands the monitoring and reporting requirements and expectations of a DBE program. In addition to verifying compliance with relevant "Best and Good Faith Effort" and tracking "DBE Solicitation" compliance by proposers, we also focus on updating the DBE database and correspondence logs.

Monitoring and evaluating compliance is an important component and the responsibility of our team. We engage DBEs in a manner that is consistent with your requirements and expectations and address any areas of concern proactively, including:

- Track and verify prompt payment to DBE subcontractors.
- Review monthly utilization plans to make sure DBEs are performing the work assigned to them.
- Address any required replacement or switching of DBEs.
- Assist with dispute resolution.
- Provide ongoing DBE status reports including areas of improvement.
- Effective community and stakeholder communications to promote an environment of transparency and inclusion.
- Equally effective and targeted public outreach strategy to offer the value-add of continued public stakeholder engagement throughout the life of the program.
- Develop interactive communications to support individual and public stakeholder meetings, approved web-based, social media, and other relevant digital media platforms. Essentially, the objective is to offer a "real-time" opportunity for offering information and solving any potential issues and concerns quickly and effectively.

Tab 7 -
Key Personnel

7 Key Personnel

The Smart+Connected NOLA team is a well-structured, well-organized, well-governed delivery team. We offer proven ability to implement all facets of a Smart City program—from planning to long-term operations within our in-house team capabilities—and provide you a single point of accountability and transparency. We will work as a trusted partner fully dedicated to your success. Our full suite of services, longevity in the market, and corporate financial strength contribute to the team's confidence that we can be the partner the City needs to meet the program's objectives, maintain stakeholder confidence, and drive on-time, high-quality performance with exceptional safety and security.

This section includes detailed resumes of our key personnel, describing experience, training, education, specialized area of expertise, and experience working with governmental entities. For staff on organization chart but not identified as key personnel, we have included their brief qualifications in a table (Exhibit 7-1), which follows the resumes at the end of this section.

Kevin Ferguson

Program Manager, Risk, Stakeholder, & Partner Management

Why Kevin? *Kevin has strong connections with New Orleans, and he has devoted his career to rebuilding and strengthening his adopted home city through delivering large complex projects. He is an experienced program manager with neighborhood-level connections and close relationships with City Hall, but, most importantly for Kevin, this project is a way to give back to New Orleans.*

Relevant Project Experience

Kevin is a long-time resident of New Orleans, with deep roots in the community. He has 26 years of multi-disciplinary experience, and in the last decade he has been working with the City of New Orleans, both as a City employee and in leading rebuilding programs for the city. This includes serving as the program manager of a $2.2B FEMA-funded Capital Improvement Program for New Orleans Public Schools—overseeing grants management, community outreach, design, and construction of educational facilities. Kevin has the proven ability to lead large, complex programs for the City, and his insight into City process flows allows him to expedite projects and seamlessly coordinate with City departments. He is well connected with key program communities through his extensive stakeholder management and coordination experience in the neighborhoods in which this project is heavily investing.

As a leader, Kevin empowers and guides trusted subject matter experts to deliver the most from his teams. His main goal as a manager is to set realistic expectations for all program stakeholders, and honestly communicate tasks, stakes, timelines, and assessments at all levels of the program. By leading with integrity and transparency, Kevin's programs avoid unpleasant surprises. Kevin is excited for this opportunity to really give back to the city. He believes that all cities need to assess their infrastructure relative to technology and data, and that this project will bring New Orleans to the cutting edge of urban management and civic opportunity. It will set up the city for success, growth, and expansion.

Representative Experience Including with Governmental Entities

Capital Projects Administration, Rebuilding Program, City of New Orleans, LA; Project Manager

Kevin provided grants management, project management, and technical oversight for the City of New Orleans municipal facilities. Performed administrative and technical oversight of design and construction. Defined scope of work, resource requirements, budgets, schedules, and deliverables. Implemented cost, schedule and document control procedures. Coordinated design QA/QC. Developed contracts and procured professional services for design, construction, and engineering. Interfaced with internal departments for project and budget review. Negotiated and developed contract amendments, change

Education/Training

- BS, Mechanical Engineering, Tulane University, 1995

Distinguishing Qualifications

- Former City project manager with longstanding relationships with City Hall and deep experience engaging with the public and achieving community buy-in on the City's behalf.
- Deep understanding of internal and external permitting and approvals processes.
- A decade of management experience on major, city-wide programs in New Orleans.
- A 26-year career supporting governmental clients, with a strong record of keeping projects on time and on budget.

orders, and contract claims. Delivered presentations to end users, community groups, and various other external agencies and entities on project status and development.

Recovery School District (RSD) Orleans Parish Schools Rebuilding Infrastructure Program, New Orleans, LA; Program Manager

Kevin was brought into Jacobs from the City of New Orleans specifically for this program. He joined as the Director of Design Management in 2012 and assumed the role of Program Manager in 2014, based on client recommendations.

Improving New Orleans is personal for Kevin. He is a father himself, and has many friends and family who attend or have attended many schools in the city. He sees the rebuilding program as essential to the city's recovery and sought out Jacobs specifically to be involved in this program.

The program scope included scope included providing grants management and compliance, master planning support services, design management, construction management, project controls, community outreach, and field inspection services, as well as claims and litigation support. This $2.2B program included 87 facilities (36 new build, 16 full renovations, and 35 refurbished buildings).

As program manager of the Capital Improvement Program (CIP) for New Orleans Public Schools, Kevin oversaw community outreach, funding, design, design-build, and construction of educational facilities outlined in the State Facilities Master Plan. He coordinated client interface; developed and implemented Program Management Plan; negotiated contracts for subconsultants and program manager; coordinated staffing, as well as developed and maintained program internal work plan and financials; and provided risk and stakeholder management.

As the director of design management, he provided grants management and compliance, master planning support services, design management, construction management, project controls, community outreach, field inspection services, as well as claims and litigation support. Responsible for providing direction and input to design managers to deliver complete, compliant design packages in accordance with performance standards and educational specifications. Led technical/constructability review process. Coordinated document review; managed multiple design firms; and developed processes for review and updated of performance standards. Also coordinated development of community presentations.

Various Projects, City of New Orleans; Project Manager

Kevin and his family moved back to New Orleans in 2011 to take advantage of an opportunity to help the City rebuild. Kevin took the role of Project Manager for the City of New Orleans Capital Projects Department. The program required project management and technical oversight for parks and recreation, healthcare, public safety, library, community center, court building and other municipal facilities. This included the following project highlights:

- Youth Study Center Juvenile Justice Complex
- Municipal Traffic Court Renovations
- Orleans Parish Criminal District court Renovations
- Carrollton Hollygrove Senior Center
- A.P. Sanchez Community Center
- Rosenwald Community Center
- Rosa Keller Library
- Behrman Soccer Stadium

Various Programs; Project Executive

Employed by a disadvantaged business enterprise (DBE) firm, Kevin was responsible for executive oversight of Orleans Parish Criminal Sheriff's Office Recovery Program, Dallas County Community College District Capital Improvements, Dallas Area Rapid Transit Capital Projects, and the Port of Seattle Runway Rehabilitation. Established and implemented cost, schedule, and document control procedures, coordinated marketing efforts by maintaining client logs, tracking potential projects, and implementing marketing procedures, and conducted ongoing market research for primary and secondary markets. Monitored, tracked, and developed change order and claim status reports, progress reports, forecast reports, inspection reports, closeout documentation, etc. Delivered various presentations to industry colleagues on market trends, industry data, and impacts of local, state and federal legislation on the construction industry.

Sanjeet Pandit

Senior Advisor:
Smart City Applications

Why Sanjeet? *Sanjeet's vision, leadership, and execution have enabled smart verticals and smart spaces/industrial concepts globally that have resulted in quicker adoption into various industries and industrial verticals. He has developed and deployed various Smart City revenue models in association with ecosystem partners, resulting in a win-win situation for all parties. Sanjeet has worked and created relationships with the Smart City ecosystem partners, resulting in multiple Smart City projects globally.*

Relevant Project Experience

Sanjeet has over 20 years in the telecom and wireless technology industry and has held positions in product management, business development, and systems engineering. He is currently the global head for Smart Cities practice at Qualcomm, Inc. USA and is responsible for carrier and ecosystem relationships in this domain. Sanjeet specializes in the areas of Smart City design, creation of smart verticals, digital transformation, and go-to market strategies creating an experience that would benefit public private domains and citizen engagements.

Representative Experience Including with Governmental Entities

City of New York, LinkNYC, New York, NY; Project Management and Technology Advisor

The project consisted of repurposing existing pay phone infrastructure with smart connectivity solutions via the LinkNYC advertising platform. Project set out to bridge the digital divide with an objective to bring fast, free municipal Wi-Fi to millions of New Yorkers, small businesses, and visitors in all five boroughs. Sanjeet served as the project manager from Qualcomm and wireless technology expert for the implementation of the citywide smart digital infrastructures. Additional public services include free nation-wide calling, 311, maps, advertising, service announcements, USB charging and emergency services. The project included 7,500 Links, >1M registered users, and >100M sessions.

Gwinnett County, Reducing Non-Revenue Water (NRW), Gwinnett County, GA

The Gwinnett County project sought to improve water safety while reducing water-related waste and costs. Gwinnett County, working with Jacobs and Qualcomm, used Qualcomm technologies for cellular connected smart meters and analytics to identify water leaks on customer properties and further reduce waste. The advanced metering infrastructure also enabled detection of water consumption, water safety, and water resilience. Over the course of the 1 year, they were able to reduce average water usage by 1.4 gallons per home per day. This adds to 500 million gallons of water a year. These

Education/Training

- Computer engineering graduate with an MBA and holds Advanced Management Program completion (AMP) from Uiversity of Southern California

Distinguishing Qualifications

- Sanjeet is the Head of Smart Cities at Qualcomm Technologies .
- Over 20 years of experience in various senior managemnt roles in Qualcomm, Ericsson, etc.
- Collaborated with global carriers, local governments, and telecommunications governing bodies around to world to launch wireless networks.

water savings could add up to greenhouse gas emissions reductions equal to burning over 55,000 gallons of gasoline.

Smart City Solutions, City of Peachtree Corners, GA

The project consisted of the design and installation of Cv2X OBUs/RSUs, sensors for implementation of a smart traffic management and intersection application where visitors of Peachtree Corners can access CV2X infrastructure.

Sanjeet served as the orchestrator for the Peachtree Corners Smart City solutions. Sanjeet managed the sub-consultants designing and installing the product and acted as a subject matter expert assisting with Smart City implementation. The project was successfully installed, with working live intersections involving vehicles to efficiently and safely navigate traffic.

International Projects, Thailand, Mexico, Vietnam, Brazil, Finland, and Indonesia

Sanjeet, along with his team has implemented smart cities and smart connected spaces projects of various nature in the above international markets and actively working on projects in the U.S. and abroad.

Sanjeet leads and evaluates submittals, RFIs, and technical reviews of all international bids for Qualcomm to ensure projects move forward and requirements are met.

Global Commercial Wireless Mobile Network Launches, Worldwide

Sanjeet has over 20 years' experience in the telecom industry leading mobile carriers around the world with full-scale 3G and 4G commercial launches.

In collaboration working with global carriers, local governments, and telecommunications governing bodies around to world, Sanjeet led large-scale deployment programs and management with multiple Qualcomm teams and with regional operator and smartphone manufacturers driving both technical, engineering and business teams to successful network/handset launches.

Project highlights include:

- 4G network launches in South East Asia, India with Ecosystem Partners
- World's first 4G feature phone on Reliance Jio India
- Launch of first 3G mobile phone with LG in emerging markets globally

Mark Jernigan, PE, PMP

Senior Advisor:
Infrastructure

Why Mark? *Mark has demonstrated program/project management experience in public works infrastructure, including flood risk reduction structures, roadways, bridges, drainage, and water and sewer systems. He has proven engineering, facilities management, construction management, emergency management, communications, strategic planning, personnel management, training, budget development and execution skills in highly stressful, dynamic, and complex operating conditions in the U.S. and across the globe. Most importantly, he is the former Director of Public Works at the City of New Orleans, bringing hands-on experience in managing the operation and maintenance of the City's streetlight system, including the City's LED streetlight conversion in 2013-2014; 2015 Broadband Master Plan; permitting and construction requirements for the City; knowledge of the City's existing traffic management infrastructure; and oversight of the City's minor drainage system.*

Relevant Project Experience

Mark has managed all aspects of a project, from design, bidding, bid/proposal evaluation, contract negotiation, value engineering, subcontracting, procurement, estimating, scheduling, claims resolution, and commissioning for public works projects ranging from $500,000 to more than $1B. Mark has experience developing the criteria documents, requests for qualification (RFQs), requests for proposal (RFPs), selection criteria, and contracts for federal, state, and municipal projects delivered using design-bid-build, design-build, and construction management at-risk (CMAR) project delivery methods. He has coordinated emergency response/recovery efforts at the federal, state, and local levels in southeast Louisiana including Hurricanes Katrina, Rita, Gustav, Ike, and Isaac, as well as the BP Oil Spill, Mississippi River Flood Event of 2011, and New Orleans Canal Street Tunnel Collapse in 2016.

Representative Experience Including with Governmental Entities

Department of Public Works, City of New Orleans, LA; Director of Public Works

Appointed by the mayor to oversee the third largest City department with over 200 city employees organized into five divisions at six separate facilities with over $10B in fixed physical assets. Managed annual operating budget of over $30M and was responsible for a 5-year capital budget of $2B. Oversaw maintenance and management of city's streets, curb space, bridges, signalized intersections, traffic and regulatory signage, minor drainage system, and streetlight system. Responsible for delivery of the multi-billion-dollar Joint Infrastructure Recovery Roads Program of road, drainage, water, and sewer repairs and improvements, including program and

Education/Training

- MS, Civil Engineering (Environmental), Missouri University of Science and Technology, 1997
- BS, Civil Engineering, Mississippi State University, 1991

Licenses/Certifications

- Professional Engineer: LA (No. 036673, 2011); MO (No. 028285, 1997)
- Project Management Professional, No. 1452963, 2011

Distinguishing Qualifications

- Successful leadership of public works and engineering organizations at the federal and municipal levels, including the City of New Orleans.
- Demonstrated mega project program and construction management experience in public works infrastructure in Louisiana.
- Proven knowledge and experience in the delivery of a wide range of projects and programs using CMAR and other alternative delivery methods.

project management, program controls, outreach and engagement, cost control, geographic information system, grant proposal development and management, scheduling, change management, document management, performance monitoring and reporting, policy and standard development, risk management, and quality control management. Agency lead for public works related Smart City initiatives to include a city-wide LED streetlight conversion program. Managed construction on a wide variety of projects including roadway reconstruction, green infrastructure, drainage improvements, streetscapes, bridge replacement, traffic signal upgrades, and streetlight upgrades.

Mid-Basin Sediment Diversion Program Management, Louisiana Coastal Protection and Restoration Authority (CPRA), Baton Rouge, LA; Construction Manager/CMAR Advisor

Assists the CPRA as part of the program management team in delivery of the Mid-Barataria and Mid-Breton large-scale sediment diversion projects through the CMAR alternative project delivery method. This program is valued at more than $2.4B and is the first of its kind implemented by the CPRA to support the State of Louisiana's Coastal Master Plan by rebuilding and protecting coastal regions across southeastern Louisiana. Serves as the lead for construction-related issues at the program level and for both sediment diversion projects. Provides subject matter expertise across a broad range of topics, including CMAR; construction planning, engineering, and management; quality assurance/quality control (QA/QC); operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) planning; program governance; and U.S. Army Corps of Engineers (USACE)/Louisiana Department of Transportation and Development policies related to environmental review and permitting and design reviews. Assists CPRA with day-to-day administration of the CMAR, independent cost estimator (ICE), and owner's review team (ORT) contracts, including conducting project meetings, reviewing invoices, developing scopes of services at the task order level, reviewing deliverables, and assisting contractors in interpreting requirements on behalf of the CPRA. Assists in the development of contractor procurement documents for the projects delivered as part of this program, such as RFQs and RFPs, selection evaluation criteria, negotiation plans, lessons learned, and contracts. Participates as required as a member of selection committees and negotiation teams to assist CPRA in selecting contractors and negotiating contracts.

New Orleans District, USACE; Deputy Commander and Chief of Staff

Successfully oversaw the largest USACE District with over 1,450 military/civilian employees, over $1B in fixed assets, physical plant and equipment at 50 separate sites and installations and over $15B of civil works construction in southern Louisiana, including two separate multi-billion-dollar programs: Southeast Louisiana Urban Flood Control (SELA) Program, and Hurricane Storm Damage Risk Reduction System (HSDRRS) Program. Managed projects such as hurricane and storm damage risk reduction system (levees, floodwalls, and pump stations), ecosystem restoration, marsh creation, and dredging using a full range of project delivery methods, including early contractor involvement (ECI) or CMAR, design-build, and design-bid-build. Directed environmental reviews and permitting, regulatory compliance, water resource management, outreach and engagement, emergency management, and the operation and maintenance of waterways, recreational areas, and navigation/flood control structures.

Albuquerque District, USACE; Deputy Commander and Chief of Staff

Managed a USACE District with over 325 military and civilian employees, over $750M in fixed physical assets at 15 separate sites, including 7 dams and recreational lakes, covering 5 river basins in New Mexico, southern Colorado, and western Texas, and over $300M of construction. Directed delivery of multi-million-dollar USACE Civil Works, International and Interagency Support and Military Construction (MILCON) programs across five states in southwestern US, using both alternative and traditional project delivery methods. Responsible for delivery of multi-billion-dollar Department of Homeland Security/Customs and Border Patrol (DHS/CBP) P-225 Program. Managed planning, engineering and design, and construction of projects such as schools, ecosystem restoration, environmental management, regulatory compliance, real estate acquisition, water well purification, water resource management and operation and maintenance of levees, dams, and recreational areas.

Andrew Kim

Senior Advisor,
Funding/Financing/
Monetization

Why Andrew? *Andrew brings two decades of utility and infrastructure finance experience to the Smart+Connected NOLA consortium. His move from large New York finance institutions to lead the renewable energy and utility investment practice at JLC Infrastructure was motivated by his desire to join a diverse and inclusive organization where he can drive decisions to invest in critical infrastructure in communities with the most need. He is no stranger to custom state-of-the-art project structures designed to accomplish the complex needs of customers, vendors, investors, and policymakers, while at the same time managing risk for all parties.*

Relevant Project Experience

Andrew has over 20 years of utility and infrastructure finance, investment, and asset management experience. Prior to joining JLC, he led energy investment efforts in the Americas for Goldman Sachs Infrastructure Partners, an investment manager that has raised over $10B in private infrastructure capital since 2006. He has successfully executed and managed investments in the regulated utility, energy efficiency, and renewable power sectors, including investments in over 2 GW of wind and conventional power projects globally, and regulated public utilities serving over 2.5 million customers. In 2007, Andrew was one of the original team members in JPMorgan Asset Management's infrastructure platform, which was an early participant in the initial wave of infrastructure-focused private equity strategies launched in the U.S. At JPMorgan, he also advised on marquee transactions in the utility and telecommunications sectors, including Sprint and Nextel's merger in the early 2000s.

Over the last 3 years, Andrew has led numerous investments on behalf of JLC Infrastructure, on projects focusing on providing services and benefits to municipalities and local communities they serve. In East Aurora, IL, JLC invested in the upgrade of lighting, ventilation, and HVAC equipment at 16 schools in the district. JLC's financing of the project was a unique alternative, enabling East Aurora to avoid large, up-front capital outlays for utility equipment and instead allocating vital education dollars to teaching and curriculum budgets. Andrew also led JLC's acquisition of Greenskies Clean Focus, a full-service solar installation and financing platform focused on delivering energy cost savings to municipal and commercial customers through the delivery of solar facilities. He sits on the board of Greenskies and seeks opportunities to leverage its solar and structuring expertise to deliver energy cost savings to municipalities that often are unable to realize the benefits of federal tax incentives. In Louisiana, Andrew led JLC's investment in smart meter installations in several parishes, which have since generated significant water revenue by those municipalities, a direct result of having access to real-time usage data. Most recently, JLC has also just completed the construction of turf baseball fields in Crowley, LA, allowing the city to accelerate and amplify the revenue opportunity generated from its vital sports economy.

Education/Training

- BA, Economics, Harvard College, 2000

Distinguishing Qualifications

- Over 20 years of experience structuring private debt and equity investments in critical infrastructure assets globally.
- Track record of leading and managing investments in utility and energy projects with direct connectivity to communities, municipalities and public end-users.
- Recent local investment in smart water meter and social infrastructure in Louisiana parishes.

Pankaj Patel, PMP
Program Portal

Why Pankaj? *Pankaj has over 25 years of proven experience in information systems development and implementation, program and project controls systems implementation, systems analysis and design, program management office (PMO) development, and capacity building. He has extensive experience in design and delivering executive reporting systems, dashboards development, performance management systems, and key performance indicator (KPI) reporting.*

Relevant Project Experience

Pankaj has extensive domestic and international experience working with large CIP programs. He is experienced in requirements analysis, business process mapping, system architecture design, and managing system development using current technologies such as ASP.Net, C#, Windows 2018 server, SQL Server 2018, and client side development technologies including Javascript frameworks, JQuery, CSS 3, and HTML5. He is experienced in the development of performance dashboards using Dundas dashboard and Microsoft Power BI platforms and has familiarity with both traditional (waterfall) and Agile development methods. He has proven track record of working with and managing teams in diverse cultural environments.

Representative Experience Including with Governmental Entities

Program Management Center of Excellence, Jacobs; Various: U.S., Brazil, Qatar, KSA, Philippines, and India; Senior Program Management Systems Consultant

Pankaj worked with large CIP programs to set-up program and project management information systems (PMIS). Worked with clients and project controls staff to define performance management framework, assist in development of work breakdown structure, define reporting requirements and KPIs. Set up systems and tools to manage risks, issues, health and safety metrics, KPIs, and monthly status reports. Worked with project controls staff to establish processes for periodic data updates and reporting.

Worked on initiation of several large programs, including FIFA World Cup, Rio Olympics, Saudi Authority for Industrial Cities and Technology Zones (MODON), Allegheny County Sanitary Authority (ALCOSAN), New Manila Airport, and Amaravati Capital City. As a member of global program management group at Jacobs, provided business requirements and helped design interface for development of a customized program management reporting tools (V5 Portal and Acuity).

Education/Training

- Masters, Industrial Engineering, National Institute for Training in Industrial Engineering, Mumbai
- BE, Mechanical Engineering, Birla Institute of Technology & Science, Pilani, India

Licenses/Certifications

- Project Management Professional (PMP), Project Management Institute, 2011

Distinguishing Qualifications

- Experienced in managing turnkey projects for implementing IT/IS infrastructure for large utilities.
- Implemented PMISs for several programs, including Sewerage and Water Board of New Orleans (SWBNO).
- Experienced in assessment and developing vision and mission for information technology and systems for an organization.
- Developed and implemented comprehensive IT master plans, covering all aspects of automation, including finance, administration, billing and collection, operations and maintenance and capital planning and program management.

Worked as project controls manager for New Manila International Airport and managed a team of eight staff members, including estimator, cost control specialist, planners, documents control manager, building information model (BIM) manager, and information systems manager. Responsible for managing development of land development phasing plan, master program schedule, estimate revisions based on final master plan, and development of BIM execution plan. Developed detailed system requirements and managed procurement of program-wide control tools including P6, Aconex, BIM 360, and cost management system.

Managed process for selection, evaluation and contracting of PMIS for Oklahoma City Utilities. Managed requirement gathering for a project and portfolio management system for the gas division of Xcel Energy. Developed demonstration scripts, organized demonstration, and managed evaluation process.

Worked with Pittsburgh Airport Authority and Chicago Department of Aviation to develop and recommend project control tools for managing capital expansion.

Implemented PMISs for several programs, including SWBNO, Amravati Capital City, Arctic Logistics Support Program, Fresno Water Improvement Program, Coastal Water Authority, Seminole Tribe Water Improvement Project, Salt Lake City Department of Public Utilities, and San Francisco Seawall Program. Managed implementation of PMIS and worked on establishment of PMO for MODON.

Designed and developed executive dashboards for North Texas Utility and UK Atomic Energy Agency using Power BI platform. Developed and implemented executive dashboards Q2022 FIFA World Cup, and Rio2016 Olympics program using Dundas dashboard technology.

Water and Wastewater Sector Policy Reform Project (WWSPR); Cairo, Egypt; Program Management Information Systems Specialist

Managed design, development, and implementation of a web-based program management information system (PRiSM) for the Ministry of Housing, Utilities and Urban Development. Developed a high-level enterprise work breakdown structure (WBS) to provide reporting at different levels: ministry, agency, geographic region, or project types. Designed and developed formats and implemented a monthly reporting system for projects managed by each agency. Designed an easy-to-use interface for managing project cost and schedule data in a high level WBS format and status monthly progress. The web-based system provides reporting on cost and schedule KPI and provided capabilities for aggregating and reporting project performance at program, agency, and Ministry level. During project timeframe over 3,000 capital projects were actively tracked using PRiSM. Established PMOs in the Ministry and agencies and trained project controls staff in using pre-built templates for data collection. Managed a staff of six including business analysts, senior software architect, developers, and technical writer.

Water and Wastewater Sector Policy Reform Project (WWSPR); Cairo, Egypt; Management Information Systems Task Leader

Designed and implemented a web-based monitoring and reporting system (MARS) for tracking daily quality, production, and performance data from water and wastewater utilities. Designed and managed development of a MIS for Egyptian Water and Wastewater Regulatory Agency (EWRA) to maintain and analyze performance, financial, operational, and commercial data of 14 water and wastewater utilities.

Worked with Cairo Water Company in selection and implementation of a new billing system serving 4 million customers. Developed hardware and software specifications; developed procurement documents and managed procurement process. Managed a staff of eight personnel.

Alexandria General Organization for Sanitary Drainage; Cairo, Egypt; Management Information Systems Task Leader

As an MIS task leader for this institutional strengthening project for the Alexandria wastewater utility, developed an IT Master Plan that addressed areas of finance, O&M, and HR development. The plan was presented to utility leadership and was adopted for implementation. As part of IT master plan, managed and delivered hardware, software and networks valued at $2M. Managed customization of system including personnel, payroll, accounting, inventory, and asset management modules.

Managed development of GIS network maps for the Alexandria water utility. Procured base maps, set up applications (ArcGIS and Map2000i) to digitize network features and update network attributes. Worked on development of application for field GIS data collection using a handheld pen-based computer.

Victoria Johnson
Digital Inclusion

Why Victoria? *Victoria provides expert solutions in strategic planning and urban economic development, with a focus on the disproportionate impact infrastructure has on low-income people and communities of color. Recently, Victoria was appointed by the National Skills Coalition and Business Leaders United for Workforce Partnerships to serve on a national Industry Recovery Panel that will advise the Biden Administration and new Congress on federal recovery policies in the coming months to leverage investments in infrastructure to benefit underserved communities through a racial equity lens to create an enduring community benefits relating to future of work, skills development, creation of employment pathways, and overall community wealth building.*

Relevant Project Experience

Victoria Johnson leads a Social Value Solutions practice with Jacobs, providing expertise in innovative and equitable solutions in strategic planning, program/project management, capital improvement planning, and economic development in conjunction with large infrastructure programs nationwide. As a highly accomplished practice leader with 18 years of experience in the architecture, engineering, and construction (A/E/C) industry, she is an executive advisor and trusted partner to government officials throughout the U.S. in the development of equity initiatives to maximize investments in infrastructure via capital improvement, consent decree and redevelopment programs in excess of $25B. Victoria's clients consist of federal, state and municipal government agencies throughout the U.S. in multiple sectors, including water/wastewater/stormwater, aviation, transportation and transit. She is a proven multi-functional leader with capabilities in strategic management consulting, business development and integrated project delivery.

Victoria leads strategic planning, economic inclusion, and social, racial, and environmental justice techniques for government agencies. In partnership with infrastructure leaders nationwide, Victoria provides program management and executive advisory services for infrastructure-focused equity initiatives, including strategic planning, capital improvement, social procurement, and supplier diversity. She has a reputation for engaging at the highest level of government agencies and working directly with infrastructure executives to deliver agency-wide strategic plans and priorities.

Victoria has been instrumental in building Jacobs' social value capabilities and portfolio of work. She is a proven social value ambassador and executive advisor to our client leaders, stewarding a strong portfolio of work demonstrating how Jacobs delivers effective, multi-discipline social value solutions. Victoria is committed to partnering with public sector leaders globally to create more equitable, inclusive, and resilient communities.

Education/Training

- BA, Communications & English, Purdue University, 2003

Distinguishing Qualifications

- Multi-functional equity expert with demonstrated expertise in developing strategic partnerships with stakeholders across multiple sectors, including municipal, state, and federal agencies, businesses, and community-based organizations to champion economic vitality and drive inclusive growth.
- Experienced executive advisor to senior government leaders in the development of equity-focused strategic plans and programs that identify key economic drivers and initiatives to bolster opportunity and growth.
- Program manager adept at developing and implementing national, regional, and local strategic initiatives addressing economic development needs, including workforce development, green infrastructure, and social justice to produce more resilient, sustainable, and inclusive economies.

Representative Experience Including with Governmental Entities

Port Authority of New York and New Jersey, Airport Redevelopment Workforce Development Program; LaGuardia, JFK & EWR Airports; Training & Stakeholder Lead/Workforce Development Consultant

Key team leader developing and implementing a comprehensive workforce development program for LaGuardia, JFK, and EWR airports. The program is an extension of $20B+ redevelopment projects at three airports with the objective of creating positive economic outcomes for local communities by increasing long-term employment for local residents (unemployed and under-employed), second chance citizens, and youth in partnership with employers, community-based organizations, and local stakeholders.

U.S. Water Alliance; National Water Equity Taskforce (2nd Cohort); Water Equity Consultant

Convened by the U.S. Water Alliance, serving as a member of a 17-city national taskforce anchored by utilities to develop equity, social, racial and environmental justice action plans nationwide. Provided equity leadership for the first cohort, consisting of 7 cities in direct partnership with agency executives. Continuing mentorship and engagement for a second cohort of 10 cities (i.e., Washington, DC, Seattle, Houston, etc.) committed to developing equity roadmaps and action plans.

Water Workforce Report, *Renewing the Water Workforce*, The Brookings Institution; Washington D.C.; Contributor/Water Workforce Consultant

Partnered with the Brookings Institution during its water workforce research with three utilities: San Francisco Public Utilities Commission, Louisville MSD, and Camden County Municipal Utilities Authority. Hosted a *Utility Workforce Convening* in support of Brookings research to understand local employment and economic conditions, and how utilities create jobs for vulnerable communities and boost the economy. Also made key contributions to Brookings' final Water Workforce Report and industry article.

Critical Repair and Reinvestment Plan, One Water Workforce Development Program, Louisville Metropolitan Sewer District (MSD); Louisville, KY; Program Manager/Water Equity/Workforce Development Consultant

Provides strategic and programmatic consulting in partnership with MSD's executive director on community benefits and workforce development initiatives. Played a leadership role in developing MSD's Water Equity Roadmap to advance economic inclusion in among Louisville's vulnerable communities. Worked with MSD's executive leadership to develop and implement the utility's first Community Benefits policy and program, which provides education, funding, and training opportunities in workforce development to local citizens.

City of Buffalo, Buffalo Sewer Authority (BSA); Buffalo, NY; On-Call Professional Engineering Services, Water Equity/Workforce Development Consultant

Partners with BSA general manager and executive leadership team to support the utility's water equity, affordability and green infrastructure initiatives. Supports BSA's Water Equity Roadmap and action plan to benefit vulnerable communities in BSA's service area.

National 7-City Water Equity Taskforce (1st Cohort), U.S. Water Alliance; Water Equity Leader

Key team leader on Louisville MSD's Water Equity Taskforce as a part of a seven-city taskforce convened by the U.S. Water Alliance to develop action-oriented roadmaps to address inequities in vulnerable communities served by utilities. The taskforce consists of utility leaders from Atlanta (GA), Buffalo (NY), Camden (NJ), Cleveland (OH), Louisville (Ky), Milwaukee (WI), and Pittsburgh (PA). Supporting MSD and other utilities and community partners, including the City of Atlanta Department of Watershed Management, Buffalo Sewer Authority, Camden County Municipal Utilities Authority, Louisville Water Company, Louisville Metropolitan Government, and other equity stakeholders.

Susan Howard, CISSP

Cybersecurity

Why Susan? *Susan has an interdisciplinary background in cryptography and cybersecurity with a wide range of professional experience for diverse applications. Throughout her career, she has kept on the forefront of telecommunications and cybersecurity practices and technology, and is frequently trusted with military-grade cybersecurity projects. Susan draws on this depth and breadth of experience to provide peace of mind to clients and stakeholders.*

Relevant Project Experience

Susan has an interdisciplinary background that began as a telecommunications and cryptography specialist in the U.S. Air Force, where she worked on innovative secure solutions such as Meteor Burst Technology. Her private industry experience includes healthcare IoT and network cybersecurity and telemedicine at the only Level 1 Trauma Center in New Mexico, UNMH, where she managed network, cybersecurity, and telemedicine programs and staff for 10 years. After moving to the West Coast, she started the intelligent transportation systems business for LTK Engineering, developing network and cybersecurity technology for light rail systems, WAVE autonomous/connected vehicle (AV/CV) research, and other ITS components. She was co-founder of ITS Oregon. Susan also worked as a network and cybersecurity manager for Intel Corporation, where she developed a cybersecurity architecture to protect Intel Labs from intellectual property loss, earning her an Intel Achievement Award. She also managed external connectivity cybersecurity for Intel partner networks across 16 global sites. After working with Intel Factory Automation cybersecurity team to develop secure architecture, she moved to the electric utility industry where she worked as a security operations center manager for the CIP environment, protecting electric grid resources and managing a staff of 25 network and cybersecurity engineers. She left the electric utility industry to join Jacobs' Industrial Control Systems group, where she practices governance, risk, and compliance and network and cybersecurity architecture and design for water, wastewater, electric utilities, and federal control systems. She currently manages a fast-growing team of cybersecurity technologists supporting federal clients.

Representative Experience Including with Governmental Entities

Honolulu Area Rapid Transit (HART) Light Rail System; Honolulu, HI; Cybersecurity Lead

Jacobs conducted a multimodal fare collection study, including cybersecurity as a precursor to procuring a next-generation, account-based fare collection system.

Education/Training

- MS, Telecommunications and Cybersecurity Engineering, University of Colorado Boulder, 2010
- BS, Information Systems Quantitative Analysis, Portland State University, 2001

Licenses/Certifications

- Certified Information Systems Security Professional (CISSP), ISC2, 2010, #321712, 2022

Distinguishing Qualifications

- Expertise in industrial control systems cybersecurity for federal building systems, transportation systems to include fare systems and WAVE, AV/CV, public utility sector to include water, wastewater, and electric utilities, and private sector, including advanced facilities and data centers.

Following that successful study, HART retained Jacobs to develop technical specifications, procure, and implement the account-based system. Additional tasks included recommendation of an integrated fare structure that will seamlessly accommodate the new rail system, and a complete procurement and operations strategy. The new system introduces secure open architecture, account-based electronic fare payment, and supports interoperability between bus, rail, and paratransit, as well as integration with new partners such as bike share. The implementation of the system is underway.

Susan delivered cybersecurity and telecommunications design oversight on this project as part of the Jacobs fare collections team. She was instrumental in adding best practices data protection and cybersecurity technology platforms to the design. Her work on this project references guidelines identified in the Payment Card Industry Data Security Standards (PCI-DSS). She has also consulted on data records retention best practices as required by the Federal Transit Administration. Her background in networking and telecommunications allows her to provide guidance on cybersecurity protections required for the fare systems backend architecture in accordance with NIST 800 series guidelines.

Southern California Regional Rail Authority (SCRRA), Los Angeles Metrolink; Los Angeles, CA; Cybersecurity and Telecommunications Analyst

The objective of this project was fare system upgrade from SCRRA inclusive of cybersecurity and telecommunications architecture to enable use of 5G technology in geographical areas where cabling and conduit would have been cost prohibitive.

Susan delivered cybersecurity and telecommunications design and consulting services for fare collection systems as part of the LA Metrolink on-call and fare systems upgrade project. This work involved complex troubleshooting of existing fare system problems as well as design guidance for new fare systems upgrades to ensure cybersecurity best practices were followed in accordance with NIST 800 series, PCI-DSS, and ISO/IEC 27k series guidelines.

Advanced Data Facility Upgrade; Buckley AFB, CO; Cybersecurity Lead

Susan's role was as the facility-related control systems cybersecurity technical lead. She provided cybersecurity controls and design for a confidential Intelligence Community agency using ICS 706.2 and UFC 4-010-06 and ensuring any gaps or variances between the two criteria were mitigated. She managed a junior cybersecurity staff person and collaborated with the Jacobs supervisory control and data acquisition (SCADA) lead so that all components were designed securely and submittals could be easily understood by contractors during construction phase. The project required 6 weeks of meetings to ensure cybersecurity controls were aligned with the programmable logic controls (PLCs), network, and human-machine interface (HMI) software components. The cybersecurity portion and entire project was delivered on time and within budget.

USACE/MDA Homeland Defense Radar, HI Design Build Project; Honolulu, HI; Cybersecurity Lead

Susan served as the facility-related control systems cybersecurity design lead for the Merrick/CH2M Joint Venture on this project. As design project lead, she worked closely with USACE MILCON Cybersecurity Center of Excellence in Huntsville, AL, Black & Veatch PMO, USACE Honolulu office, MDA Cybersecurity stakeholders, and HQ Space Command cybersecurity to provide cybersecurity design submittals for all control systems on this project. This project was a collaborative effort between MDA, Space Command, USACE, and Air Force. Susan led the UFC 4-010-06 design efforts and facilitated cybersecurity design meetings to gain alignment on Confidentiality-Integrity-Availability impact ratings, system owner roles, technical implementation details and other key information as a collaborative effort between AECOM/TetraTech, Black & Veatch, and CH2M/Merrick. The project was placed on hold until a new site location can be agreed upon as the site that was planned for this project can no longer be used due to local state restrictions. Susan successfully delivered cybersecurity submittals up to the 35% phase and pending project re-start.

Rodney Carpenter
Field Installation and Commissioning

Why Rodney? *Rodney has extensive installation and commissioning experience and has supervised a wide variety of field projects for municipal, higher education, utility, federal, and state clients, including a strong history working with the Sewerage and Water Board of New Orleans as construction manager on multiple projects.*

Relevant Project Experience

Rodney has 24 years of experience in construction management. His diverse experience includes underground utility and infrastructure, industrial and commercial buildings, chilling plants, central heating and cooling plants, power generation plants, electrical distribution and substation upgrades 15kV to 765kV, oil and gas plant retrofits and outages. Rodney has experience with all types of project contracts including design-build, hard bid, CMAR, program management and construction management (PMCM), and cost plus. He trained as a microwave telecommunications facilities repair man (26VH2) in the military and served in that capacity for 4 years. During this time, he served as am electronics instructor for the 26V course in August, GA. This grounding in electronics and communications helped to further his career in the technical aspects of the power industry and its automation and data communications systems.

Representative Experience Including with Governmental Entities

Power Master Plan and Implementation Projects, Sewerage and Water Board of New Orleans; New Orleans, LA; Construction Manager

Responsible for the onsite engineering representative. Conceptual constructability, systems operations advisor, and component product research. The project involved developing and evaluating alternatives and identifying the optimal strategy for power generation and distribution system improvements supporting the water, sewer, and drainage systems. The first phase of critical power projects, currently underway, includes the static frequency changer and T7.

1370A 60 Hz Switchgear/Transformer Project, Sewerage and Water Board of New Orleans; New Orleans, LA; On-site Engineering Representative/ Construction Project Manager

Responsible for supporting the engineering team and served as the on-site contact. Will provide on-site supervision during construction. The $12M project involved the development and integration of a new 60 Hz medium voltage distribution infrastructure and control.

Education/Training

- U.S. Army Electronic Systems Repair / Electronics Instructor, 1980–1984
- Engineering, Tarleton State University, 1993
- Engineering, University of Texas at Arlington, 1997

Licenses/Certifications

- CMAA, Construction Management Association of America

Distinguishing Qualifications

- Strong history of working in New Olreans with SWBNO, serving as Construction Manager on multiple projects.

6249 Feeder Replacement Project, Sewerage and Water Board of New Orleans; New Orleans, LA; Construction Project Manager

Responsible for managing the last phases of feeder replacement construction, the testing, and placement of the feeders into service. The project replaced 10 distribution feeders of the SWBNO 25 Hz 6600-volt transmission system.

Sewerage and Water Board of New Orleans Program - Various Projects; New Orleans, LA; Construction Manager

Responsible for technical support of all projects under the SWBNO program umbrella, including preparing and oversight of the program's quality management plan, coordinating all engineering services during construction for two drainage system projects totaling $2M, and managing the design team for the $50M general boiler house upgrade project.

Confidential Midwest Utility Client, Turbine Generator and Substation Addition; Confidential Midwest Location; Construction Project Manager

Jacobs provided the planning, detailed design, construction, and startup phase services for the addition of a 20 MW blackstart turbine generator system to one 1,280 MW and one 640 MW combined cycle power plant. The two new General Electric LM2500 gas turbine generators were connected through expansion of the 345 kV air insulated collector buses with the addition of a new 345 kV breaker, air switches and generator step-ups, along with the control and relaying additions and modifications to existing protection schemes. Managed the delivery, installation, integration, commissioning and demonstration testing of the two new turbine generator systems and associated auxiliary equipment on two separate project sites.

University of Minnesota Combined Heat and Power Plant; Minneapolis, MN; Resident Engineer

Resident engineer supporting the planning, predesign analysis and equipment optimization, equipment prepurchase, as-built of existing facilities, preliminary/schematic design, detailed design, construction administration, and startup/ commissioning support for a new 22 MW dual-fuel combustion turbine generator and heat recovery steam generator to be installed at the existing Old Main Steam Plant at the University's Minneapolis campus.

Vistra Energy (formerly Duke Energy) Turbine Generator and Substation Additions; Hanging Rock and Washington, OH; Construction Manager

Provided planning, detailed design, construction, and startup phase services for the addition of a 20 MW blackstart turbine generator system to one 1,280 MW and one 640 MW combined cycle power plant. The new General Electric LM2500 gas turbine generator was connected through an expansion of the 345 kV air insulated collector bus with the addition of a new 345 kV breaker, air switch and generator step-up, along with the control and relaying additions and modifications to existing protection schemes.

Texas A&M University, Central Plant and Power Distribution Upgrade; College Station, TX; Superintendent

Managed the selective demolition of the existing combined heat and power plant. Subsequently managed the purchase, foundations, delivery, installation, startup integration, and commissioning of: GE LM2500+G4 DLE 32MW gas turbine generator; 210,000 pounds per hour EIT heat recovery steam generator; Dresser-Rand 10 MW back pressure steam turbine; steam dump condenser; steam pressure reducing station; medium voltage switching stations; and medium voltage distribution system throughout the campus.

Srinivasa (Srini) Samudrala

Task Manager: City Command and Control Center

Why Srini? *Srinivasa (Srini) is the chief architect and global head of IoT at Infinite (Zyter's parent company), and is also responsible for the Zyter SmartSpaces™ suite of products. He has more than two decades of experience in leading product strategy, technology innovation, delivery and customer growth across multiple verticals including telecom, travel, media and entertainment, healthcare, and hi-tech. Srini has held leadership roles in technology and innovation at Motorola, Sabre, AT&T, and Verizon. He is a passionate and innovative business and technology leader in Smart Cities, IoT, digital transformation, analytics, cloud, design thinking, UX and technology, proficient in building, growing and running strategy, sales, business development, delivery and innovation teams in Smart Cities, Digital, Edge, Cloud, IoT, and AI.*

Relevant Project Experience

Srini has 20 years' experience providing strategic, business, product, technical, and architectural direction; and leading and managing multiple customer engagements with diverse teams around the world. His professional roles include acting as developer, analyst, architect, consultant, researcher, strategist, client partner, mentor, coach, product owner, program director, and business unit head. Srini has a strong analytical and business sense with a proven track record for shaping ideas into implementation. He empowers teams, providing the strategic direction, establishing processes and implementing auto-governance for business and product strategy.

Srini has expertise in architecting, designing, implementing and deploying anything as a service (XaaS) and enterprise application integration (EAI) systems (both front-end and back-end) for web, mobile, social, digital, and IoT. He holds multiple patents and has published extensively on autonomic networking.

Representative Experience Including with Governmental Entities

Infinite | Zyter; Rockville, MD; Chief Architect, Infinite; Global Head, Zyter SmartSpaces, Zyter

At Zyter, Srini drives innovation, strategy, partnerships, business development, sales, marketing, product development and customer success across the globe. He is responsible for Zyter SmartSpaces, a cloud-agnostic, end-to-end Smart Spaces solution driven by IoT and Analytics, for multiple verticals like smart cities, communities, safety and security, logistics, and more. Srini has integrated 90+ devices from 40+ different partners into the Zyter Ecosystem, enabling rapid deployment of digital solutions, including asset tracking, logistics, indoor wayfinding, smart operations, and touchless experiences. Zyter SmartSpaces has been built using Cloud Native principles enabling

Education/Training

- MS, Computer Engineering, University of Texas at Dallas, 2004
- BE, Electronics, University of Mumbai, 2000

Distinguishing Qualifications

- Keynote speaker at Qualcomm Smart Cities Accelerate 2019 and 2020.
- Successfully deployed a microcosm of a Smart City at Qualcomm HQ, which included smart parking, AI-based security, smart shuttles, digital twin, waste management, building energy management, smart lighting, air quality sensing, Smart City command center, and mobile apps for users.
- MVP Award at HCL, 2016 & 2017, for outstanding achievement in new business development, customer delight and innovation.
- Winner at Big Pitch event at Sabre for pitching innovative business ideas in 2011.
- PSD Champions Award in Sabre for Outstanding contributions in 2010.
- Motorola BRAVO awards for Outstanding Performance in 2005, 2006, 2007, and 2008.

rapid development and predictable releases, with a secure core and in-built automation to stitch custom solutions charged in a SaaS model. This can be deployed on everything from Raspberry Pis, to MEC devices, to on-prem VMs, to Public or Private Cloud.

Srini is responsible for technical architecture of solutions at Infinite, including cloud, edge compute, application modernization, healthcare, telemedicine, automation and accelerators, and he is jointly responsible for building Infinite's Multi-access Edge Computing practice, which includes hardware, software and solutions for customers (beyond Telcos) who need low-latency and edge-compute deployments in remote locations or private RANs. Zyter SmartSpaces has been deployed on MEC devices in factories, stadia and more.

Srini successfully deployed a microcosm of a Smart City at Qualcomm HQ, which included smart parking, AI-based security, smart shuttles, digital twin, waste management, building energy management, smart lighting, air quality sensing, Smart City command center, and mobile apps for users.

DXC; Plano, TX; Global Head of IoT Compound Offering

Srini was responsible for creating IoT co-innovation labs for design thinking-led innovation and collaboration with customers, to solve their business problems, envision strategy, build MVPs and eventually deploy at scale. The labs draw from areas such as Digital, Analytics, AI and IoT, across all industry verticals. He managed DXC's strategic partners in the area of IoT and built industry and inter-company consortiums, with a GTM strategy, to pursue new business in IoT. Srini showcased DXC's expertise in IoT, AI, Analytics and Digital through speaking engagements, analyst and advisory meetings, industry working groups and consortiums, workshops, podcasts and panels.

DXC; Plano, TX; Industry Domain Leader, Telcom, Americas

Srini managed customer engagements across telecom, IoT, smart cities, telematics, digital, workplace mobility, and BPO, with teams deployed globally. He was responsible for innovation, strategy, development, delivery, and deployment of IoT, telematics, and Smart City solutions (that weave in AI, analytics, digital, and cloud) for telecom customers across Americas and globally. He was part of a global think tank for IoT, Smart Cities, telematics, digital, AI, and analytics, responsible for customer advisory, advocacy and solutioning. He regularly interacted with CXOs in customer organizations to help them evolve and execute their strategies.

HCL; Frisco, TX; Associate VP & Chief Architect, Verizon

Srini was responsible for overall architecture, development, delivery and support of Verizon's Smart Cities Platform for multiple customers and cities across the globe. This involved product strategy and integrating partner ecosystems into the platform. He worked with C-level stakeholders at Verizon on strategy execution, P&L, acquisitions, IP management, customer delight, and long-term support and monetization. He worked with Verizon with multiple cities to help monetize their smart cities implementations.

HCL; Frisco, TX; Associate VP & Chief Architect, IoT & Digital

Srini was responsible for strategy, development, and delivery of the Digital eXperience Platform, which weaves together design thinking, human centered design, platform thinking and intelligent analytics to create a comprehensive suite of products, processes and accelerators, to build next generation of digital products and solutions, enabling Digital Transformation across multiple domains and verticals. This included overall responsibility for architecture, implementation and deployment of IoT vertical applications (Vision Zero, City Of Boston, AgTech, and Connected Home) at Verizon, device integration in the ThingSpace Platform (lights, video cameras, smart microphones, smart meters, weather stations, smart irrigation pipes, and more), and IoT platform and applications for smart cities and venues at Verizon (Applications: Intelligent Parking, Smart Lighting, Smart Cities). Technologies included Spark Analytics, Sparking Streaming, Spark ML, Scala, Clojure, Kafka, and React.

Mehmet Yavuz, PhD

Task Manager:
Broadband Connectivity

Why Mehmet? *Mehmet is a technology leader in 4G and 5G cellular wireless and IoT technologies specializing in citizens band radio services (CBRS) private networks. He has 24 years of experience in telecommunication companies like Qualcomm, Nortel Networks, and General Electric, with a proven track record driving new technology initiatives from concept to commercialization with numerous commercial field deployments. Mehmet holds more than 170 active U.S. patents and has received multiple prestigious industry awards.*

Relevant Experience

Dr. Mehmet Yavuz is the co-founder of Celona, delivering end-to-end private 5G solution in the CBRS band. Prior to founding Celona, Mehmet worked as VP of engineering at Qualcomm Corporate R&D for 15 years and has led many technology initiatives, from concept to commercialization, including 3G/4G/5G cellular data networks and network densification with small cells, wireless VoIP services, self-organizing networks, cellular/Wi-Fi interworking, neutral host services, 4G/5G in unlicensed and shared bands including CBRS and private networks and 5G for industrial IoT services. He has worked as CTO of Ruckus Networks and also worked at Nortel Networks and General Electric Global Research Center driving many new wireless technology initiatives to commercialization.

Representative Experience Including with Governmental Entities

Marion County School District PLTE Solution; Marion, IN; Executive Sponsor

Marion Community Schools is a public school district with 3,863 students in grades PK, K-12, with a student-teacher ratio of 17 to 1. Mehmet, CTO, was the executive sponsor for the deployment of Celona PLTE solution. He provided guidance on architecture and installation to our partner SBA and our internal support team.

Celona; Cupertino, CA; CTO and Co-Founder

Mehmet led technical and field teams across 50+ field deployments of CBRS LTE/5G networks. This involved 10+ Smart Cities and K-12 remote learning deployments with extensive experience in RF design, coverage and capacity planning, field validation, and performance optimization of CBRS LTE/5G networks. Mehmet provided 5G technology leadership and product expertise for field deployment of enhanced cellular features including multiple-in/multiple-out (MIMO), self-organizing networks, neutral host networks, and IoT use cases.

Education/Training

- PhD, Electrical Engineering University of Michigan, Ann Arbor
- MSc, Electrical Engineering, University of Michigan, Ann Arbor, MI
- BS, Middle East Technical University, Turkey

Distinguishing Qualifications

- 170+ patents issued with U.S. Patent Office.
- 25+ peer reviewed publications.
- Qualcomm Distinguished Contributor Award for Project Leadership, 2014*.
- Qualcomm Distinguished Contributor Award for Technical Contributions, 2009*.
- Qualcomm IP Excellence Award, 2013*.
- Femto Forum (later became Small Cell Forum) Chairman's Award for technical contributions, 2011.
- Inventor Award from Nortel Networks, 2003.
- Management Award by GE, 1999.

*Annual award granted to *one* employee in Qualcomm CR&D.

Ruckus/Commscope; Sunnyvale, CA; CTO

Mehmet led the Ruckus CBRS LTE program with product development for first CBRS certified base station and early field deployments. He drove new technology initiatives and wireless strategy, wireless network standards and regulatory affairs, and advanced development.

Qualcomm Corp R&D; San Diego, CA; VP of Engineering

3.5GHz US CBRS

Mehmet was responsible from Qualcomm's 3.5GHz CBRS shared spectrum technology, strategy and development. He led the technology team on standards (e.g., CBRS Alliance – coexistence/SAS management), trails and collaboration with industry partners and customers, and support of commercialization (FSM and MSM chipset).

Private 4G/5G Networks

Mehmet led technology development, E2E system design, ecosystem development, partner collaborations, prototyping, demonstrations, and customer field trials with 4G and 5G, and commercialization support. He developed the customer relationship in driving requirements, use cases, key differentiations, and business model. Mehmet led the Qualcomm team in E2E system design including IoT device management, services integration with LTE/5G system, SIM-less authentication, sensor gateway and Wi-Fi integration, cloud network and E2E security. He drove shared/ unlicensed spectrum initiatives for private 4G/5G networks, as well as new industrial IoT initiatives including edge computing, security and deep learning.

Neutral Host LTE Network Services for Mobile Network Operators

Mehmet drove neutral host small cell deployment model in enterprise and venues from concept to commercialization. He led coordination within Qualcomm groups (business, product, marketing) and with industry partners including business model, technology development, standardization, commercialization, and spectrum usage. This was a successful demonstration of technology with MNOs and partners, standardization, and spec completion. Supporting commercialization (FSM and MSM chipset) and different business models with partners.

Small cells (3G and 4G) and UltraSON™ Commercialization

Mehmet successfully led small cells project (60+ people) in Corporate R&D department and interactions with different Qualcomm groups and industry partners to enable widespread deployment of small cells. He oversaw Qualcomm's Self Organizing Networks solution from inception to commercial deployments by multiple major MNOs and MSOs worldwide in residential, SoHo, enterprise and outdoor deployments. He led multiple years of evangelization and guidance with MNOs and MSOs leading to commercial deployments. Commercial features provided with FSM small cell solution spanning autonomous self-configuration, and mobility, interference and backhaul management (1x/DO/UMTS/HSPA and LTE). Mehmet led the team in commercialization of UltraSON™ and overall systems support for FSM product team including radio frequency, timing synchronization, and Physical, MAC and upper layers. He also led industry with plug and play deployment model of small cells eliminating the need for manual configuration, site survey, mobility tests, etc. Drove new models and pushed boundaries of the technology

Field Deployments of Cellular Networks

Mehmet successfully led field initial deployments of many small cellular networks with 3G, 4G, and 5G technologies with multiple operators including Sprint, Verizon, British Telecom, and Charter. Example field deployment: NASCAR hyper-dense outdoor small cell trials in NASCAR with density more than 10,00SCs/km2 (link).

Nortel Networks; Richardson, TX; Senior Engineer

Mehmet was the lead research scientist on data networks and protocols including TCP/IP and radio link layer ARQ in terms of their interactions with wireless MAC and physical layers. on CDMA2000 and 1xEV-DO wireless networks. He provided QoS for different multimedia applications over wireless networks and developed RRM and scheduling algorithms which became part of Nortel RAN products. Developed and evaluated various algorithms in areas such as smart antennas, transmit diversity, Walsh code management, and fixed wireless access.

Scott Stokes

Broadband Connectivity: Fiber

Why Scott? *Scott has diverse skills and experience across many areas of the telecommunications business, which make him an ideal team member for this project. He is a hands-on leader of planning, designing, permitting, constructing, and commissioning fiber-optic systems across the U.S. and abroad.*

Relevant Project Experience

Scott is a program manager with over 30 years of experience in engineering, planning, design, and operation of telecommunications networks. His skills include fiber network planning, design, construction, and project planning and project execution for new and existing networks. Scott has overseen the production of network design, engineering drawings and related construction documents for thousands of miles of fiber optic plant, covering much of the U.S. He has strong leadership skills and has been successful in leading teams of technicians, engineers, construction managers, and installation crews. Similarly, Scott has overseen the construction of hundreds of wireless telecom facilities throughout the eastern U.S., including construction, modifications, and repair.

Representative Experience Including with Governmental Entities

Verizon One Fiber; Charlotte NC; Program Manager

Program manager for fiber capacity planning, design and route permitting in the City of Charlotte. The network supports 4G and 5G small cell nodes, as well as 1Gig service to commercial clients within the network footprint. Approximately 500 miles of fiber, several hundred small cell nodes, and nearly 5,000 commercial 1-Gig customer locations served. The routes are optimized for micro trenching as the primary fiber placement method.

SiFi Networks Fiber City; Fullerton, CA; Saratoga Springs, NY; Salem, MA; East Hartford, CT; Costa Mesa, CA; Program Manager

Program manager for designing and permitting the fiber routes of FiberCity networks in five cities, to provide 1GB fiber to the premises (FTTP) service to residential and non-residential buildings, as well as to selected Smart City points. This project requires high-accuracy GIS data collection, site selection, and cooperation with the city engineer for micro trenching as the primary fiber placement method.

Education/Training

- Extensive experience in multiple telecommunications technologies and applications

Licenses/Certifications

- Society of Cable and Telecommunications Engineers

Distinguishing Qualifications

- Responsible for network upgrade and deployment of new broadband high-speed data service in New Orleans.
- Expertise in the application and functionality of telecommunications equipment, with expertise in site design and development.
- Acted as engineering manager responsible for a fiber network upgrade project that spanned 10 years, 1,200 fiber route miles, 2,500 fiber junction locations, 4 new fiber hubs, and relocating the master headend facility with over 12,000 fiber terminations.

Google Fiber; Irvine, CA; Program Manager

Program manager for survey and design of 1GB FTTP in large, multi-building apartment complexes. Projects included design of optical add-drop multiplexer optical transport network, fiber distribution hub, fiber distribution terminal with all necessary duct paths, permitting, and fiber dimensioning to connect 100% of existing apartment units.

City of Atlanta Communications Audit; Atlanta, GA; Deputy Project Manager

As deputy project manager for audit of city-owned communications infrastructure, Scott was responsible for the location, allocation, and status of conduits, cables, cabinets, and hubs. Ensured fiber was inspected, verified, photographed and mapped to a comprehensive GIS database. Also responsible for documenting more than 50 miles of fiber cable route, and 30 miles of copper cable route including traffic signal cabinets, network equipment, cameras, and termination facilities.

AT&T 3G and 4G Upgrade in MARTA Stations; Atlanta, GA; Program Manager

Program manager for the upgrade of AT&T Wireless facilities in Atlanta Metropolitan Atlanta Rapid Transit Authority (MARTA) stations, including upgrades to AC power, DC power, radio base station, cables, and antennas in the downtown stations.

TDS Telecom Fiber to the Home; La Vergne and Mt. Juliet, TN; Engineering Manager

Engineering manager for the planning, design, installation and activation of a gigabit-passive optical network, fiber-to-the-home (G-PON FTTH) network. Responsible for the route design, cable placement, fiber distribution hub (FDH) installation, fiber connectivity planning, splicing, and path testing for brown-field residential network, overlaying TDS Telecom's existing copper telephone plant.

Cox Cable Fiber Network Upgrade; Las Vegas, NV; Engineering Manager

Engineering manager for a fiber network upgrade project that spanned 10 years, 1,200 fiber route miles, 2,500 fiber junction locations, 4 new fiber hubs and relocating the master headend facility with more than 12,000 fiber terminations. The project began by mapping and documenting the existing network, adding 4 new redundant fiber rings, adding 4 new fiber hubs, and then overlaying new cables on the distribution routes to increase capacity for residential cable TV, commercial and medical data, casino and hotel circuits, competitive access providers (CAPs), school networks, and military dedicated circuits for Nellis AFB. The project covered the entire Las Vegas metro area including Boulder City, Enterprise, Las Vegas, North Las Vegas, and Nellis AFB.

Design and Commissioning of First Amplitude Modulated Fiber Optic Super Trunk, Tel Aviv to Haifa; Israel; Engineering Manager

Engineering manager for the custom implementation of new AM optical transmission link between BEZEQ Headquarters in Tel Aviv to a field office in Haifa. This project marked the first successful installation of a link longer than 18.5 miles using the same technology.

Implementation of Residential High-Speed Data; New Orleans, LA; Engineering Manager

As engineering manager, Scott was responsible for the network upgrade and deployment of new broadband high-speed data service for Cox Cable in New Orleans. Responsible for the installation and commissioning of one of the first deployments of new cable tv triple play high-speed data, phone, and video service. Worked with service provider @Home and CableLabs and Cox to develop network characteristics, performance metrics, deployment and commissioning methods that would eventually become the universal standard for network deployment.

Satellite Television Receive Only (TVRO) Facility; Hong Kong; Staff Engineer

Responsible for the physical/mechanical layout of 12 satellite receiver antennas. Performed satellite link analysis and characterization of signal quality parameters for trans-Pacific links to geosynchronous satellites in orbit over the central and eastern Pacific Ocean.

Brian White

Broadband Connectivity: Radio Frequency Design

Why Brian? *Brian has over 27 years of enterprise networking experience and over 24 years of wireless local area network (LAN) experience with both indoor and outdoor deployments. His specialties include client device interoperation, access point backhaul networking, and overall systems integration for deployment orchestration and management system information workflows.*

Relevant Project Experience

Brian White is the Director, Systems Engineering with Celona, specializing in private LTE/5G citizens broadband radio service (CBRS). He was a wide range of experience with corporate enterprise, university/K-12, and municipal wired and wireless networking ranging from small regional companies and schools to the Fortune 500 and the largest regional universities and K-12 districts.

Representative Experience Including with Governmental Entities

Campbell School District PLTE Solution; San Jose, CA; Design Lead

The Campbell Union School District is in the greater San Jose, CA, area. It was established in 1921. As of 2010, it served the communities of Campbell, Los Gatos, Monte Sereno, San Jose, and Santa Clara. The district includes 13 schools (9 elementary schools, 2 middle schools, 1 TK-8 school, and 1 day school) for an enrollment of 7,300 students.

Brian was the lead engineer in designing and implementing Campbell Union School District's private long-term evolution (PLTE) solution. This included deployment of our solution on multiple schools to provide broadband to hundreds of disadvantaged children. His role included pre-sales design, installation, and post-installation testing with the director of IT at Campbell.

University Wireless LAN indoor/outdoor deployment; University of Washington; Seattle, WA; Consulting Systems Engineer

This project provided ubiquitous indoor and outdoor wireless coverage through the University's Seattle campus as well as their satellite campuses throughout the state. Eventually growing to over 10,000 Wi-Fi access points (APs) and supporting more than 40,000 students.

Microsoft corporate Wireless LAN; Global; Consulting Systems Engineer

Involved in three different Wi-Fi deployments, starting in 2000 with approximately 3,500 access points, this network went global starting in 2005 eventually growing to over 35,000 APs and installed in over 90 countries. Brian was involved in early testing,

Education/Training

- Coursework, University of Louisville
- Coursework. Murray State University

Licenses/Certifications

- Certified Professional Installer (CPI) – CBRS private cellular base station

Distinguishing Qualifications

- Federated Wireless CBRS Certified Professional Installer.
- Nearly 25 years of wireless networking experience.

proof of concepts, deployments, and after-installation management consulting. In addition, Brian was highly involved in the guest networking architecture which eventually grew into a global “must have” network and over time evolved into the global 802.1x authentication system.

Seattle Police Department; Seattle, WA; Consulting Systems Engineer

This project entailed a vehicular communications network for police vehicles around certain parts of downtown Seattle as well as in the vehicle barn so that operational data could be uploaded when the vehicles returned to the station. The intention was also to support camera surveillance in various locations.

University Private LTE outdoor deployment; University in California; Director, Systems Engineering

Outdoor private LTE deployment on a university’s 250-acre campus to support outdoor learning locations, campus security communications and possible smart building applications.

Laura Glaser, PE, LC, LEED

Task Manager: Streetlights; Lighting Analysis and Master Plan

Why Laura? *Laura is passionate about all things lighting, both inside and outside of the office. Laura is an active board member of the Illuminating Engineering Society (IES), St. Louis Chapter, and serves on the IES Committee for Light Sources. When not writing standards, she is also a professional theatrical lighting designer, designing lighting for youth theater productions. Laura also serves as the subject matter expert for Jacobs, and engages in complex lighting projects to meet clients' needs. She has been actively involved with smart lighting projects and master planning projects for the past 4 years and with roadway lighting projects for the past 19 years.*

Relevant Project Experience

Laura has over 23 years of experience as a professional lighting designer; over 19 years of experience as an electrical systems engineer in lighting design for roadway applications, land development, industrial, power distribution designs, controls systems, and port facilities; and 19 years of experience in the design of medium voltage distribution systems for land development projects. Laura specializes in all lighting aspects, with a strong background in LED technologies and energy savings analysis and lighting design. She brings more than 15 years of experience with LED lighting systems, including smart LED lighting systems, as well as power distribution design, lighting design, and fire alarm, security, and control systems for roadway applications and municipal facilities and infrastructure.

Representative Experience Including with Governmental Entities

City of Miami Beach Smart Lighting; City of Miami Beach, FL; Project Manager and Lighting Technologist

The project consisted of developing citywide lighting standards to be implemented for all future projects in within Miami Beach and an analysis of all existing lighting types and roadway classifications within the City boundaries. Laura served as the project manager and lighting expert for the implementation of the citywide lighting standards.

Smart City Solutions; Peachtree Corners, GA; Project Manager

The project consisted of the design and installation of 7 cameras, 7 digital displays, 8 access points, and 323 parking sensors for implementation of a smart parking application where visitors of Peachtree Corners can access an application to locate available parking spots within the city town center.

Laura served as the project manager for the Peachtree Corners Smart City Solutions. She managed the subconsultants designing and installing the product and acted as a subject matter expert assisting with smart city implementation. The project was

Education/Training

- BS, Lighting and Robotics Engineering, Purdue University, 2002

Licenses/Certifications

- Professional Engineer: FL (No. 66457, 2007); IL (No. 062068579, 2016); KY (No. 34307, 2018); MI (No. 6201057683, 2011); MO (No. 2010001771, 2010); OH (No. 83144, 2018)
- Lighting Certified (L.C.): National Council of Qualifications for the Lighting Professions, 2006
- LEED Accredited Professional for Buildng Design + Construction (LEED-AP BD+C), United States Green Building Council, 2006

Distinguishing Qualifications

- From 2002-2006, she designed LED fixtures for a leading manufacturer and was on the cutting edge of designing high-power LEDs when the industry shifted in 2005.
- For the City of Miami Beach's smart LED street lighting conversion and system design project, implemented citywide lighting standards for all future projects and analyzed all existing lighting types and roadway classifications within the city boundaries.

successfully installed, with a working phone application that saved residents time to efficiently find parking in a crowded area.

Suntrax; Orlando, FL; Electrical Engineer

The Suntrax project is a master plan project to develop the $150M, 200+/- acre infield area of the Suntrax facility including integrated services, complex road network design and architecture. Laura served as the electrical engineer of record for the landscape lighting and ITS power systems. Laura also helped with the development of a wireless smart city lighting platform. The project was successfully installed, with a working phone application that saved residents time to efficiently find parking in a crowded area.

Opportunity Corridor (OC3) CUY-IR490/SR010-2.09/19.28; Cleveland, OH; Electrical Engineer

The project consists of the construction of 2.1 miles of a new two- to three-lane Boulevard from E. 55th Street to E. 93rd Street. Work includes pavement, railroad, structures, retaining walls, drainage, waterworks, lighting, power distribution, traffic control, traffic signals and adjustment of existing utilities. The project has 29 buildable units and each buildable unit as three submissions (interim, final and released for construction). Subconsultant to independent quality firm (IQF), Richland Engineering, responsible for performing quality assurance functions related to design components and seeing that all design work meets applicable requirements of the contract documents. Perform three separate verification reviews for each of the 29 Design Buildable Unit packages. Also perform the over-the-shoulder design reviews and attend the design task force meetings, weekly coordination meeting and pre-submittal meetings. Laura served as the electrical engineer to review lighting and traffic signal designs for compliance with contract documents and Ohio Department of Transportation Requirements.

I-4/SR 408 Program Management; Orlando, FL; Electrical Engineer

The project is a $2.3B, I-4 ultimate public-private partnership (P3) project and SR 408 Interchange. The project is constructing an interchange between I-4 and SR 408 to provide direct access between the two roadways in downtown Orlando. This effort includes design engineering review, technical specifications review, change order review, project cost estimate development, lighting design, and construction documents and shop drawing review to ensure compliance with approved project design criteria, contract requests for information (RFI) review, and overall project coordination on behalf of CFX. Laura served as the electrical engineer as the CFX owner's representative. She evaluated submittals, RFIs, and technical reviews of all lighting and electrical components.

Wekiva Parkway Corridor Management; Orlando, FL; Electrical Engineer

The Wekiva Parkway (SR 429) connects to SR 417, completing the beltway around Central Florida, while helping to protect the natural resources surrounding the Wekiva River. This effort includes design engineering review, technical specifications review, change order review, project cost estimate development, lighting design and construction documents and shop drawing review to ensure compliance with approved project design criteria, contractor RFI review, and overall project coordination on behalf of CFX. Laura served as the electrical engineer as the CFX owner's representative for the Wekiva Parkway project. Laura evaluated submittals, RFIs, and technical reviews of all lighting and electrical components.

I-295 Express Lanes; Duval County, FL; Electrical Engineer

This project involved adding express lanes along I-295 from the Buckman Bridge to the I-95 south Interchange for a project length of 5 miles. Both 8-lane and 10-lane sections were developed. Project was advertised as design-build. Responsibilities included ITS design engineering review, technical specifications review, change order review, Project Systems Engineering Management Plan (PSEMP), Concept of Operations review, contractor RFI review, and ITS devices shop drawings review to ensure compliance with approved project design criteria. Laura served as the electrical engineer to support the ITS system for the I-295 design-build project.

Kris Milster, PE, PTOE

Task Manager: Traffic Management and Mobility

Why Kris? *Kris has a wide array of experience in scoping, developing, and delivering technology projects around the world. He remains committed to advancing technology to provide better public services throughout his career and will prove to be a great asset in advancing the City of New Orleans' Smart City goals.*

Relevant Project Experience

Kris is a rising star within the ITS and Smart Cities industries. As an active member in the Institute of Transportation Engineers (ITE) at the international and local levels, he is quickly becoming a go-to resource for transportation technology implementation. His work on the Al-Maktoum Dubai Airport and management of the federal ITS Program in the State of Florida will provide the New Orleans stakeholders a smooth and efficient project delivery process.

As the ITS engineer at Ross & Baruzzini, he led telecommunications infrastructure projects in Qatar, UAE, and Saudi Arabia, from concept of operation through final design. He was in charge of a variety of tasks, including design and commissioning, business development and strategic planning, and project management. When he started, the team consisted of only two people with net service revenue (NSR) of $400K. By the end of his tenue, the group had a NSR over $2M, a team of 6, and a growing domestic portfolio in FL, CO, and IA, along with other international projects.

As the ITS/traffic operations engineer with FHWA, he led multiple programs and synthesized national best practices. He was involved in over a dozen innovative ITS projects, ranging from multi-modal integration and adaptive system control systems projects to severe weather detection and parking management systems. These innovative projects required him to lead a diverse group of stakeholders to complete the projects. This led to several risk mitigation and project delivery streamline strategies, which included the teaching of systems engineering training sessions, and facilitation of national peer-to-peer workshops.

Representative Experience Including with Governmental Entities

Traffic Detection Technology Installations, Chandler AZ and Phoenix, AZ; Project Manager and Integrator

Lead integrator for cradle-to-grave NoTraffic traffic detection technology installation projects across the US, most recently a 40-unit system in Chandler, AZ, and a 25-unit system in Phoenix, AZ. Kris interfaced with the client, programmed and converted controller databases, installed equipment, and led a crew of installers. The team was able to install NoTraffic's equipment in very challenging environments, specifically

Education/Training

- BS, Civil Engineering, University of Arizona, 2009

Licenses/Certifications

- Professional Engineer: AZ (No. 57442); FL (No. 78883)
- Certified Professional Traffic Operations Engineer
- Project Leadership Certificate – Cornell University

Distinguishing Qualifications

- Worked with governments and automotive OEMs to implement Smart City and connected vehicle programs.
- Founder and Past Chair of the Institute of Transportation Engineers' (ITE) Smart Communities Standing Committee and Past Vice-Chair and Chair of ITE's Transportation Systems Management & Operations (TSM&O) Council.
- ITE Florida District Young Transportation Engineer of the Year.
- Past Lead ITS Designer for 2022 Qatar World Cup projects.
- Project manager and integrator for notraffic installations in CalTrans District 4, City of Chandler (AZ), City of Phoenix (AZ), Redlands (CA), and Dublin (OH).

around interchanges and older infrastructure. Kris' vast experience in construction led to solutions that reduced the impact on the driving public, and at a lower cost than traditional systems.

Federal ITS Program, Federal Highway Administration; Florida; ITS Project Manager

Program manager and lead technical analyst for the federal ITS Program in the State of Florida. Kris was responsible for managing transportation technology and analytics projects, most notably a major adaptive traffic signal installation and the I-4 Ultimate Managed Lanes, both in Orlando, FL. Kris' continual engagement with stakeholders and facilitation through the federal and technical processes provided a smooth implementation for these complex and multi-agency projects.

Al-Maktoum International Airport – Landside ITS, Dubai Airports – Engineering Projects; Dubai, UAE; Project Manager

Project manager for landside ITS for the$33B Al-Maktoum Airport (DWC) expansion to be completed in time for the Dubai World Expo. The design focused on the implementation of a communications network, landside dynamic message signs, microwave detection sensors, lane control signs, parking management system, smart parking systems, ticketing systems, and assisted with airside roadway traffic signal control system. Project team also worked with the Dubai Roads and Transport Authority (RTA) and consultants/contractors for coordination on adjacent projects. Kris designed and signed-off on the design, engaged with internal and external project stakeholders, and coordinated with other disciplines. Kris was the only certified traffic engineer, which helped with analyzing the complex vehicular and pedestrian traffic movements throughout the airport, along with programming all airside traffic signal controllers in the tunnel system.

Orbital Highway, Contract 4 — ITS, Ashghal; Doha, Qatar; Project Manager & Engineer

Orbital Highway is a 125-mile project, broken into four contracts. ITS project manager for Contract 4, valued at $910M, for the 26-mile, 14-lane loop that extends from the Northwest area of Doha City to the adjacent contract. Systems included lane control signs, weigh-in-motion system, magnetometer detection system, dynamic message signs, and fiber communication and networking. Designer and project manager for all ITS components of the system. Kris' experience with extra-low voltage systems helped make coordination and design simpler and more cost efficient.

Abu Dhabi Low Emission Zone-Feasibility Study and Concept Construction and Design Study, Abu Dhabi Integrated Transportation Center; Project Engineer

Project team prepared and published a conceptual design for a low-emission zone in the island of the Abu Dhabi Central Business District. The design and study forecasted effects of fleet turnover, enforcement options, data collection and analysis, and returns on investment. Kris led the conceptual communications, networking and technological design using automated number plate recognition (ANPR) and toll tag recognition systems, and fiber backbone communication. Project team interfaced with stakeholders on technology along with policy and legislation. Kris' experience in working with vendors was valuable for the customer to understand how this system could be procured and deployed in the most efficient way possible.

Jessica Burton

Task Manager: Kiosks

Why Jessica? *Jessica brings strong expertise in multi-team collaborations, cultivating strategic partnerships, dedication to public benefit, and project management skills necessary for complex projects. Through community engagement and experience working with government entities, Jessica is adept at handling interests of multiple stakeholders concurrently while maintaining internal processes to successfully implement and manage turnkey kiosk solutions for cities across the country, including Cleveland, OH, and Berkeley, CA, and more now underway.*

Relevant Project Experience

As a development manager for IKE Smart City, Jessica has been responsible for cross-team coordination with City partners and internal associates for IKE Smart City, effectively managing project tasks and deadlines. She has proven, tangible experience in cultivating and navigating relationships with local city officials, city staff, and department entities, and local external city partners that include business improvement districts (BIDs) and destination marketing organizations (DMOs) to implement kiosk networks that are customized to tell the story of the city.

Representative Experience Including with Governmental Entities

Smart City Upgrade, City of Cleveland, OH, Development Manager

In January 2019, the Cleveland City Council selected IKE to upgrade the City's outdated static kiosk network and enhance the service to residents while increasing the City's revenue. Since then, IKE Smart City has replaced dozens of static wayfinding kiosks with IKE kiosks and deployed IKE kiosks in several new locations to provide advanced wayfinding and digital information within the right-of-way.

As development manager, Jessica worked closely with several local stakeholders to manage the network in Cleveland, such as the City Planning Commission and the Mayor's Department of Communications. She also cultivated strategic partnerships with local BIDs and DMOs like Downtown Cleveland Alliance and Destination Cleveland to curate local content and maintain an active presence in the local community. Project achievements:

» Replaced the city's outdated static kiosk network at no cost to the City or taxpayers

» Worked with the City's public power agency to implement a wireless metering solution for the IKE kiosks and integrate with the agency's existing billing system

» Partnered with local BIDs and DMOs to curate local content and promote the city

» Provided increased equitable access to city and social services, further enhancing the overall vibrancy of the city through the use of smart city technology and generating revenues to be invested directly back into the local community

Education/Training

- MS, Merchandising, University of North Texas, 2013
- BBA, Marketing, University of North Texas, 2008

Distinguishing Qualifications

- Experienced leader of IKE project implementation across several cities, driving the process from IKE site selection to IKE installation, content management, and maintenance.
- Extensive knowledge and understanding of how to cultivate effective relationships with key stakeholder groups, City staff, and external partners to manage needs and ensure ongoing success of the project.
- Strategic and creative problem-solver who knows how to navigate complex regulatory policies and nuances unique to each City.
- Expert in training and helping cities customize IKE content management system (CMS) to maximize public benefit and promote local business.

The City's advertising revenue share is 100% allocated to the City's Storefront Renovation Program, which provides funding to small business owners to help renovate retail spaces and cultivate commercial districts in neighborhoods outside of the downtown core.

Deployment and Activation, City of Berkeley, CA; Development Manager

IKE Smart City is contracted with the City of Berkeley and Visit Berkeley, to install up to 30 kiosks in the right-of-way throughout various areas in the City of Berkeley with anticipated kiosk installations to start summer 2021.

As development manager, Jessica has worked with all stakeholders including the city, business improvement districts, and destination marketing organizations to install kiosks in ideal locations for maximum public use. She serves as the day-to-day client contact with the City of Berkeley, including key representatives from the Office of Economic Development and Visit Berkeley, to maintain the IKE Smart City content management system and coordinate community messaging and art content on the kiosks.

IKE Smart City Expertise

In addition to working with City partners, Jessica works closely with internal development and deployment teams as a liaison to ensure customization and timely installation of kiosks. In this capacity, Jessica works with IKE Smart City's in-house:

- Software engineering team to deliver innovative solutions to address equity and accessibility concerns
- Creative team to customize applications and posters that promote City events and businesses
- Sales team to ensure economic return to the City
- Development team to learn and share experiences

As a member of IKE Smart City Development team, Jessica has the resources and shared knowledge from Development colleagues working in other cities.

Customization and Integration, City of St. Louis, MO

The City of St. Louis and St. Louis Development Corporation (SLDC) selected IKE Smart City due to robust and flexible software, willingness and ability to integrate with other planned Smart City technology, impressive safety features, and user-friendly interface. The City needed a program that aligned with its Smart City initiatives and overall goals of increasing economic development, improving wayfinding and transportation, promoting tourism and visitor experiences, providing free public Wi-Fi, and focusing on sustainability and air quality. By working closely with the chief technology officer for the city, IKE Smart City has had several opportunities to integrate IKE with other smart technology in the right-of-way, including the City's Smart Street Lights. A percentage of the kiosks are installed in underrepresented communities, ensuring equitable distribution throughout the City. For example, IKE is installed outside of the Wohl Center, a St. Louis recreation center. IKE Smart City is working with the organization and Alderwoman to use IKE to promote education, art and fitness resources offered by the Wohl Center. Project achievements include:

- Customized kiosks with an LED attachment integrating the City's Smart Street Lights program.
- Equitable distribution of kiosks across City neighborhoods.
- Municipal power infrastructure to significantly decrease deployment timelines.

Development and Integration, City of San Antonio, TX

IKE Smart City was awarded a contract with the City of San Antonio to develop an IKE network through a competitive RFP process. The IKE initiative in San Antonio is managed by IKE Smart City in partnership with the City's Office of Innovation and Office of Government & Public Affairs. This collaboration ensures that the power of smart city technology and city infrastructure work together seamlessly to maximize public benefit and ad revenues.

The IKE team worked closely with City stakeholders on design, location selection, due diligence, logistics, and permitting. IKE Smart City has successfully managed the objectives of multiple stakeholder groups concurrently and using the IKE platform to deliver against a diverse set of needs. Partnerships with the City's Office of Innovation and Office of Historic Preservation has led to:

- Inclusion of a customized 311 application on IKE's home screen that connects to City data.
- Advanced wayfinding capabilities to improve the transit rider experience with kiosk placements at major transit centers throughout the City.
- A kiosk design that paid homage to San Antonio's historical Mission sites and manage the impact of construction on the City's historical landmarks.

Joe Ball
Task Manager: Water

Why Joe? *Joe serves as Jacobs' smart metering lead for the Americas and technology subject matter expert for smart metering solutions. He uses his expertise to help water utilities around the world understand and adopt available technology options to solve their business challenges. Joe is vendor independent and dedicated to assisting clients in making decisions that will most positively impact their operational needs both today and in the future.*

Relevant Project Experience

With 20 years of experience, Joe is an advanced meter infrastructure (AMI) expert who has worked with water utilities around the world to design and deploy technology to improve their operational efficiency and reduce costs. He works alongside utility personnel to select the right technology through feasibility studies, cost-benefit analysis, procurement, vendor evaluation, and negotiations. Joe has worked in North America and internationally in the countries and territories of Australia, Bahamas, Brazil, Belgium, Dominican Republic, Dubai, France, Germany, Hong Kong, Ireland, Italy, Japan, Malaysia, Mexico, The Netherlands, Qatar, Singapore, Spain, Thailand, Trinidad and Tobago, and United Kingdom.

Representative Experience Including with Governmental Entities

AMI Procurement and Project Management Services, Sewer and Water Board of New Orleans, New Orleans, LA; Technical Project Manager

Joe is currently managing the City's AMI project to evaluate, procure, and implement an AMI solution for the City and its 140,000 customers. Currently, the Jacobs team is conducting field surveys and developing the City's AMI strategy, which will be used to develop the AMI RFP. Joe and his project team will support the City during the strategy, procurement, and implementation phases of the project to successfully procure and implement the City's AMI solution.

AMI Procurement and Project Management Services; Forsyth County Department of water and Sewer, Cumming, GA; Procurement Lead

Managed the procurement phase of the County's AMI project to evaluate and procure an AMI solution for the County and its 66,000 customers. Joe and his project team educated the County's AMI selection committee on the water AMI technology and the solutions currently available. Joe and his project team conducted interviews and workshops with the County's staff to define and document solution requirements. The team drafted the RFP technical specifications tailored for the county's requirements. They worked with the County's staff to finalize the RFP for advertisement and

Education/Training

- BS, Accounting and Business Administration, Manhattan College, 1994

Licenses/Certifications

- American Water Works Association (AWWA) Member

Distinguishing Qualifications

- Local experience with advanced metering in New Orleans.
- Jacobs' smart metering lead for the Americas and technology subject matter expert for smart metering solutions.
- Extensive worldwide AMI experience.

supported the County during the advertisement period. Joe performed the technical evaluation and conducted the scoring workshop to determine the shortlisted vendors. He prepared the shortlist interview agenda, attended the shortlist interviews, and advised the county's selection committee to select an AMI vendor. Joe transitioned the contract negotiations to the Jacobs implementation lead and supported the negotiations.

AMI Procurement and Project Management Services; City of Allen Water and Sewer Operations, Allen, TX; Procurement Lead

Currently managing the procurement phase of the City's AMI project to evaluate and procure an AMI solution for the City and its 33,000 customers. Joe and his project team started the project by performing an assessment of the City's existing meter reading system and educating the City's AMI working group on the available water AMI technology and solutions currently available. Joe and his project team conducted workshops to review the City's key use cases to identify and document solution requirements. The Jacobs team worked with the City's staff to finalize the RFP for advertisement and supported the City with questions and answers during the advertisement period. Joe and team are currently evaluating the proposals submitted by the AMI vendors. He will continue to lead the project through the shortlist interviews and vendor selection phase of the project.

AMI Feasibility Study, Greater Cincinnati Water Works, Cincinnati, OH; Technical Project Manager

Managed an AMI feasibility study for Greater Cincinnati Water Works (GCWW). Joe and his project team performed a business case evaluation to determine the benefits of implementing a system-wide AMI solution for GCWW and its 265,000 customers. He worked with the cross-functional GCWW AMI team to identify, prioritize, and quantify the business drivers and associated benefits to enable the GCWW team to make an informed decision regarding its necessary capital investment in its next meter reading solution.

AMI Feasibility Study, City of Fayetteville, AR; Technical Project Manager

Managed an AMI team providing an AMI feasibility study to procure and implement a system-wide AMI system to increase operating efficiencies, reduce costs, and better serve its 43,000 residential, commercial, and industrial customers. Joe worked with the City's AMI team to identify its functional requirements, the costs associated with implementing the AMI system, and the most appropriate technologies to meets the City's needs.

Meter Replacement Project, City of Santa Cruz, CA; Solution Architect

Currently managing the City of Santa Cruz's meter replacement project procurement. The project team is using the strategic meter replacement plan that Jacobs developed for the City and its approximately 25,000 customers in Northern California. The city currently uses five different meter reading methods: Sensus AMI, Sensus AMR, Badger Cellular, touch pads, and manual reads. The goal of the plan is to identify and efficiently move to a single technology that will support the City's needs going forward.

AMI Implementation, Public Utilities Board, Singapore; Solution Architect

Member of the Jacobs AMI team that was selected to develop a comprehensive tender specification, evaluate tender proposals and program manage the Public Utilities Board's (PUB's) 300,000-meter AMI demonstration project. Joe provided technical guidance related to the AMI technology available. Joe reviewed and assessed the proof of concept project previously conducted by PUB and AMI vendors. He developed a training program to ensure the PUB staff is equipped with the necessary skill set to operate the AMI system. He led the evaluation of existing PUB standard operating procedures (SOPs) and advised PUB of the impact of AMI to its SOPs.

Jalendra Sannashetty

Task Manager: Operations & Maintenance

Why Jalendra? *Jalendra is a technology leader experienced in building and managing engineering teams to deliver solutions focused on the right functionality, availability, and scale. He has a track record of frugal development in tune with changing market needs. Jalendra has expertise in software development in IoT, Telco, Cloud SaaS, network, and application performance. He establishes engineering culture and standards for architecture, policies, and practices to deliver excellence in execution — combining fast delivery with high quality. He is skilled at understanding customer requirements and translating the needs into innovative solutions ahead of the market. Jalendra has been selected for this team for his ability to effectively identify and resolves problems and to increase organizational efficiency and productivity. He specializes in bringing diverse teams together to accomplish project goals on time and within budget on multimillion-dollar technology solutions projects and programs.*

Relevant Project Experience

Jalendra is a technology program director and senior advisor on information technology and research and development programs. He has a 20-plus year track record of consistent performance and accountability using multiple account management, delivery approaches, managing complex operation into large enterprises, and building multiple routes to market. He seeks to constantly improve work efficiency and effectiveness through innovation and automation. Jalendra has served as project director on multiple Smart City programs including smart campus, smart parking, smart security and smart transit, smart stadium, smart construction, and smart factories.

Representative Experience Including with Governmental Entities

Data Center Monitoring, Hewlett Packard, Grenoble, France; Data Center Operation Manager

Jalendra was in charge of monitoring critical network elements and engaging in proactive network systems monitoring. He monitored the day-to-day performance of servers, maintaining an optimally controlled environment for servers, and troubleshooting network and server problems. He was responsible for carrying out monitoring operations, servicing servers, network, and telecommunication equipment in data centers. Provided 24/7 monitoring of data center infrastructure, servers, and computer networks for issues from a centralized location.

Education/Training

- MBA, Management Information System, MIBM Global
- BBM, Business Administration, Mangalore University

Licenses/Certifications

- Infrastructure Management Services (IMS)
- Application Management Services (AMS)
- Six sigma Lean white belt
- DevOps & SRE Trained

Distinguishing Qualifications

- Program Director: IOT programs- Smart Campus, Smart Parking, Smart Security and Smart Transit, Smart Stadium, Smart Construction, and Smart Factory.
- Designed solution for network high-availability and disaster recovery, fault tolerance, scalability, database concepts, system and software architecture, security, IT infrastructure and virtualization.
- Led research on core infrastructure, cloud, and robotic automation technologies; planned proof-of-concept and roadmap for production implementations.

Network Operations Center, United Airlines, Chicago, Il; Network Operations Center Manager

Jalendra provided 24/7 technical support to global clients supporting a service level agreement (SLA) of 99% uptime; re-designed technical infrastructure resulting in a global, high-availability environment. He was in charge of monitoring critical network elements and engaging in proactive network systems monitoring. This included network operation center and support services 24/7/365 for local area network (LAN) / wide area network (WAN) / wireless local area network (WLAN) management, network security management, and load balancer management. The role involved daily troubleshooting and providing 24/7 technical support to global clients supporting a service level agreement of 99% uptime. Jalendra re-designed technical infrastructure resulting in a global, high-availability environment. As the center manager, Jalendra filled the roles of product manager, program manager, IT project manager, IT compliance, information risk manager, information protection, and data privacy. Jalendra created high level design, low level design, network implementation, and network-ready-for-use test plans documents for transactional projects.

Various Projects, Shell, Texas; Project Operation and Delivery Manager

Jalendra provided 24/7 technical support to global clients supporting an SLA of 99% uptime; re-designed technical infrastructure resulting in a global, high-availability environment. He worked on 24/7, ServiceNow, server patching, desktop vulnerability management, database, network, firewall, F5, UC, Control M, Informatica, Wintel, Citirx, Storage, VMware, and Solarwinds support functions. Jalendra served as product manager and oversaw strategic and tactical implementation. He interfaced between different organization to understand backlog, product function and features, and what was needed or required to improve business function. Jalendra oversaw network transformation services, such as network refresh services, greenfield rollout, WAN transformation services, and firewall/LB migration services. He formulated strategy by building architecture building blocks and solution building blocks to implement solutions for infrastructure services and provide software strategy recommendations based on future business requirements, software upgrade triggers, and lifestyle considerations. Jalendra acted as configured node manager for administering the servers in WebLogic and Configured Web Server plug-ins for application servers (WebLogic). Routine tasks included defining the project charter, roles, tasks, milestones, budgets, and measures of success to support the business case, and developing project estimates and plans to manage the end-to-end project execution. models. During this time Jalendra demonstrated skill in migrating, building, deploying, and managing large multi-tiered applications, concepts of scaling, load balancing, containerization, HA-DR (high availability — disaster recovery).

Joy Swenson

Task Manager: Training Program/ Knowledge Transfer

Why Joy? *As the firm's Global Transformation Lead for Smart Metering Solutions, Joy is an expert who understands political, organizational, and individual motivations to which a new technology must appeal in order to capture intended benefits. Over many smart technology deployment efforts, she sees that the programs are designed with users in mind so that people are able and willing to adopt new solutions with minimal resistance.*

Relevant Project Experience

Joy Swenson has 30 years of international experience designing and implementing interventions to increase employee and operational performance, community reputation, public policy support, cross-functional collaboration, innovation, and commitment to set objectives. She has managed major strategic planning efforts, community outreach programs, and process improvement projects for public agencies, government entities, and utility service providers. Joy's work frequently involves developing major stakeholder management campaigns, using quantitative and qualitative methods to measure public opinion, applying strategies that serve to align project objectives with current opinion, and devising interventions to positively engage stakeholders in proceedings and project results.

Representative Experience Including with Governmental Entities

AMI Planning and Implementation, Sewerage and Water Board of New Orleans (SWBNO); New Orleans, LA; Transformation and Engagement Task Lead

Joy is currently leading the organizational transformation and customer engagement workstreams of a multi-year AMI deployment program team, making sure that the SWBNO is able to capture the full benefit of its technology investment. Responsibilities include the implementation of an internal and external engagement plan that encompasses city leadership, community partners, and all types of customers, as well as a capacity-building plan that will make sure staff are prepared to adopt the new technology and their cross-functional work processes are able to accept and fully use AMI capabilities once they are in place.

AMI Implementation, City of Fort Wayne, IN; Process Improvement Task Lead

Joy leads an employee team in identifying, mapping, and developing the initiatives necessary to improve meter-to-cash processes that will be affected by the integration of new metering technology. She maps present processes and identifies tasks, policies, and organizational relationships that need to be adjusted to support desired AMI benefits. Next steps will be to re-map the processes in lieu of the new technology

Education/Training

- MS, International Communications, Pepperdine University, 1989
- BA, Mass Communications and Political Science, Denver University, 1984

Distinguishing Qualifications

- In New Orleans, currently leading the organizational transformation and customer engagement workstreams of a multi-year AMI deployment for SWBNO
- Completed a comprehensive and global review of communication and engagement practices for ensuring the immediate and sustained benefit of smarter metering technology.
- Developed a framework for preventing public resistance to technologies, including issues with EMF and data privacy.
- Adept at designing and employing both qualitative and quantitative methods for measuring public opinion.

and develop a roll-out strategy that will ensure the City will capture, measure, and sustain desired benefits.

AMI Planning & Support, Louisville Water Company (LWC), KY; Communications Task Lead

Helped to devise a public opinion research strategy to align program messaging with current opinion and sensitivities to AMI. LWC used this input in its implementation of a customer focus group as well as the subsequent development of communication materials for their program. Responsibilities also involved leading cross-functional process-mapping workshops, where staff identify process, capability, and tool gaps between current and future ways of doing business. These findings were channeled into an organizational transformation strategy currently underway within the city.

Workforce Analysis, Succession Planning and Capacity Building, Tampa Bay Water, FL; Analyst

Over a series of engagements, Joy evaluated the staffing levels and performance competency of all functional areas of Tampa Bay Water, identifying gaps in capacity compared to the requirements of its newly strategic plan. The initial analysis evaluated its internal performance trends, workload imbalances, and compared the agency to the industry and also to an assembled panel of utilities of similar size and operations. In subsequent engagements, Joy evaluated the agency's internal capabilities, capacity, and expected leadership attrition and developed a succession plan that will enable the utility to continually manage its staffing gaps as relate to service commitments. Aligned to the succession plan, the effort also entailed recommending a new organizational structure meant to capitalize on leadership retirements and transition on its transition from O&M to Capital Development. The Board hailed the succession planning effort as the best it had seen and is fully supportive of the agency's plans.

Comprehensive Asset Management Program, Great Lakes Water Authority; Detroit, MI; Organizational Assessment and Transition Management Lead

Task lead for the assessment of the organization's capacity to adopt asset management practices across the enterprise, including identification of skills, cultural, and process gaps that exist. Led the specialized team assigned to develop a change, communication, performance, and resource management plan to fill the identified organizational gaps and skills.

AMI Functional Analysis, Public Utilities Board; Singapore; Customer Requirements and Engagement Lead

Analyzes methods for engaging Singaporean customers in using technologies associated with smart meters to better management their water consumption. As a result of a global analysis of best practices as well as local customer preferences and behaviors, developed recommendations for the program's customer-facing AMI portal/app and a locally referenced communication program geared to bringing positive attention and heightening conservation impacts of the program rollout.

Automated Meter Infrastructure Program, City of Columbia Water Department; Columbia, SC; Stakeholder Engagement Consultant

The City of Columbia Water Department has initiated the installation of an AMI, as well as immediate process improvement efforts directed at correcting existing customer service and billing issues. Although the City's process improvement and AMI strategy are well-intentioned and forward-thinking, they are being undertaken at a time when its customer service performance is being questioned in the public sphere. Joy is assisting the City by developing and guiding a multiyear communication campaign to address current issues and gain stakeholder confidence required to implement AMI with minimal resistance and full customer benefit.

EXHIBIT 7-1. *Staff Qualifications*

Delivery Team

Amanda Gaze: Local Principal

Education & Training / Registrations

BSc, Geology, University of Saskatchewan

Years of Experience: 19

Key Accomplishments / Experience

- Experience leading teams, leveraging global subject matter experts for local New Orleans delivery
- Knowledge and experience interfacing with multiple stakeholders on municipal projects with an emphasis on citizen engagement
- An Orleans Parish resident, with 19 years of experience delivering complex projects and leading multidisciplinary teams for government and private clients
- Frequently partners with local municipal and federal government organizations, with direct experience with FEMA, Sewerage and Water Board of New Orleans (SWBNO), OCD, Department of Public Works (DPW), Levee Boards, and US Army Corps of Engineers (USACE), coordinating across multiple departments and agencies

Relevant Projects / Working with Government Entities

- $80M Emergency Services Program, New Orleans, LA, SWBNO, *Local Principal/ Program Manager*
- $180M Hazard Mitigation Grant Program (HMGP) – Power Plant Retrofit Program Management, New Orleans, LA, SWBNO, *Local Principal/ Program Manager*
- $72M Hurricane Related Water Restoration Program, New Orleans, LA, SWBNO, *Client Service Manager/Technical Services Manager*

Raja Kadiyala: Senior Advisor – Digital Solutions

Education & Training / Registrations

PhD, Electrical Engineering, University of California at Berkeley; MS, Electrical Engineering, University of California; BS, Electrical Engineering, Purdue University

Years of Experience: 33

Key Accomplishments / Experience

- As Jacobs' Global Digital Director and Senior Technology Fellow, leads our digital team in developing unique applications of technology and can share these solutions with the City of New Orleans
- Leverages global digital solutions to accelerate and redefine how stakeholders and end users will connect in the future
- Expert in software architecture development for distributed systems and IT system architecture and design
- Links technical innovation with academic research to address digital equity and inclusion

Relevant Projects / Working with Government Entities

- Countrywide Smart Meter Implementation, Singapore, Singapore Public Utilities Board, *Digital Transformation Lead*
- Smart City Implementation, City and County of Denver, CO, *Digital Solutions Senior Advisor*
- Surveillance Response System, Cincinnati OH, Greater Cincinnati Water Works, *Digital Solutions Technical Lead*

Ashok Tipirneni: Senior Advisor – Network Design and Plan

Education & Training / Registrations

MS, Electrical Engineering, Virginia Tech University; MBA, University of California

Years of Experience: 23

Key Accomplishments / Experience

- Helps cities build and execute IoT and machine learning/artificial intelligence (ML/AI) strategies that help improve livability and sustainability for citizens
- Responsible for technology vision, strategy, and leadership for development and implementation of enterprise-wide IoT programs, initiatives, and investments in Smart projects
- Focused on end-to-end IoT services and platform development across various verticals including smart infrastructure, smart manufacturing, and smart asset management

Relevant Projects / Working with Government Entities

- LinkNYC, New York, NY, City of New York, *Project Management and Technology Network Advisor*
- Reducing Non-Revenue Water, Gwinnett County, GA, Gwinnett County, *Network Design Advisor*

Adi Karisik: Senior Advisor – Cybersecurity

Education & Training / Registrations

MBA, Business, Southeastern Louisiana University; BA, Business, Southeastern Louisiana University; ICS 100, 200, 300, 400, 700, 800 Cyber-Intelligence analyst Cyber Forensics

Years of Experience: 20

Key Accomplishments / Experience

- Serves as Jacobs' Global Technology Leader for Operational Technology and leads the firm's Operational Technology/Cybersecurity group, with 200+ clients and projects worldwide, and can share this cybersecurity expertise with the City of New Orleans
- Offers specialized expertise in cybersecurity and intelligence, program management, classified operations, and operational technology
- Served as a partner and a key leader in the national security domain, including working with the Department of Defense

Relevant Projects / Working with Government Entities

- Denver Smart Cities, Denver, CO, Denver Water, *Cybersecurity Manager*
- Master Plan Buildup and Execution, Chattanooga, TN, City of Chattanooga, *Cybersecurity Project Executive*
- Cybersecurity Vulnerability Assessments and Recommendations, Wilmington, DE, Wilmington Water, *Cybersecurity Project Executive*

Charles Ramsay: Senior Advisor – Data Analytics

Education & Training / Registrations

MA, Computer Science, Texas State University; BS, Computer Science, Southwestern University

TS/SCI Clearance

Years of Experience: 20

Key Accomplishments / Experience

- Leads technical solutions from concept to deployment for many open-source, government-provided software tools
- Recognized for leading multiple data analytics and software R&D initiatives and has hands-on experience working research and leading data science efforts
- Experience includes an emphasis on cyber, data science, statistical analyses, information retrieval, and data fusion for all levels of government, military, and law enforcement

Relevant Projects / Working with Government Entities

- Intel Systems, Multiple Programs, Overwatch Systems, Austin, TX, DoD, DARPA, *Chief Systems Engineer/Architect*
- Multiple Programs, Austin, TX, KeyW, Sotera Defense, *Division Lead/Program Manager/Data Scientist*
- Multiple Programs, Austin, TX, Overwatch Systems, *Director*

Suresh Mandava: Senior Advisor - Cloud

Education & Training / Registrations

BS, Computer Science & Engineering, University of Connecticut

Years of Experience: 25

Key Accomplishments / Experience

- Principal architect in design and delivery of cloud-native multi-tenant applications across multiple Hybrid clouds (AWS/Azure/GCP/OnPrem Systems)
- Expert end-to-end SDLC Lifecycle Management with Microservices Integration API architectures
- Security risk advisory and auditor for global 100 clients with 25+ engagements

Relevant Projects / Working with Government Entities

- 5G Security Design and Delivery, Worldwide, T-Mobile and Tier-2 Telco's, Worldwide, *Senior Principal Architect*
- Smart Campus Convergence Design and Platform Delivery, St. Louis, MO, Mastercard/Qualcomm, *Senior Principal Architect*
- Edge Platform Delivery, Minneapolis, GE Connected Hospitals, *Vice President/Chief Architect*
- Security Operations Center IT/OT Converged Design, Exxon Mobile, Houston and Coca-Cola Femsa, Mexico City, *Product Offering Manager*

Jo Danko: Senior Advisor – Digital Inclusion/Equity

Education & Training / Registrations

MS, Chemical Engineering, Oregon State University, Minor in Environmental Engineering

BS, Chemical Engineering, University of New Hampshire

Years of Experience: 35

Key Accomplishments / Experience

- Serves as the Managing Director of City Solutions at Jacobs, leading development and implementation of projects and programs in equity, resilience, urban development, and Smart Cities
- Involved in the planning and development of new urban cities and revitalization of existing cities, including preserving local culture while developing infrastructure and services that will improve the quality of life and benefit local communities
- Has a strong focus on cities and creates an approach to help cities attract businesses and investments, integrate technology to drive efficiencies, and create accessible, vibrant communities where people want to live and work

Relevant Projects / Working with Government Entities

- Smart City Lighting System, Miami Beach, FL, City of Miami Beach, *General Manager*
- Great Cities Projects, Various Locations, EcoDistricts, *Project Leader*
- LaGuardia Redevelopment Program, Queens, NY, Port Authority of New York and New Jersey, *General Manager*

Alok Kumar: Senior Advisor – City Platform

Education & Training / Registrations

MS, Computer Engineering, CCS University; CDAC – Diploma in Advance Computing

Years of Experience: 19

Key Accomplishments / Experience

- Expert in software architecture development for distributed systems and device architecture and design
- Leverages global digital solutions to accelerate and redefine how stakeholders and end users will connect in the future
- Links technical innovation with academic research to address digital equity and inclusion

Relevant Projects / Working with Government Entities

- Smart City Implementation, Boston, MA, City of Boston, *Technical Advisor*
- Smart City Implementation – Smart Park, Smart Light, Sacramento, CA, City of Sacramento, *Architect/Advisor*
- Smart Building for Intel Office, U.S., Digital *Transformation Architect*
- Smart Light Platform Development for Intel, U.S., *Platform Engineer*

Jason Bird: Programmatic Functions - Sustainability/Resiliency

Education & Training / Registrations

AA, Central Florida Community College; Course work in Civil Engineering with Construction Management focus, University of Central Florida; Certified Floodplain Manager

Years of Experience: 21

Key Accomplishments / Experience

- Focused on sustainable infrastructure and water resources, including water balance modeling, decision support analysis, and infrastructure resiliency evaluations
- Expertise in developing resilient master plans, hardening vulnerable infrastructure, and preparing adaptation strategies
- Recognized leader in the resilience field; currently co-developer of a new Resilience Scorecard and Tool for the United Nations Office of Disaster Risk Reduction for use by building owners, operators, and managers

Relevant Projects / Working with Government Entities

- Interactive Vulnerability Assessment Tool, Miami Beach, FL, City of Miami Beach, *Resilience Task Lead*
- Resilient Installation Facility Standards Development, Tyndall Air Force Base, FL, *Resilience Task Lead*
- Integrated Sea Level Rise Mitigation and Stormwater Management Plan, Miami Beach, FL, City of Miami Beach, *Resilience Task Lead*

Josephine Pittman: Programmatic Functions - Project Controls

Education & Training / Registrations

BS, Computer Science, University of Hartford

Years of Experience: 26

Key Accomplishments / Experience

- As a project controls specialist, develops, monitors, tracks, analyzes, forecasts, and reports on project budgets, estimates to complete, work plans and schedules, and project progress and productivity
- Supports project managers with quarterly project forecasts
- Makes sure change management systems and processes are implemented and followed

Relevant Projects / Working with Government Entities

- Project Control, Multiple Projects, Various Locations, Jacobs, *Project Control Specialist*
- Multiple Projects, Farmington, CT, University of Connecticut Health Center, *Project Controls*
- Multiple Projects, Hyannis, MA, Cape Cod Healthcare, *Field Project Controls*

Bob Elsinga: Broadband Connectivity - Standards & Design

Education & Training / Registrations

BA, Human Resource Management, Lewis University

Years of Experience: 33

Key Accomplishments / Experience

- Telecom industry experience includes fiber design (small cell fiber/power routing, node design, and backbone fiber design), project management where responsible for designing the deployment of large-scale fiber projects, and permitting for fiber projects
- Performs compliance checks of standards and design and manages projects for small cell fiber/power routing, node design, and backbone fiber design
- Experience building telecom networks both copper and fiber, and has designed between 100,000 and 200,000 of fiber plant, which have received excellent quality reviews from the customer

Relevant Projects / Working with Government Entities

- AT&T Lighting Build, Chicago, IL, AT&T, *Project Manager/Fiber Design*
- Small Cell Build, Chicago, IL, Verizon Wireless, *Project Manager/Fiber Design*
- Verizon Charlotte Build, Charlotte, NC, Verizon, *Fiber Design Specialist*

Scott Fox: Broadband Connectivity - Network Engineer

Education & Training / Registrations

HS Diploma, Huntley High School

Years of Experience: 26

Key Accomplishments / Experience

- Experience with 22+ years in telecommunications OSP design and maintenance at AT&T
- Leads Jacobs OSP/fiber teams in planning and routing of fiber to facilitate networks
- Knowledgeable in designing and constructing fiber networks

Relevant Projects / Working with Government Entities

- Smart City Infrastructure Build, Greater Washington D.C. Area, Confidential Client, *Project Manager/Project Engineer*
- Verizon One Fiber Build, Charlotte, NC, Verizon, *Project Engineer*
- Crown Castle Small Cell Program, New York City, NY, Crown Castle, *Assistant Project Engineer*

Ron Mansmann: Broadband Connectivity - Network Integration

Education & Training / Registrations
Masters Certification, AT&T School of Business & Stevens Institute of Technology; Diploma in Network Technical Support, LAN/WAN Networking, The Chubb Institute; Electronics Technology Certificate, Hudson County Vocational School

Years of Experience: 26

Key Accomplishments / Experience
- Experience includes technical project management/implementation support, engineering, ethernet, site acquisition and construction services, integration, RAN/RF, microwave services, DAS services, and CO/MSC/data centers
- Unparalleled experience in the industry, and has the leadership skills, knowledge, and experience to provide network integration services to successfully drive this project component
- Served as Director, Deployment Program Manager, Executive Vice President, and Principal for multiple large deployment initiatives

Relevant Projects / Working with Government Entities
- Jacobs Network Services, Various Locations, AT&T, Verizon, Sprint, T-Mobile, *Director/Principal Network Engineering and Operations*
- AT&T Turf Program – EPA, Various Locations, AT&T, *NSB/MODs Deployment Program Manager/LTE Deployment Program Manager*
- Alltel Gemini Project, Various Locations, AT&T Mobility, *Ethernet Senior Program Manager*
- Various Projects, Wayne, PA, MTPCS dba Cellular One, *Executive Vice President of Network Engineering and Operations*

Elizabeth Calvit: Permitting – Broadband Connectivity; Streetlights; Traffic Management and Mobility; Kiosks; Subject Matter Expert - Permitting

Education & Training / Registrations
MA, American Studies/Graduate Program in Historic Preservation, The George Washington University; BID, Interior Design, FIDER accredited, Louisiana State University; BS, General Studies (Psychology and Art History), Louisiana State University

Years of Experience: 24

Key Accomplishments / Experience
- Experience serving as environmental and permitting lead involving Section 10/404, Coastal Zone Consistency, Section 103 ocean disposal, dredging, beneficial use, and Section 401 water quality certification
- Supported the environmental and permitting activities for the Coastal Protection and Restoration Authority (CPRA) for the two proposed Mississippi River diversions
- Experience with the National Environmental Policy Act (NEPA) and USACE's permitting requirements for work in U.S. waters
- Serves as the environmental and permitting lead for projects establishing and executing environmental and permitting strategies, developing task orders, managing environmental consultants in the preparation of environmental studies, and meeting with local, state, and federal regulators to discuss permitting requirements and potential impacts to endangered species
- Architectural historian with over 20 years' experience in survey, evaluation, and preparation of documents for potential impacts to historic structures and sites

Relevant Projects / Working with Government Entities
- Mid-Barataria and Mid-Brenton Sediment Diversion Projects, Plaquemines Parish, LA, CPRA, *Permitting Task Manager*
- Restoration and Expansion Projects, Gulfport, MS, Port of Gulfport, *Environmental/Permitting Lead*
- Port of Anchorage Restoration Project, Anchorage, AK, Port of Anchorage, *Environmental/Permitting Lead*

Simi Burg: Streetlights - Lighting Analysis, Master Plan, Architectural Lighting

Education & Training / Registrations
BS, Architectural Engineering, Penn State University
International Association of Lighting Designers, Associate
NCQLP Lighting Certification

Years of Experience: 11

Key Accomplishments / Experience
- Extensive technical experience paired with her creative artistry deliver dynamic lighting solutions that are stimulating and satisfy visual requirements and end user expectations.
- Experience with projects ranging anywhere from small galleries to large corporate campuses, computer software used to calculate daylight such as Ecotect, Daysim, Diva, and Radiance
- Awards include 40 under 40 North America by Lighting Magazine (2018), and Illuminating Engineering Society (IES) Illumination Award of Merit for 53rd Street Public Library in New York and Google Cambridge Center

Relevant Projects / Working with Government Entities
- Smart LED Street Lighting, Miami Beach, FL, City of Miami Beach/Jacobs, *Project Manager*
- West End Square, Dallas, TX, James Corner *Field Operations Project Manager*
- Miami Baywalk Riverwalk, Miami, FL, Savino Miller Design Studio, *Project Manager*
- The Miami Underline, Miami, FL, James Corner Field Operations, Kimley Horn & Associates, *Project Manager*

Alexander Bilchinsky: Streetlights - LED Lighting and Controls

Education & Training / Registrations
BSc, Computer Science and Physics, Technion University

Years of Experience: 17

Key Accomplishments / Experience
- Serves as CTO and COO and co-founder of Juganu
- Managed strategic R&D and operations for diverse, multidisciplinary team in complex infrastructure projects
- More than 300 patents in the lighting, controllers, and radio frequency (RF) space and industry expert in the lighting, RF, and microwave space

Relevant Projects / Working with Government Entities
- Smart City Implementation, Kalamata, Greece, *Chief Lighting and Controller Architect*
- Smart City Implementation Jerusalem, Israel and Smart City Implementation, Or Yehuda, *Chief Lighting Architect*
- Friendship Bridge, Brazil-Paraguay, *Design Architect for Lighting, RF/Microwave*

Emily Weigand, PE: Traffic Management & Mobility - ITS

Education & Training / Registrations
BS, Civil Engineering, Louisiana State University
Professional Engineer: LA # 44380

Years of Experience: 6

Key Accomplishments / Experience
- Experience designing ITS incident management system consisting of removal and relocation of dynamic message signs, CCTV cameras and poles, microwave vehicle detectors, installation of new conduit, ground boxes, fiber cables, and communication cables
- Has detailed knowledge of data collection, traffic projects, and transportation modeling projects including innovative intersections, roundabouts, and diamond interchanges
- Performed voltage drop calculations and determine electrical services
- Assisted with crash analyses, operating speed tabulations, and intersection and corridor analyses on projects for Louisiana Department of Transportation and Development (LaDOTD) across multiple parishes in Louisiana

Relevant Projects / Working with Government Entities
- IH 45 Segment 1 Schematic: Illumination (master lighting report), Sign Design, TCP, Walker County, TX, TxDOT, *Transportation EIT*
- IH 635 PS&E Design of ITS Incident Management System, Dallas, TX, TXDOT, *Transportation EIT*
- Tyndall Air Force Base Master Plan and Roadway Design, Panama City, FL, USACE, *Transportation Engineer*
- I-20 and I-49 Speed Study, Multiple Parishes, LA, LaDOTD, *Traffic Engineer Intern*

Shay Glickman: Traffic Management & Mobility - IoT Sensors and Cameras

Education & Training / Registrations
BSc, Electrical Engineering, Tel Aviv University, Israel; PMI certification

Years of Experience: 25

Key Accomplishments / Experience
- Project lead for integration of traffic control technologies on five Smart City projects
- Developed groundbreaking solution for splitting total required energy into small banks using fewer transformers
- Extensive multi-site construction and project management experience

Relevant Projects / Working with Government Entities
- Design and Installation of Systems for Communications, Detection, Analytics, and Traffic Optimization, City of Chandler, AZ, *Project Manager*
- Design and Installation of Systems for Communications, Detection, and Analytics, Redlands, CA, San Bernardino County Transportation Authority/ City of Redlands, *Project Manager*

Uriel Katz: Traffic Management & Mobility - Backend IT Design

Education & Training / Registrations
BA, Computer Science, Economics, The Open University of Israel

Years of Experience: 16

Key Accomplishments / Experience
- Serves as an IoT security expert and developed the Trusteer Security platform that was acquired by IBM
- Extensive experience managing development teams to deliver projects on time
- Expert level coding skills in many high-level and low-level languages
- 15 years of experience as an Open Source Software Community Contributor

Relevant Projects / Working with Government Entities
- Backend IT Design and Development for Communications, Detection, Analytics, and Traffic Optimization, City of Chandler, AZ, *Backend Design Lead*
- Backend IT Design and Development for Communications, Detection, and Analytics, Redlands, CA, San Bernardino County Transportation Authority/City of Redlands, *Backend Design Lead*
- Backend IT Design and Development for Communications, Detection, Analytics, and Traffic Optimization, City Phoenix, AZ, *Backend Design Lead*

Thomas Cooper: Traffic Management & Mobility - Virtual TMC

Education & Training / Registrations
BA Business, LaSalle University
Traffic Signal Academy, University of Tennessee at Knoxville

Years of Experience: 34

Key Accomplishments / Experience
- Delivered project oversight for traffic signal control projects at more than 1,100 intersections across multiple agencies
- Managed city relationships with project oversight for municipal wireless network deployments
- Provided program and project oversight for design, installation, and operation of more than 20,000 public Wi-Fi nodes and 43 communications tower sites
- Launched the first connected vehicle data service in the U.S. and Canada by working with governments and automotive original equipment manufacturers to implement Smart City and connected vehicle programs

Relevant Projects / Working with Government Entities
- Adaptive Traffic Signal Control Intersection Projects, Various Counties, PA, PennDOT District 6-0, *Business Lead/Project Owner/Virtual TMC Advisor*
- Adaptive Traffic Signal Control Intersection Projects, NJ, New Jersey Department of Transportation, Various Counties, *Business Lead/Project Owner/Virtual TMC Advisor*
- City-wide Wi-Fi Network, Philadelphia, PA, City of Philadelphia/Wireless Philadelphia, *Project and Compliance Oversight/Virtual Network of Operations Advisor*

Monica Stochl: Kiosks - Site Survey

Education & Training / Registrations
MS, Civil Engineering, University of Missouri at Kansas City; BS, Civil Engineering, Saint Louis University; Engineer in Training: LA; Envision Sustainability Professional

Years of Experience: 8

Key Accomplishments / Experience
- Experience in on-site survey through GIS and other online data portals, while conducting in field work for various clients
- Creates benefit-cost analysis and innovative, sustainable financing related to operation and maintenance
- Facilitated the design effort through data collection and site surveys for new and refurbished equipment within the New Orleans pumping station system
- Construction experience on drainage and power projects in a complex, continually operating environment

Relevant Projects / Working with Government Entities
- Emergency Services Program, New Orleans, LA, SWBNO, *Field Engineer*
- Hazard Mitigation Grant Program, Power Plant Retrofit Program Management, New Orleans, LA, SWBNO, *Task Manager*
- Deer Creek Flood Mitigation Project, City of Brentwood, Brentwood, MO, *Project Engineer*

Curt Basnett, PE: Kiosks – Geotechnical; Subject Matter Expert – Geotechnical

Education & Training / Registrations
MCE, University of Florida
BS, Civil Engineering, University of Florida; Professional Engineer: FL, GA, CA, PA, TX, NM, UT, NV

Years of Experience: 35

Key Accomplishments / Experience
- Served as geotechnical engineer for a variety of facilities development for new construction and renovations of waterfront, operations, industrial, water treatment, and utility projects
- Expert in geotechnical services for shallow floodplain levees, dredge spoil dikes design, water and wastewater treatment facilities, conveyance, cogeneration power plants, bridges, and retaining structures
- Provides quality assurance reviews of geotechnical services to make sure structures and foundations meet code and client requirements

Relevant Projects / Working with Government Entities
- C.W. Bill Young Regional Reservoir, Tampa, FL, Tampa Bay Water, *Geotechnical Engineer*
- 6th St Viaduct Seismic Retrofit, Los Angeles, CA, City of Los Angeles Department of Public Works, *Geotechnical Engineer*
- Doyle Drive/Presidio Parkway Public Private Partnership Proposal, San Francisco County, CA, Caltrans District 4, *Geotechnical Project Manager*
- Carlsbad Energy Center Project, San Diego, CA, Carlsbad Energy Center LLC, *Geotechnical Lead*

Josh Braman, PE: Water - Water Metering

Education & Training / Registrations
BS, Civil Engineering, Ohio University; Professional Engineer: OH

Years of Experience: 11

Key Accomplishments / Experience
- Serves as Jacobs' AMI implementation lead and has managed strategic utility projects ranging from $50,000 to multi-million-dollar programs
- Provided strategic insight into the SWBNO workshop materials and workshop sessions as Implementation Lead, leveraging past best practices from similar programs across the U.S.
- Proven experience implementing lessons learned to avoid unnecessary pitfalls commonly associated with AMI implementation projects
- Experience in the U.S. and globally with field installation for network infrastructure and best practice workflows for meter upgrades to ensure a high degree of first-touch success

Relevant Projects / Working with Government Entities
- Advanced Metering Infrastructure (AMI) Implementation, New Orleans, LA, SWBNO, *AMI Implementation Lead*
- Program Management for AMI Implementation, Columbia, SC, City of Columbia, *Project Manager*
- AMI Program, Louisville Water Company, Louisville, KY, *Implementation Project Manager*
- AMI Implementation, Cleveland, OH, Cleveland Division of Water, *Program Manager*

Tonja Koob Marking, PE, CFM: Water - Flood Management Strategy

Education & Training / Registrations

PhD, Civil Engineering, Washington State University
MSE, Environmental Engineering, Tulane School of Engineering; MBA, Finance, Tulane University
MSPH, Environmental Health Sciences, Tulane School of Public Health and Tropical Medicine; BS, Biology, Newcomb College; Professional Engineer: LA, # 30749; Certified Floodplain Manager; LEED Accredited Professional, Diplomate, Water Resources Engineer #000766, Diplomate, Forensic Engineer #1152S

Years of Experience: 28

Key Accomplishments / Experience

- Worked extensively in New Orleans and throughout Louisiana for 28 years providing flood management, hydraulic and hydrologic modeling and engineering, environmental engineering, consulting services, and project management.
- Recently served as the hydraulic engineer for five City green infrastructure (GI) flood management strategy projects and one SWBNO GI flood management strategy project using PCSWMM; created GIS-based flood maps with custom ArcGIS program to integrate with PCSWMM results
- State and federal courts have accepted her as an expert witness in the fields of environmental engineering and hydrology and hydraulic engineering
- City Business selected her as a Woman of the Year in 2005 and 2014 and selected her company, Gaea Consultants, as a Top Woman-Owned Business in 2012 and 2013

Relevant Projects / Working with Government Entities

- Hazard Mitigation Grant Program (HMGP), Lake Providence, LA, East Carroll Parish Government, *Senior Hydraulic Engineer Lead Civil*
- Root Cause Analysis, New Orleans, LA, SWBNO, *Hydraulic Engineer/Advisor*
- Aurora Sewer Pump Station Drainage Improvements, New Orleans, LA, SWBNO, *Hydraulic Engineer*

Richard Giani: Water - Water Quality

Education & Training / Registrations

BS, Environmental Studies, East Stroudsburg University; AAS, Biotechnology, State University of New York

Years of Experience: 24

Key Accomplishments / Experience

- Served as the senior technical specialist on numerous national and international water projects related to water treatment plant optimization, regulatory compliance, and optimization of water distribution water quality
- Extended knowledge in treatment and operations for various types of water treatment facilities and currently oversees Jacobs' Drinking Water Technical Support Group for Operations, which provides technical services to all the drinking water utilities operated by Jacobs in the U.S. and U.S. territories
- Experience includes surface and groundwater treatment, treatment techniques, monitoring, and maintaining/troubleshooting distribution water quality plant optimization that focuses on improving water quality with increased cost savings

Relevant Projects / Working with Government Entities

- Drinking Water Technical Compliance Coordinator, Tuscaloosa, AL, City of Tuscaloosa, *Manager*
- Water Quality Group, Portland, OR, Portland Water Bureau, *Manager*
- Drinking Water Division, Washington, DC, District of Columbia Water and Sewer Authority, *Manager*

Robert Poche, CMRP: Ongoing O&M – Asset Management – CMMS

Education & Training / Registrations

BS, Electrical Engineering, Tulane University; Certified Maintenance and Reliability Professional (CMRP)

Years of Experience: 19

Key Accomplishments / Experience

- Asset management leader with experience in engineering, construction, and O&M for industrial and commercial facilities
- Focuses on improving O&M by implementing reliability centered maintenance (RCM) principles and making design, construction, and O&M decisions based on impacts to the total cost of ownership
- His work has resulted in over 40% reductions in facility operating costs, while improving system performance
- Applies RCM principles for asset optimization projects to lower costs and improve system availability, involving development of optimal maintenance strategies, training, and deployment to reinforce localized sustainment

Relevant Projects / Working with Government Entities

- Michoud Assembly Facility, New Orleans, LA, NASA, *Facility Maintenance and Operations Director*
- Manufacturing Support and Facility Operations Contract, New Orleans, LA, Jacobs, *Facilities O&M Engineering Manager*
- Glenn Research Center Asset Management Transformation, Cleveland, OH, NASA, *Asset Management Advisor*

Bill Rouselle: Training Program/Knowledge Transfer - Stakeholder Meetings

Education & Training / Registrations
BA, History & Political Science, Xavier University of Louisiana

Years of Experience: 37

Key Accomplishments / Experience
- Known as a trusted and effective consensus builder in New Orleans to engage stakeholders
- Has been involved in most of the broad-based community rebuilding efforts in the metropolitan area including the Bring Back New Orleans disaster recovery committee and the adoption of a comprehensive citywide rebuilding plan
- Assisted in the adoption of a Master Plan for Land Use and the passage of a Comprehensive Zoning Ordinance

Relevant Projects / Working with Government Entities
- Master Plan and CZO Outreach, New Orleans, LA, New Orleans City Planning Commission, *Community Outreach*
- Outreach and Construction Monitoring for School Rebuilding Program, New Orleans, LA, Recovery School District (RSD) and Orleans Parish School Board (OPSB), *Community Outreach*
- Master Plan Development for Land Use and Comprehensive Zoning Ordinance, New Orleans, LA, City of New Orleans, *Community Outreach*
- Universal Medical Center/Veteran Hospital, Mid-City, LA, State of LA, *Community Outreach*

Deymara Mesa: Training Program/Knowledge Transfer – City & Citizen Training, Connectivity & Solutions Trainer

Education & Training / Registrations
BS, Civil Engineering, Louisiana State University

Years of Experience: 4

Key Accomplishments / Experience
- Experience managing multiple rehabilitation and operations and maintenance projects for Baton Rouge Department of Environmental Services (DES) through various project phases
- Led implementation and management of electronic reporting tool (JacobsOmni) for DES; responsible for training users, providing technical assistance, and performing troubleshooting
- Implemented and managed Google Analytics dashboard to track key performance indicators (KPIs) for DES; responsible for set up, data analysis, and maintenance, as well as provided training for team members on Google Analytics dashboard development and maintenance
- Led implementation and management of occupational health and safety training program for DES employees

Relevant Projects / Working with Government Entities
- Sanitary Sewer Overflow (SSO) Program, Baton Rouge, LA, DES, *Project Engineer/Training*
- SSO Program Support Continuation – Capital Project Management and O&M, Baton Rouge, LA, DES, *Project Engineer/Training*
- Operational Improvement Program, Baton Rouge, LA, DES, *Project Engineer/Training*

Shared Subject Matter Expert Resources

Guruprasath Venkataraman: IoT Solutions Architect

Education & Training / Registrations
BSC, Computer Science, National College, Trichy, MCA, Computer Science, Madras University

Years of Experience: 16

Key Accomplishments / Experience
- Experienced in providing technical leadership and guidance to customers' IoT requirements as an IoT subject matter expert with complete landscape understanding including connectivity, data management, data analytics, and visualization
- Builds architectural solutions leveraging edge sensors, gateways, aggregators and actuators, mesh networks, and IoT cloud services such as data ingestion, device provisioning, analytics, and orchestration
- Creates technical architecture and builds end-to-end integrated solutions for Smart Cities, including smart parking, smart buildings, smart energy management, smart traffic, smart kiosks, and environmental solutions

Relevant Projects / Working with Government Entities
- Penn Station Train Scheduler System, New York, NY, Amtrak, *Senior Technical Lead, Development + End-to-End Testing*
- IMG Models/IMG Ticketing Path/IMG Hyde Park, FL, IMG, *Senior Technical Lead - Development and End-to-End Testing with Database, Production Support, Security Testing*
- Zyter Telehealth and Remote Patient Monitoring, MD, Deloitte, *Solutions Architect; End-to-End Testing and Reporting, Web and Mobile Application Support, Production Support*

Hrudaya Kommareddy: Cloud Architect

Education & Training / Registrations
Linux Foundation Certified System Administrator; Certified Kubernetes Application Developer; Certified Kubernetes Administrator; Collibra Expert Level 1

Years of Experience: 13

Key Accomplishments / Experience
- Uses Cloud functions to model applications and event-based responses in customized user systems
- Creates security groups and policies and uses tags to restrict users from unauthorized access
- Coordinates with various development, testing, and support teams to implement best practices
- Designs and implements cloud automation functions using various open-source continuous integration servers

Relevant Projects / Working with Government Entities
- Staff Data DevOps, Springdale, AR, Tyson Foods, *Cloud Engineer/Architect*
- Data DevOps/Cloud, Minneapolis, MN, Prime Therapeutics, *Technical Cloud Architect Consultant*
- AWS Infrastructure/Cloud Automation, Knoxville, TN, Pilot, Flying J, *Cloud Engineer/Architect*

Suresh Chatla: Deployment Automation

Education & Training / Registrations
Master of Computer Applications, Andhra University

Years of Experience: 13

Key Accomplishments / Experience
- Coordinates the creation of analysis requirements, platform selection, technical architecture design, application design, and development, testing, and deployment of proposed solutions
- Identifies possible technical solutions and provides comprehensive solutions
- Responsible for database modeling, development, integration, quality assurance, and deployment of products in various environments with support teams

Relevant Projects / Working with Government Entities
- GS1 Activate Service, Various Locations, GS1 Global Office, *Architect/Technical Deployment Automation Lead*
- Jemstep-MyVest Integration, Various Locations, Jemstep, *Technical Deployment Automation Lead*
- HawkEye AP, Various Locations, Hexis Cyber, *Developer and Deployment Engineer*

Yossi Bechor: Lighting

Education & Training / Registrations
BS, Electrical Engineering, Tel Aviv University

Years of Experience: 35

Key Accomplishments / Experience
- Experience in leading teams for complex radio frequency, microwave, power, and control solutions
- Proficient experience in acting as the essential interface between the company's engineering, sales and marketing, senior management, and customer base
- Lead for obtaining certification from regulatory bodies and chief architect for light design and mechanical team

Relevant Projects / Working with Government Entities
- Safe City Benito Huaraz, Mexico, Illumex, *Lighting Architect*
- Villa Nueva Lighting and Management System, Guatemala, Alumbrado Publico de Viila Nueva, Guatemala, *Chief Lighting Architect*
- Broadband Amplification Systems for IED, Various Locations, USACE, *Lighting Architect*

Michael Brown: Data Analytics

Education & Training / Registrations
BS, Earth System Science, University of California

Years of Experience: 16

Key Accomplishments / Experience
- Experienced in geospatial technologies with a focus on automation, system integration, and environmental data
- Integrates GIS-based tools and technology to generate solutions for clients
- Received 2018 Technology Merit Award from the *Environmental Business Journal in Information* for creating and implementing near real-time field data collection and reporting program

Relevant Projects / Working with Government Entities
- Web and Mobile Mapping Support, San Diego, CA, Pacific Gas & Electric, *Senior Geospatial Specialist*
- Rub Long-Term Revegetation Monitoring, San Diego, CA, Kinder Morgan, *Geospatial Solution Architect*
- Siting, Planning and Permitting Dashboard, San Diego, CA, Confidential Transmission Line Client, *Geospatial Solution Architect*

Trevor Giles: Data Privacy - PII

Education & Training / Registrations
Computer Systems Technology, Diploma, Saskatoon Institute of Applied Science and Technology
College of Arts & Science, College of Engineering, University of Saskatchewan

Years of Experience: 9

Key Accomplishments / Experience
- Has experience setting up and managing database, version control, and web servers
- Designs and develops web applications to work on both mobile and desktop devices
- Collects, stores, protects, and distributes sensitive data in accordance with Personal Information Protection and Electronic Documents Act (PIPEDA)

Relevant Projects / Working with Government Entities
- Southwest Calgary Ring Road, Calgary AB, Alberta Transportation, *Solution Implementation Manager and Lead Developer*
- Queen Elizabeth Way Over Credit River Bridge, Mississauga ON, Infrastructure Ontario, *Solution Implementation Manager and Lead Developer*
- Highway 407 East OM&R, Oshawa ON, Ministry of Transportation of Ontario, *Systems Implementation Specialist*

Emre Bolukbasi: Scheduler

Education & Training / Registrations
BS, Land Surveying Engineer, Yildiz Technical University; Master, Real Estate Development, Istanbul Technical University

Years of Experience: 14

Key Accomplishments / Experience
- Experience managing project controls, maintaining, and updating project schedules, and performing schedule impact analyses
- Regularly reviews critical path, schedule content, use of relationships and lag, constraints, milestones, and updates actual cost data in Primavera P6
- Develops, updates, and maintains fully cost- and resource-loaded Level 5 schedules
- Provides project performance reports, earned value analysis, S-curves, KPIs, estimate to complete, and other reporting

Relevant Projects / Working with Government Entities
- Mid-Basin Sediment Diversion Program, Baton Rouge, LA, CPRA, *Project Controls/Scheduler*
- Various Design Schedules for USACE, Towers, Warehouses, etc., Mobile, AL, USACE, *Project Controls/Scheduler*
- Turbine Maintenance Projects, Turkey and US, General Electric, *Project Controls/Scheduler*

Heather Layrisson, PE: Quality Manager

Education & Training / Registrations
MS Environmental Engineering and Science, Johns Hopkins University, Engineering for Professionals Program; BS, Civil Engineering, Louisiana State University; Professional Engineer: LA # 40542

Years of Experience: 13

Key Accomplishments / Experience
- Served as a project manager for CPRA's $2B Mid-Breton Sediment Diversion Project and as project manager for eight large infrastructure projects relating to the $1.6B Baton Rouge Sanitary Sewer Overflow Program
- Demonstrated quality manager experience through working directly with clients and staff on large, complex infrastructure projects
- Provides quality assurance reviews of deliverables and ensures standards compliance prior to client submittal
- Led a value engineering team that partnered with the owner to review all projects on a large program for a construction cost savings of over $25M

Relevant Projects / Working with Government Entities
- Mid-Basin Sediment Diversion Program Management, Baton Rouge, LA, CPRA, *Project Manager*
- Third Party Engineering Inspection, Baton Rouge, LA, City of Baton Rouge/Department of Environmental Services, *Contract Manager*
- Ward Creek Aerial Crossing Emergency Project, Baton Rouge, LA, City of Baton Rouge/ Department of Environmental Services, *Project Manager*

Michael Decoteau, PE: Engineering Manager

Education & Training / Registrations
BS, Civil Engineering, Louisiana State University; Professional Engineer: LA # 28535

Years of Experience: 26

Key Accomplishments / Experience
- Focused on project management, administration, and engineering design for infrastructure, roadway, and land development projects in Louisiana
- Experience with site development and assisted with design of commercial and residential developments
- As a Louisiana native, his projects have involved roadway, sewer, hydraulics, project management, and construction management oversight

Relevant Projects / Working with Government Entities
- SSO Control and Wastewater Facilities Improvement Program Management, Baton Rouge, LA, City of Baton Rouge, *Project Manager*
- Subsurface Utility Engineering (SUE), Opelousas, LA, LaDOTD, *Project Manager*
- Portsmouth Facility Stormwater Compliance, Portsmouth, VA, BASF Corporation, *Senior Project Engineer*

Lee Long: Construction Manager

Education & Training / Registrations
BA, Public Administration, Upper Iowa University; OSHA Standards Trainer Course (OSHA 500)
OSHA 30 Hours Construction Standards (OSHA 30)

Years of Experience: 39

Key Accomplishments / Experience
- Program background experience includes project management, construction management, and construction safety management
- As a project closeout manager, makes sure all construction projects are properly closed out according to contractual requirements
- Provides program level safety oversight for PM project office, reviews project site safety plans, and performs periodic safety audits of active construction job sites

Relevant Projects / Working with Government Entities
- Recovery Program, New Orleans, LA, Recovery School District and Orleans Parish Schools, *Project Closeout Manager*
- Recovery Program, New Orleans, LA, Recovery School District and Orleans Parish Schools, *Project Health & Safety Manager*
- Recovery Program, New Orleans, LA, Recovery School District and Orleans Parish Schools, *Project Manager*
- United States Air Force, *Retired Chief Master Sergeant*

Denny Brestle, PE: Construction Manager

Education & Training / Registrations
BS, Civil Engineering Technology, Southern College of Technology;
AS, Southern College of Technology;
Professional Engineer: LA # 40588

Years of Experience: 31

Key Accomplishments / Experience
- Experience in both clean and environmental construction management activities for utility, infrastructure, transportation, and environmental investigation projects
- Serves as construction manager for complex infrastructure projects throughout New Orleans and the state of Louisiana, facilitating relationships with local municipalities, contractors, and stakeholders that can be used to bolster communication for the City of New Orleans
- Manages various phases of site assessment, remediation, regulatory compliance, and monitoring for construction projects
- Extensive infrastructure program/project construction management experience

Relevant Projects / Working with Government Entities
- Retrofit Power Plant Hazard Mitigation Grant Program (HMGP), Hurricane Related Water Restoration Program (HRWRP), and Emergency Power and Drainage (Emergency) Program, New Orleans, LA, New Orleans Sewerage and Water Board (SWBNO), *Program Construction Manager*
- Sanitary Sewer Overflow (SSO) Program, Baton Rouge, LA, City of Baton Rouge, *Construction Manager*
- Capital Improvement Program, Chicago, IL, City of Chicago, Department of Water Management, *Program Construction Manager*
- Knoxville Utilities Board PACE 10 Program, Knoxville, TN, Knoxville Utilities Board, *Construction Manager*

Pierre Charbonnet: Field Inspector

Education & Training / Registrations
Louisiana Contractors License # 53106/# 39030; USACE Construction Management for Contractors Training Course

Years of Experience: 24

Key Accomplishments / Experience
- Assists project manager in monitoring progress and coordinating all consultant and contractor activity
- Informs project manager, project coordinators, and administrators of construction progress and activity of any non-conformance/non-compliance issues
- Issues safety observation reports (as applicable) when performing job site inspections

Relevant Projects / Working with Government Entities
- Recovery School District Program Management, New Orleans, LA, Recovery School District, *Field Inspector*
- Hurricane Rita Recovery, Cameron, LA, Royal Engineering, *Field Inspector*
- Hurricane Katrina Recovery, New Orleans, LA, Environmental Chemical Company, *Field Inspector*

Walter Raffield: Field Inspector

Education & Training / Registrations
Vo-Tech Training-Electrical Technician

Years of Experience: 47

Key Accomplishments / Experience
- Experience in both clean and environmental construction management activities for utility, infrastructure, transportation, and environmental investigation projects
- Serves as construction manager for complex infrastructure projects throughout New Orleans and the state of Louisiana, facilitating relationships with local municipalities, contractors, and stakeholders that can be used to bolster communication for the City of New Orleans
- Manages various phases of site assessment, remediation, regulatory compliance, and monitoring for construction projects
- Extensive infrastructure program/project construction management

Relevant Projects / Working with Government Entities
- Distribution Network Design – Oak Street Pump Station and Power Plant, New Orleans, LA, SWBNO, *Electrical Inspector*
- Algiers Water Purification Plant Improvements, New Orleans, LA, SWBNO, *Electrical Inspector*
- Bayou Lafourche Bridge, Larose, LA, LaDOTD, *Inspector*

Eduardo Rendon: GIS

Education & Training / Registrations
MS, Environmental Planning and Design, The University of Georgia;
Graduate Certificate Program in GIS and Remote Sensing, University of North Georgia;
BS, Central University of Venezuela, Caracas

Years of Experience: 16

Key Accomplishments / Experience
- Experience integrating geospatial technologies to understand the dynamics of urban and rural systems
- GIS planner for Jacobs' Advance Planning Group, allowing him to stay abreast of the latest technologies and implement them for the City of New Orleans
- Uses GIS and remote sensing to perform multitemporal analyses to describe changes that occurred after major storm damage caused by hurricanes

Relevant Projects / Working with Government Entities
- Tyndall AFB Hurricane Michael Remediation, Panama City Beach, FL, US Air Force, *GIS/Geodesign Consultant*
- Smart Stormwater Management Land Suitability Analysis, Gwinnett County, GA, Gwinnett County, *GIS/Geodesign Consultant*
- Westside Blight Remediation Study, Atlanta, GA, City of Atlanta, *GIS/Geodesign Consultant*

Jesse Weaver: Procurement Manager

Education & Training / Registrations
BS, Business Management, University of Florida

Years of Experience: 12

Key Accomplishments / Experience
- As Regional Procurement Manager for Jacobs Buildings and Infrastructure Line of Business, manages highly experienced staff that covers procurement with an annual spend exceeding $100M
- Proficient in managing all procurement and contract administration activities from pre-award through closeout for design, maintenance, and construction projects
- Specializes in meeting small and diverse business goals
- Expertise in supplier pre-qualification and analysis and owner requirement compliance

Relevant Projects / Working with Government Entities
- Facility Upgrades and Operations and Maintenance at Lake Underhill Road, Orlando, FL, Lockheed Martin, *Contract Administrator and Procurement Manager*
- Project Management Consultant for Long Island Railroad (LIRR) 3rd Track Expansion, New York, NY, Metropolitan Transportation Authority, *Subcontract Manager*
- Facility Expansion, Melbourne, FL, Northrop Grumman – Center of Excellence, *Subcontract Manager*

Norma Santiago: Document Controls

Education & Training / Registrations
BBA, Marketing, Interamerican University

Years of Experience: 23

Key Accomplishments / Experience
- Served as document controls lead on the $2.2B Recovery School District program responsible for establishing the processes and report formats that provide prompt, error-free transmittal and tracking of RFIs, submittals, and change orders
- Confirms compliance with client and company policies and procedures, as well as tracking, controlling, and issuing engineering documentation generated for various projects

Relevant Projects / Working with Government Entities
- Recovery Program, New Orleans, LA, Recovery School District and Orleans Parish Schools, *Document Controls*
- Capital Improvement Program, New Orleans, LA, Orleans Parish School Board, *Document Controls*
- One-Touch Ultra Project, Aguadilla, Puerto Rico, LifeScan, *Document Control Lead*

Ralph Myers: Cost Estimating

Education & Training / Registrations
AA, Coursework for Degree, Miami-Dade Community College

Years of Experience: 34

Key Accomplishments / Experience
- Skilled in using Timberline Precision Extended Construction Cost Estimating Software and Primavera Project Planner Scheduling Software P6
- Collaborates closely with design and construction teams to deliver estimate preparation, hard bid management, scope management, budgeting, purchasing, planning, scheduling, and close out
- Specializes in developing guaranteed maximum price (GMP) pricing and estimates for progressive P3 and design-build projects

Relevant Projects / Working with Government Entities
- Utility Capital Improvements Program, Tampa, FL, City of Tampa, *Pre-Construction/Estimator*
- Total Water Management Plan Design-Build, Jacksonville, FL, JEA, *Pre-Construction/Estimator*
- C.W. Bill Young Regional Reservoir Renovation Design-Build, Tampa, FL, Tampa Bay Water, *Lead Estimator*

Jarrod Tramonte, PE: Civil Engineering

Education & Training / Registrations
MS, Civil Engineering, Louisiana State University; BS, Environmental Engineering, Louisiana State University; Professional Engineer: LA # 31541

Years of Experience: 20

Key Accomplishments / Experience
- Direct knowledge and experience working with large-scale programs including the $2B Louisiana CPRA Mid-Basin Sediment Diversion Program and $1.6B City of Baton Rouge SSO Program
- Wide range of experience working with management and execution of civil engineering and construction projects
- Provides engineering support and management on engineering and design phase activities for projects in Louisiana

Relevant Projects / Working with Government Entities
- East Jefferson Foreshore Protection Project, New Orleans, LA, Southeast Louisiana Flood Protection Authority-East, *Project Manager for Engineering and Design Services*
- Mid-Basin Sediment Diversion Program Management, Baton Rouge, LA, CPRA, *Engineering Support*
- Various SSO Program Projects, Baton Rouge, LA, City of Baton Rouge/Parish of East Baton Rouge, *Project Manager/Engineer*

Ruhan Isim, PE: Civil Engineering

Education & Training / Registrations
BS, Mechanical Engineering, Arkansas State University; Professional Engineer: LA #39882

Years of Experience: 19

Key Accomplishments / Experience
- Serves as lead project engineer in many civil projects including SELA Flood Control Program, sewer projects, drainage projects, and street projects
- Experience includes electronic testing devices (SCADA controls and sensors), hydraulics, CADD, GIS, sewerage pump stations design and commissioning, startup, testing, water distribution networks modeling and design, roadway, and rail geometry design
- Has managed multiple construction projects, supervised several construction managers (CM) and worked with the CMs and contractor to maintain schedules, resolve field conflicts, held progress meetings, and reviewed RFIs, RFCCs, and plan changes

Relevant Projects / Working with Government Entities
- DPW Engineering Pool, Roadway Reconstruction Project, RR036 Marengo and Constantinople Streets, New Orleans, LA, City of New Orleans Department of Public Works, *Lead Project Engineer*
- DPW Engineering Pool, Patch, Mill and Overlay, and Full Reconstruction Project, RR084 Lakeview North Group B, New Orleans, LA, City of New Orleans Department of Public Works, *Lead Project Engineer*
- DPW Engineering Pool, Roadway Reconstruction Project, RR071 Lake Terrace & Oaks Group C, New Orleans, LA, City of New Orleans Department of Public Works, *Lead Project Engineer*

Roy Snover: Mechanical

Education & Training / Registrations
BS, Mechanical Engineering, California Polytechnic State University; Executive Education Program, University of Michigan – Ross School of Business

Years of Experience: 40

Key Accomplishments / Experience
- Serves as Project Director for the implementation of SWBNO Power Master Plan Projects including design, procurement support, and construction management services for installation of the first 25MW static frequency converter and the first 20 MW combustion turbine
- General management and execution executive with a depth of experience leading multi-billion dollar organizations and projects in the power and oil and gas sectors
- Mechanical engineer who implemented numerous initiatives to enhance design, construction, and startup; led a step change enhancement to safety programs

Relevant Projects / Working with Government Entities
- Power Master Plan Projects, SWBNO, New Orleans, LA, *Project Director*
- Lake Side 2 Power Plant, PacifiCorp, Salt Lake City, UT, *Execution Executive, Mechanical Senior Advisor*
- Darling Downs Power Plant, Origin Energy, Dalby, Queensland, Australia, *Execution Executive/ Consortium Manager*

Jeff Handwork: I&C/SCADA

Education & Training / Registrations
BS, Electrical Engineering, Georgia Institute of Technology; Professional Engineer: GA

Years of Experience: 30

Key Accomplishments / Experience
- Project engineer on large, complex power plants primarily focused on instrumentation and controls, SCADA, electrical engineering, process safety, functional safety, and HAZOP
- Experience encompasses design, owner's engineering, and EPC contracting
- Serves as project manager on control system retrofits and engineering services contracts

Relevant Projects / Working with Government Entities
- Bajo Grande and San Timoteo Power Stations, Solidaris LLC, Venezuela, *Project Engineer*
- Texas Clean Energy Project, Summit Power, Penwell, TX, *Project Engineer*
- Owner's Engineer Contract, Mexico, Abengoa, *Project Engineer*

Cassie Kerrin, PG: Environmental

Education & Training / Registrations
MS, Geology, Louisiana State University; BS, Geology, Indiana State University; Professional Geoscientist (PG): LA No. 1092

Years of Experience: 10

Key Accomplishments / Experience
- Licensed Professional Geoscientist in Louisiana working on compliance-driven environmental investigations, monitoring activities, and corrective actions of various media using prescribed methods and guidelines
- Prepares and reviews documents to confirm compliance with regulatory guidelines, permit requirements, and standard technical methodologies
- Technical emphasis in soil and groundwater assessments and remediation
- Knowledgeable in Louisiana's Risk Evaluation/Corrective Action Program (RECAP)

Relevant Projects / Working with Government Entities
- Advanced Metering Infrastructure, New Orleans, LA, SWBNO, *Deputy Project Manager*
- Retrofit Power Plant Hazard Mitigation Grant Program, New Orleans, LA, SWBNO, *Project Manager*
- Groundwater Monitoring and Remediation Projects, Various Locations, LA, Confidential Industrial Clients, *Project Manager*
- Site Investigation, Bossier City, LA, Greenfield Environmental Trust Group, *Project Geoscientist*

Tim Smith: Environmental

Education & Training / Registrations

MS, Wildlife Science, Virginia Polytechnic Institute and State University; BS, Environmental Sciences, University of California Riverside

Years of Experience: 25

Key Accomplishments / Experience

- More than 25 years of consulting experience focused on planning, NEPA, and environmental compliance for large infrastructure projects
- Extensive experience conducting environmental studies and NEPA documentation for infrastructure projects in Louisiana
- Technical expertise includes conducting corridor and alignment feasibility studies, natural resource surveys, agency consultation and coordination, and public involvement program development and implementation

Relevant Projects / Working with Government Entities

- Mid-Basin Sediment Diversion Program Management, Baton Rouge, LA, Louisiana CPRA, *Environmental Impact Statement Support*
- Manual of Standard Practice for Project Development and Implementation, Statewide, LA, LaDOTD, *Technical Manager*
- Louisiana 1 Improvements, Port Fourchon to Golden Meadow, LaFourche Parish, LA, LaDOTD, *Environmental Studies Manager*

Kenneth Bennett: Health & Safety

Education & Training / Registrations

BS, Environmental Science, University of Alabama; Environmental Management Systems Lead Auditor; FEMA Disaster Planning and Response Training; Code of Federal Regulations 40 and 49 Training
Hazardous Waste Operations and Emergency Response Training

Years of Experience: 25

Key Accomplishments / Experience

- Coordinates safety planning development and program implementation for the New Orleans $2.2B RSD program and Louisiana CPRA $2B Mid-Basin Sedimentation Program
- Performs onsite project health, safety, and environment (HSE) evaluations to minimize hazard exposure and implement safety measures including COVID-19 pandemic management strategies
- Implements Jacobs' Safety Program for multiple project sites, and coordinates and conducts required safety training for Jacobs project employees

Relevant Projects / Working with Government Entities

- Mississippi River Mid-Basin Sediment Diversion Program and Coastwide Reference Monitoring System (CRMS)-Wetlands, Baton Rouge, LA, CPRA, *Safety Manager*
- Program Management Services, New Orleans, LA, Louisiana Recovery Schools District and Orleans Parish School Board, *Safety Manager*
- Hwy 70 – Sevier Street Widening, Little Rock, AR, Arkansas DOT, *Safety Manager*

Tab 8 - **References**

8 References

We are proud of the innovative and collaborative work we provide to our clients. The best measure of our technical and management performance is the opinion of our clients. Therefore, client references offer a valuable assessment of our team's capabilities, commitment, and reliability. We encourage you to contact the references provided to verify the quality of our work and confirm our qualifications and experience relevant to delivering similar projects. **As these clients will confirm, our team's collective strength, experience, and unparalleled understanding of your aspirations and objectives enable us to capture the opportunities to implement a successful program and meet the challenges ahead.**

Our team has a strong reputation for delivering excellent work on projects and exceeding expectations. Our corporate and team culture encourages collaboration and inclusion for every assignment we undertake. The City of New Orleans can rest assured our team will begin a professional, collaborative relationship with you and your staff from Day 1.

Per the RFP, this section provides client references who used the services proposed to the City, including contact name, entity, address, telephone number, e-mail address, and dollar amount and term of the contract. Detailed descriptions for these projects can be found in Tab 4, Capabilities of Organization and Personnel.

Additionally, as a testament to our client's satisfaction, we have included client letters of reference and quotes in this section.

What Our **Clients** Are **Saying**

Jacobs

"[Jacobs] has been instrumental in assisting the City of Bellevue with creating a vision for becoming a Smart City, networking with industry practice leaders on IoT technologies, strategically pursuing funding and partnerships to help execute Smart City initiatives and managing the delivery of Bellevue's Smart City projects. **They [Jacobs] have been a valued member of our team in developing and implementing our Smart City Program."**

—Andrew Lee, PE, Deputy Director, Bellevue Utilities (Bellevue was named 4th most Digital City in the U.S. in 2017)

"To this day, **Jacobs continues to provide outstanding customer service to our residents and corporate tenants. They have been flexible, responsive and honest in their service.** The company and its employees clearly have a strong commitment to the citizens of this community."

—City Manager, Brian L. Johnson, City of Peachtree Corners

"Jacobs is a trusted and long-term partner, and I would recommend them for the City of New Orleans Smart City Program. They proactively brought an innovative, 'smart' solution, including funding, to evaluate non-revenue water in a pilot area. For this first-of-its-kind project by a utility, we collaborated with Jacobs to integrate AMI with other data streams to identify and reduce water loss. What was really useful to me was the customized dashboard Jacobs developed. This interactive dashboard processes data analytics and displays information in an easy-to-understand way, which improves communication with our citizens as well as county leadership. We were able to quickly identify potential leaks and work closely with our Field Operations Division, Customer Service staff, and the customers themselves to address them."

—Steve Seachrist, PE, Project Manager, Gwinnett County Department of Water Resources

JLC

"We're grateful to JLC Infrastructure for their partnership throughout this project. JLC's commitment to advancing opportunities for MWBEs in our communities complement our own and make them an ideal and valued partner for the Terminal B redevelopment project. We are excited to share this milestone with them and look forward to the final completion of this monumental project to create an airport that New York deserves."

—Stewart Steeves, Chief Executive Officer of LaGuardia Gateway Partners (in reference to the LaGuardia Airport Central Terminal B project)

160_NWOSC_05

What Our **Clients** Are **Saying**

Zyter

"Zyter's tools built on Verizon's 5G network and MEC technology can make the return to venues of all kinds smoother and more efficient — that includes stadiums, workspaces, schools, travel hubs, and anywhere people gather. **It has been a pleasure working with Zyter to leverage the most transformative technology of our generation — 5G — in innovative ways that can improve people's lives."**

—Aamir Hussain, Verizon Business Senior Vice President and Chief Product Officer

Celona

"Across our campus, pervasive outdoor wireless coverage has been a challenge for the new generation of IoT infrastructure connectivity. **Celona's CBRS based private LTE network allows us to enable primary and backup wireless backhaul options for critical infrastructure** such as fire alarms and connectivity during incident response. During our trial of the solution, it has proven to be easy to deploy, offer wide area coverage and deliver strong quality of service."

—Kevin Schmidt, Director of Network, Communication and Security Services, University of California Santa Barbara

IKE

"After a thorough review of several kiosk providers and manufacturers, the City of San Antonio **selected IKE because it has an experienced engineering team that provides innovative software and hardware development.** It will give us the opportunity to communicate in a different way with our residents and tourists, and it will also allow the City to receive revenue from the project."

—Brian C. Dillard, Chief Innovation Officer, Smart City Administrator, City of San Antonio

NoTraffic

Dominic Papa, Vice President of Smart Cities Initiatives at the Arizona Commerce Authority, sees **use of the NoTraffic system as a literal life saver,** explaining to Forbes.com regarding Maricopa County, "we have the number one highest pedestrian traffic fatality rate in the country, so more people die, walking on our streets than anywhere in the country. They (NoTraffic) stop people from waiting in line at lights for longer than a minute because people get to work on time, but honestly, it's stopping people from dying which is the most exciting thing for us." A wider pilot program in the Phoenix area is nearing its conclusion but Papa predicts if the NoTraffic system were installed at every intersection, "we'd be able to potentially reduce pedestrian traffic deaths by 10-20%."

https://www.forbes.com

160_NWOSC_05

Client References

City of Peachtree Corners

Contact Name and Title: Brandon Branham, Assistant City Manager and CTO
Address: 310 Technology Parkway NW, Peachtree Corners, GA 30092
Telephone Number: 770.609.8818
Email Address: bbranham@peachtreecornersga.gov
Dollar Amount: Multiple contracts that total approximately $1 million
Term of Contract: 2013–Ongoing
Responsible Firm: Qualcomm/Jacobs
Brief Project Description: Smart City Internet of Things Solutions

Client letter of reference included in this section.

Gwinnett County Department of Water Resources

Contact Name and Title: Steve Seachrist, PE, Project Manager
Address: 684 Winder Highway, Lawrenceville, GA 30045
Telephone Number: 678.376.6736
Email Address: steven.seachrist@gwinnettcounty.com
Dollar Amount: $456,680
Term of Contract: 2017–Ongoing
Responsible Firm: Qualcomm/Jacobs
Brief Project Description: Non-Revenue Water Pilot Project

Recovery School District

Contact Name and Title: Annie Cambria, Chief Operating Officer, Education Facilities Development Office
Address: 909 Poydras St., Suite 1230, New Orleans, LA 70112
Telephone Number: 504.529.4054, Mobile: 504.920.6881
Email Address: annie.cambria@rsdla.net
Dollar Amount: $2.2 billion
Term of Contract: 2007–Ongoing
Responsible Firm: Jacobs
Brief Project Description: Orleans Parish Schools Rebuilding Infrastructure Program

Client letter of reference included in this section.

Sewerage and Water Board of New Orleans

Contact Name and Title: Ghassan Korban, Executive Director
Address: 625 St. Joseph Street, New Orleans, LA 70165
Telephone Number: 504.529.2837
Email Address: gkorban@swbno.org
Dollar Amount: Various
Term of Contract: Various (Ongoing)
Responsible Firm: Jacobs
Brief Project Description: Various Infrastructure Programs/Projects

Client letter of reference included in this section.

Verizon Wireless

Contact Name and Title: Jill Flynn, Project Manager
Address: 15505 Sand Canyon Ave., Irvine, CA 92618
Telephone Number: 949.233.8175
Email Address: jill.flynn@verizonwireless.com
Dollar Amount: $3 million (total contract value); $200 million (construction/total installed cost)
Term of Contract: 2018–Ongoing
Responsible Firm: Jacobs
Brief Project Description: Los Angeles International Airport (LAX) Four-Carrier Distributed Antenna System for Neutral Host Network

City of New York

Contact Name and Title: Miguel Gamino, Former CTO for City of New York, Currently Executive VP for Global Cities, Mastercard
Address: 2000 Purchase Street, Purchase, NY 10577
Telephone Number: 915.539.8443
Email Address: Miguel.gamino@mastercard.com
Dollar Amount: $90 million
Term of Contract: 2014-2017
Responsible Firm: Qualcomm
Brief Project Description: LinkNYC

Amtrak

Contact Name and Title: Bob Dorsch, Senior Vice President
Address: 400 W 31st St, New York, NY 10001
Telephone Number: 202.697.0238
Email Address: Bobdorsch@gmail.com
Dollar Amount: Confidential
Term of Contract: 2018–2020
Responsible Firm: Zyter
Brief Project Description: Penn Station Smart Wayfinding and Smart Campus Solutions

Qualcomm Technologies

Contact Name and Title: Sanjeet Pandit, Senior Director, Global Head of Smart Cities
Address: 5775 Morehouse Drive, San Diego, CA 92121
Telephone Number: 858.361.5488
Email Address: spandit@qti.qualcomm.com
Dollar Amount: Confidential
Term of Contract: August–December 2020
Responsible Firm: Zyter
Brief Project Description: Qualcomm Smart Campus

Marion County Public Schools, with managed services offered by SBA Communications

Contact Name and Title: Piyush Raj, SBA Communications Managing Director for Connected Venues
Address: 9000 Westpoint Drive, Suite 116, Indianapolis, IN 46256
Telephone Number: 973.652.1563
Email Address: praj@sbasite.com
Dollar Amount: Confidential
Term of Contract: 2020-2021
Responsible Firm: Celona
Brief Project Description: Private Mobile Network

Illumex

Contact Name and Title: David Fernandez, CEO and Owner
Address: Prolongación Paseo de la Reforma #115, 706 Col. Paseo de las lomas, Álvaro Obregón C.P. 01330, Ciudad de México
Telephone Number: +52 1 55 4447 8284
Email Address: ing.david@gcx.com.mx
Dollar Amount: $1 million
Term of Contract: 2018-Ongoing
Responsible Firm: Juganu
Brief Project Description: Lighting and Public Safety Improvements, Benito Juarez, Mexico

City of Chandler

Contact Name and Title: Srini Goundla PE, PTOE, Traffic and Signal Systems Engineer
Address: 175 S. Arizona Avenue, Chandler, AZ 85225
Telephone Number: 480.782.3481
Email Address: Srinivas.goundla@chandleraz.gov
Dollar Amount: $200,000
Term of Contract: 2020–Ongoing
Responsible Firm: NoTraffic
Brief Project Description: Traffic Detection Sensor and Traffic App Installation

City of Cleveland

Contact Name and Title: Freddy L. Collier, Director of City Planning
Address: 601 Lakeside Ave., Rm 501, Cleveland, OH 44114
Telephone Number: 216.664.2210
Email Address: FCollier@city.cleveland.oh.us
Dollar Amount: Confidential
Term of Contract: 2019–2020 (deployment); contract through 2041 with additional 10-year renewal option
Responsible Firm: IKE
Brief Project Description: Citywide Smart Kiosk Deployment

Port Authority of New York and New Jersey

Contact Name and Title: Jane Garvey, Chairman of LaGuardia Gateway Partners, LLC Board of Directors and Chairman of Meridiam Infrastructure North America
Address: LaGuardia Airport Terminal B, Level 3M, Flushing, NY 11371
Telephone Number: 646.357.3463
Email Address: j.garvey@meridiam.com
Dollar Amount: Construction Amount: $4 billion
Term of Contract: 2016–Ongoing (expires 2050)
Responsible Firm: JLC
Brief Project Description: LaGuardia Central Terminal B Redevelopment

CITY OF Peachtree CORNERS
Innovative & Remarkable

OFFICE OF THE CITY MANAGER
Brandon Branham | *Assistant City Manager*

5/11/2021

To Whom It May Concern,

The City of Peachtree Corners, Georgia and Jacobs Engineering has previously engaged on several projects including smart parking applications, traffic signal installation and maintenance, city command and control center and most recently a cellular vehicle to everything platform (CV2X). In my role as Assistant City Manager and Chief Technology Officer, I served as the lead for procurement, evaluation, and integration of all smart city technologies for the City of Peachtree Corners.

We selected Jacobs Engineering for these smart city and transportation projects, as they brought a level of experience through internal team members, and external partners to provide world class technology and integration skills that were unmatched in other proposals.

When we were constructing our new downtown, a 25 acre mixed use development, that would serve as our city center and entertainment district, we had limited capacity for parking and needed a solution that would allow the city to effectively manage and distribute information to our residents about available parking. We evaluated several companies and integrators, and Jacobs was chosen because they brought a holistic approach to the problem we were facing. Through the smart parking application, using LoRaWAN, and camera systems, we were able to manage over 1,000 spaces and through this partnership developed a comprehensive city app, that not only gave residents parking information, but also the news, events and dining options throughout the city.

In 2019 Peachtree Corners created the world's first 5G enabled living laboratory for testing and deployment of smart city, IoT, and mobility services and products. Through this project, the installation of a traffic signal with the latest in connected vehicle technology was needed. The city received several bids for the design, operation, and maintenance of the intersection, and after review Jacobs was hired to perform these services. They were selected again for their experience and expertise in operating and maintaining traffic signals with integrated technology. As most of this technology is still in in its infancy stage, it was paramount that we had a company who had a complete understanding of the technology and its applications to an ITS system. Through this relationship, we also partnered with Qualcomm to deploy the latest CV2X technology in the city, with Jacobs handling the installation, configuration, and commissioning of the units.

CITY OF Peachtree CORNERS
Innovative & Remarkable

OFFICE OF THE CITY MANAGER
Brandon Branham | *Assistant City Manager*

We have been very pleased with the experience and ability of Jacobs to perform these integrations of new technology, that have helped solve real issues for our community, and we look forward to continuing our relationship with Jacobs into the future.

Sincerely,

Brandon Branham

Brandon Branham

May 17, 2021

RE: Jacobs Engineering Group Inc.

To Whom It May Concern:

The Louisiana Recovery School District (RSD) is pleased to provide this letter of reference for the Jacobs Engineering Group (Jacobs). The RSD has maintained a positive and productive working relationship with Jacobs since 2007, when the Jacobs/CSRS Joint Venture (JV) team was retained to manage the design and construction of stabilization, renovation, and new construction projects.

The JV has held four consecutive Program Management contacts to oversee the implementation of the multi-phase School Facilities Master Plan for Orleans Parish. Over the past 13 years, Jacobs has provided staff in a range of positions including program director, project manager, design manager, project controls manager, safety manager, asset/warranty manager, project engineers and administrative support.

The on-site Jacobs staff and executive leadership responsible for the RSD program have consistently met our expectations and those of RSD's extensive network of community stakeholders. The positive relationships we established with the Jacobs team, and the quality work they continue to deliver are critical to the success of our $1.8 billion program.

Based on Jacobs' solid performance and the level of trust and credibility they bring to the Orleans Parish Schools Rebuilding Program, I highly recommend Jacobs for a project/construction management role with your organization's program.

If you would like to discuss further, I can be reached via email at annie.cambria@rsdla.net.

Sincerely,

Annie Cambria
Chief Operating Officer, Education Facilities Development
Louisiana Department of Education Recovery School District

The Sewerage & Water Board
OF NEW ORLEANS

625 ST. JOSEPH STREET
NEW ORLEANS, LA 70165
504.529.2837 OR 52.WATER
www.swbno.org

June 8, 2021

To Members of the Selection Panel:

The Sewerage and Water Board of New Orleans (SWBNO) is pleased to provide this letter of reference for Jacobs. SWBNO's relationship with Jacobs extends over thirty years and ranges from discrete studies, to large program management, to emergency support. Over the past ten years in particular, we have had a very strong working relationship with Jacobs as they have been retained to provide program management, design, and implementation of critical power infrastructure supporting all of our key systems that serve the city of New Orleans. Jacobs currently holds active contracts on Advanced Metering Infrastructure (AMI) for water meters, program management of a large FEMA funded power plant retrofit program, and now design and implementation of our first wave of modern power assets; these contracts represent the most critical ongoing projects to the Sewerage and Water Board of New Orleans.

Jacobs has provided a broad range of staff to support our projects and operations, including program management, project controls, design management, construction oversight and inspection, commissioning and startup, electrical engineering and instrumentation and controls, among others. We have been pleased with the quality of professionals that Jacobs has provided, as these individuals are often supporting our most critical projects and helping us solve our biggest challenges. Jacobs has been very accommodating with unique projects needs and our occasional emergency requests, and consistently shows that they understand the unique nature of our operation in New Orleans. We are very pleased with Jacobs integrity, ethics, and prioritization of our project needs.

As evidenced by the multiple ongoing projects and contracts with Jacobs, the team continually meets our expectations and delivers on our most challenging and critical infrastructure. I fully recommend the Jacobs team for complex infrastructure programs. For any further questions, I can be contacted at gkorban@swbno.org.

Sincerely,

Ghassan Korban
Executive Director
Sewerage and Water Board of New Orleans

Tab 9 -
Insurance

Insurance

9

JLC will create a special purpose vehicle (SPV), Smart + Connected NOLA, for the execution of this project, as denoted in Exhibits 1-2 and 2-17 and discussed on pages 1-7, 2-46, and 2-47. The SPV will maintain the insurance requirements identified in Attachment D of the RFP for the duration of the work and will provide evidence of coverage after formation, and in no event later than the execution of the definitive Contract with the City. To demonstrate our team's ability to meet those requirements (and per the RFP), we have included evidence of required insurance in the amounts indicated for the following Smart+Connected NOLA consortium partners: Jacobs, JLC, and Zyter.

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 05/28/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER LIC #0437153 1-212-948-1306 Marsh Risk & Insurance Services CIRTS_Support@jacobs.com 633 W. Fifth Street Los Angeles, CA 90071	CONTACT NAME: PHONE (A/C, No, Ext): FAX (A/C, No): 1-212-948-1306 E-MAIL ADDRESS:
INSURED Jacobs Project Management Co. C/O Global Risk Management 1000 Wilshire Blvd., Suite 2100 Los Angeles, CA 90017	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : ACE AMER INS CO — 22667 INSURER B : INSURER C : INSURER D : INSURER E : INSURER F :

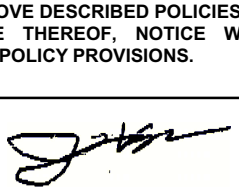
COVERAGES **CERTIFICATE NUMBER:** 62314393 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY	X	X	HDO G71452694	07/01/20	07/01/21	EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE X OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 500,000
	X CONTRACTUAL LIABILITY						MED EXP (Any one person)	$ 5,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						PERSONAL & ADV INJURY	$ 1,000,000
	X POLICY PRO-JECT LOC						GENERAL AGGREGATE	$ 2,000,000
	OTHER:						PRODUCTS - COMP/OP AGG	$ 1,000,000
								$
A	AUTOMOBILE LIABILITY	X	X	ISA H25307306	07/01/20	07/01/21	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$
	DED RETENTION $							$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY		X	WLR C67460303 (AOS)	07/01/20	07/01/21	X PER STATUTE OTH-ER	
A	ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N: N	N / A		SCF C67460388 (WI)	07/01/20	07/01/21	E.L. EACH ACCIDENT	$ 1,000,000
A	(Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below			WCU C67460340 (OH)*	07/01/20	07/01/21	E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
A	PROFESSIONAL LIABILITY			EON G21655065 011	07/01/20	07/01/21	PER CLAIM/PER AGG	2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

PROJECT MGR: Kevin Ferguson. CONTRACT MGR: Fred Davis. RE: Advanced Broadband and Smart City Systems. CONTRACT NUMBER: 1193. CONTRACT END DATE: 6/30/2023. SECTOR: Public. City of New Orleans, its departments, political subdivisions, officers, officials, employees, and volunteers are added as an additional insured for general liability & auto liability as respects the negligence of the insured in the performance of insured's services to cert holder under contract for captioned work. Coverage is primary and certificate holder's insurance is excess and non-contributory. Waiver of subrogation is hereby granted in favor of cert holder for GL, AL and WC. *THIS IS A SAMPLE CERTIFICATE ONLY*. THE ACTUAL CERTIFICATE FOR THE PROPOSED PROJECT WILL COMPLY WITH THE TERMS AND CONDITIONS NEGOTIATED IN THE FINAL

CERTIFICATE HOLDER	CANCELLATION
City of New Orleans 1300 Perdido Street New Orleans, LA 70112 USA	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE 

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SUPPLEMENT TO CERTIFICATE OF INSURANCE

DATE
05/28/2021

NAME OF INSURED: Jacobs Project Management Co.

Additional Description of Operations/Remarks from Page 1:

CONTRACT, CONSISTENT WITH POLICY TERMS AND CONDITIONS.

Additional Information:

*$2,000,000 SIR FOR STATE OF: OHIO

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 05/28/2021

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IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER LIC #0437153 1-212-948-1306 Marsh Risk & Insurance Services CIRTS_Support@jacobs.com 633 W. Fifth Street Los Angeles, CA 90071	CONTACT NAME: PHONE (A/C, No, Ext): FAX (A/C, No): 1-212-948-1306 E-MAIL ADDRESS:
INSURED Jacobs Project Management Co. C/O Global Risk Management 1000 Wilshire Blvd., Suite 2100 Los Angeles, CA 90017	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : ACE AMER INS CO — 22667 INSURER B : INSURER C : INSURER D : INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER:** 62314400 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$
	☐ CLAIMS-MADE ☐ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	$
	☐ OTHER:							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ANY AUTO						BODILY INJURY (Per person)	$
	☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	☐ UMBRELLA LIAB ☐ OCCUR						EACH OCCURRENCE	$
	☐ EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	$
	☐ DED ☐ RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						☐ PER STATUTE ☐ OTH-ER	
	ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ (Mandatory in NH)	N / A					E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
A	PROF.LIAB. (Privacy&Sec)			EON G21655065 011	07/01/20	07/01/21	PER CLAIM/PER AGG	2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

PROJECT MGR: Kevin Ferguson. CONTRACT MGR: Fred Davis. RE: Advanced Broadband and Smart City Systems. CONTRACT NUMBER: 1193. CONTRACT END DATE: 6/30/2023. SECTOR: Public. *THIS IS A SAMPLE CERTIFICATE ONLY*. THE ACTUAL CERTIFICATE FOR THE PROPOSED PROJECT WILL COMPLY WITH THE TERMS AND CONDITIONS NEGOTIATED IN THE FINAL CONTRACT, CONSISTENT WITH POLICY TERMS AND CONDITIONS.

CERTIFICATE HOLDER

City of New Orleans

1300 Perdido Street

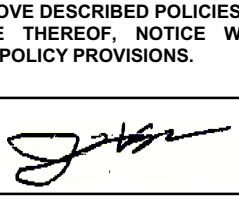
New Orleans, LA 70112

USA

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE



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SUPPLEMENT TO CERTIFICATE OF INSURANCE

DATE
05/28/2021

NAME OF INSURED: Jacobs Project Management Co.

SUPP (10/00)

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 06/03/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER CS Insurance Strategies 150 N Michigan Ave #2400 Chicago, IL 60601	**CONTACT NAME:** Toni Hanes **PHONE (A/C, No, Ext):** 312-566-9700 **FAX (A/C, No):** 312-566-0367 **E-MAIL ADDRESS:** thanes@csstrategy.com
INSURED MJE-Loop Capital Partners LLC 111 West Jackson Boulevard Chicago, IL 60604	**INSURER(S) AFFORDING COVERAGE** — **NAIC #** **INSURER A :** Valley Forge Insurance Company — 20508 **INSURER B :** Great American Insurance Group **INSURER C :** **INSURER D :** **INSURER E :** **INSURER F :**

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	GENERAL LIABILITY						EACH OCCURRENCE	$
	☐ COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
	☐ ☐ CLAIMS-MADE ☐ OCCUR						MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
							GENERAL AGGREGATE	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG	$
	☐ POLICY ☐ PRO-JECT ☐ LOC							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ANY AUTO						BODILY INJURY (Per person)	$
	☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ☐ NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
	☐ **UMBRELLA LIAB** ☐ OCCUR						EACH OCCURRENCE	$
	☐ **EXCESS LIAB** ☐ CLAIMS-MADE						AGGREGATE	$
	☐ DED ☐ RETENTION $							$
A	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** Y / N ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		6021282810	10/06/2020	10/06/2021	☒ WC STATU-TORY LIMITS ☐ OTH-ER	500,000
							E.L. EACH ACCIDENT	$ 500,000
							E.L. DISEASE - EA EMPLOYEE	$ 500,000
							E.L. DISEASE - POLICY LIMIT	$
B	Private Equity Liability Insurance			PEP2788804 / 107203042	02/01/2021	02/01/2022	$2,000,000 Aggregate Limit	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Financial Institution Bond - Travelers - Bond no. 107203042 - $5,000,000 Aggregate Limit

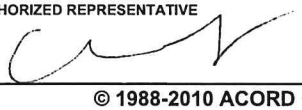
CERTIFICATE HOLDER

FOR INFORMATIONAL PURPOSES ONLY

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE



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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 04/16/2021

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IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Willis Towers Watson Southeast, Inc. c/o 26 Century Blvd P.O. Box 305191 Nashville, TN 372305191 USA	**CONTACT NAME:** Willis Towers Watson Certificate Center **PHONE (A/C, No, Ext):** 1-877-945-7378 **FAX (A/C, No):** 1-888-467-2378 **E-MAIL ADDRESS:** certificates@willis.com
INSURED Infinite Computer Solutions, Inc. 2600 Tower Oaks Boulevard Suite 700 Rockville, MD 20852	**INSURER(S) AFFORDING COVERAGE** / **NAIC #** **INSURER A :** Hartford Casualty Insurance Company — 29424 **INSURER B :** Trumbull Insurance Company — 27120 **INSURER C :** Hartford Fire Insurance Company — 19682 **INSURER D :** Allied World Specialty Insurance Company — 16624 **INSURER E :** Crum & Forster Specialty Insurance Company — 44520 **INSURER F :** Continental Casualty Company — 20443

COVERAGES **CERTIFICATE NUMBER:** W20696967 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	[X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [X] POLICY [ ] PRO-JECT [X] LOC [ ] OTHER:			42 UUN BI4443	03/31/2021	03/31/2022	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG [ ]	$ 1,000,000 $ 300,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000 $
B	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS [ ] HIRED AUTOS ONLY [ ] NON-OWNED AUTOS ONLY			42 UUN BI4443	03/31/2021	03/31/2022	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) [ ]	$ 1,000,000 $ $ $ $
A	[X] UMBRELLA LIAB [X] OCCUR EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [X] RETENTION $ 10,000			42 RHU BI4070	03/31/2021	03/31/2022	EACH OCCURRENCE AGGREGATE [ ]	$ 10,000,000 $ 10,000,000 $
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [ ] (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		42 WB AC8STF	03/31/2021	03/31/2022	[X] PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 1,000,000 $ 1,000,000 $ 1,000,000
C	Errors & Omissions including Network Security			42 TE 0320295 21	04/14/2021	03/31/2022	Aggregate Limit: Retention:	$5,000,000 $75,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

SEE ATTACHED

CERTIFICATE HOLDER

Evidence of Coverage

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Arlyn Mcumber

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AGENCY CUSTOMER ID: _____

LOC #: _____

ADDITIONAL REMARKS SCHEDULE

AGENCY		NAMED INSURED
Willis Towers Watson Southeast, Inc.		Infinite Computer Solutions, Inc. 2600 Tower Oaks Boulevard Suite 700 Rockville, MD 20852
POLICY NUMBER See Page 1		
CARRIER See Page 1	NAIC CODE See Page 1	EFFECTIVE DATE: See Page 1

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 FORM TITLE: Certificate of Liability Insurance

INSURER AFFORDING COVERAGE: Allied World Specialty Insurance Company NAIC#: 16624
POLICY NUMBER: 0312-8323 EFF DATE: 04/14/2021 EXP DATE: 03/31/2022

TYPE OF INSURANCE:	LIMIT DESCRIPTION:	LIMIT AMOUNT:
Errors & Omissions	$5,000,000 XS of	$5,000,000

INSURER AFFORDING COVERAGE: Crum & Forster Specialty Insurance Company NAIC#: 44520
POLICY NUMBER: EOL-231792 EFF DATE: 04/14/2021 EXP DATE: 03/31/2022

TYPE OF INSURANCE:	LIMIT DESCRIPTION:	LIMIT AMOUNT:
Errors & Omissions	$5,000,000 XS of	$10,000,000

INSURER AFFORDING COVERAGE: Continental Casualty Company NAIC#: 20443
POLICY NUMBER: 652076273 EFF DATE: 04/14/2021 EXP DATE: 03/31/2022

TYPE OF INSURANCE:	LIMIT DESCRIPTION:	LIMIT AMOUNT:
Errors & Omissions	$5,000,000 XS of	$15,000,000

INSURER AFFORDING COVERAGE: Liberty Surplus Insurance Corporation NAIC#: 10725
POLICY NUMBER: EO5NAB8S8R001 EFF DATE: 04/14/2021 EXP DATE: 03/31/2022

TYPE OF INSURANCE:	LIMIT DESCRIPTION:	LIMIT AMOUNT:
Errors & Omissions	$5,000,000 XS	$20,000,000

INSURER AFFORDING COVERAGE: Great American Fidelity Insurance Company NAIC#: 41858
POLICY NUMBER: MPXE249054 EFF DATE: 04/14/2021 EXP DATE: 03/31/2022

TYPE OF INSURANCE:	LIMIT DESCRIPTION:	LIMIT AMOUNT:
Errors & Omissions	$5,000,000 XS	$25,000,000

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SR ID: 20989208 BATCH: 2060343 CERT: W20696967

Tab 10 -
Financial Statements

Addenda 11

Smart+Connected NOLA

Qualcomm Jacobs JLC | MJE-Loop Capital Partners Zyter

Smart+Connected NOLA
1555 Poydras Street, Suite 1625
New Orleans, LA 70112

June 17, 2021

Attn: Ms. Kai Wells
City of New Orleans, Bureau of Purchasing
1300 Perdido Street, Suite 4W07
New Orleans, LA 70112

Subject: Proposal for Advanced Broadband and Smart City Systems; RFP No.: 1193

Dear Members of the Selection Committee:

The Smart+Connected NOLA team has reviewed and acknowledges the following addenda issued by the City:

Addendum 1, April 19, 2021

Addendum 2, April 26, 2021

Addendum 3, April 28, 2021

Addendum 4, May 3, 2021

Addendum 5, May 12, 2021

Addendum 6, May 21, 2021

Andrew Kim from JLC is authorized to sign on behalf of Smart+Connected NOLA.

Sincerely,

Smart+Connected NOLA

Kevin Ferguson
Program Manager

Sanjeet Pandit
Smart City Senior Advisor

Andrew Kim
Smart City Senior Advisor

Tab 12 -
Exceptions

12 Exceptions

In accordance with the RFP **Section 8.3 Contents, A. Technical Proposal, Tab 12**, we are requesting the following exceptions of any forthcoming contract/ legal agreement if Smart+Connected NOLA is selected for the project.

Smart+Connected NOLA has proposed a project delivery model under which Smart+Connected NOLA and the City would enter into a multi-year contract of 15 years.

Smart+Connected NOLA has reviewed **RFP Attachment I – City of New Orleans Sample Agreement Cooperative Endeavour Agreement (Agreement)** and recognizes that the Agreement is largely structured as a short-term service contract. We look forward to working with the City to develop a multi-year contract (P3 Agreement) that provides the framework for a successful, long-term partnership with the City that will incorporate the following key structural terms.

- **Risk Allocation:** Smart+Connected NOLA has proposed the assumption of the key projected P3 delivery, operating and monetization risks; however, there are other risks that the City will be better equipped to assume. Smart+Connected NOLA will work with the City to ensure that the P3 Agreement accounts for the optimal allocation of project risks between Smart+Connected NOLA and the City.
- **City Obligations:** As part of the proposed public private partnership, a successful Project will be contingent upon key deliverables from the City. Examples of such City assumed obligations include, but are not limited to:
  - Assisting Smart+Connected NOLA in securing the necessary government approvals and permits to deploy the project in an expedited manner
  - Providing access and site leases on selected government buildings for macro installation for the term of the P3 Agreement
  - Providing ISP backhaul connectivity to those macro sites
  - Allowing Smart+Connected NOLA to monetize traffic sensor collected data
  - Coordinating with the consortium to reach and sign customers onto the new network
- **Performance Standards:** The P3 Agreement should incorporate performance criteria ascribed to Smart+Connected NOLA that are "output-based" and structured around the City's key project objectives.
- **Payment Structure:** A well-defined payment mechanism tied to each project performance criteria (KPIs) as referenced above will be a critical element of the P3 Agreement.
- **Revenue Share:** Smart+Connected NOLA proposes a revenue share mechanism with the City whereby the City will receive a percentage of third-party private sector revenues received by the consortium as a result of successful monetization of the Project's assets. We believe this revenue share represents a significant opportunity for the City to access additional financial resources which can be utilized and directed by the City to subsidize digital equity programs or other budgetary needs more broadly.
- **Supervening Events:** During the term of the P3 Agreement there may be events or circumstances that will negatively impact Smart+Connected NOLA's ability to perform its obligations as originally agreed to. While Smart+Connected NOLA may manage some of these risks, others may be beyond our control. The P3 Agreement should therefore define these supervening events and identify the course of action upon occurrence

of such event. These events generally fall in three categories:

  - Force majeure
  - Material adverse government action
  - Changes to laws applicable to the project

» **Dispute Resolution:** The P3 Agreement must specify a procedure for handling disputes during the term of the contract. Alternative formal dispute resolution procedures may offer a more efficient and cost-effective method of resolving disputes.

» **End of Term Transition Process:** The P3 Agreement will need to incorporate the project transition procedures at the end of the P3 Agreement term. The P3 Agreement should incorporate handback requirements that govern the transition to the City.

The below summarizes Smart+Connected NOLA's exceptions to specific sections of the Agreement.

Article IV – Duration and Termination

1. **Section A:** Term – Smart+Connected NOLA has proposed a 15-year term from the project's substantial completion date, in order to allow sufficient time for Smart+Connected NOLA to recover and earn a return on the capital invested to deliver this no-upfront outlay and cost neutral solution to the City. We look forward to working with the City to determine the appropriate term that satisfies both Smart+Connected NOLA and the City's objectives.
2. **Section C:** Termination for Convenience – Precedent P3 project agreements include compensation amounts payable to the P3 developer or consortium (Developer) should the municipal project sponsor decide to terminate the project for convenience. We look forward to working with the City to develop a suitable termination for convenience construct that accounts for the City's resources and objectives while ensuring that the Smart+Connected NOLA consortium is compensated for
   - The financial, human, and technology capital invested during implementation
   - The future value of the financial benefits of the Project assuming successful completion of the Project
3. **Section D:** Termination for Cause – Smart+Connected NOLA would like to engage in a discussion with the City regarding the following:
   - Inclusion of prescribed events in the P3 Agreement that would constitute a Smart+Connected NOLA default
   - Inclusion in the P3 Agreement of cure periods for the appropriate default events
4. **Section E:** Termination for Non-Appropriation – Smart+Connected NOLA will work with the City to understand the City's funding and appropriation process envisioned for the project. Precedent P3 project agreements classify a municipality's failure to make agreed upon payments as a municipality default event, which may, subject to the elapse of a cure period, result in compensation owed to the Developer.

Article VII – Performance Measures

5. **Section A:** Factor – Smart+Connected NOLA looks forward to working with the City to identify explicit performance standards and KPIs that will be tied to Smart+Connected NOLA's obligations and City payments owed to Smart+Connected NOLA.
6. **Section B:** Failure to Perform – As referenced in the Termination for Cause comments above, we propose the inclusion Smart+Connected NOLA default events and cure periods for the appropriate default events.

Article XIII – Additional Provisions

7. **Section Q:** Non-Exclusivity – Smart+Connected NOLA would like to discuss the following provision, "….and the City may engage the services of others for the provision of some or all of the work to be performed under this Agreement." We would expect that under the P3 Agreement, the City will grant Smart+Connected NOLA the exclusive right during the term of the P3 Agreement to perform the required project obligations.

Tab 13 - **Litigation**

13 Litigation

Per the RFP, this section includes litigation for each of the Smart+Connected NOLA consortium partners in the past 10 years.

Qualcomm

Please refer to Note 7, Page F-28 of Qualcomm's Form 10-K for a description of Legal and Regulatory Proceedings. The Form 10-K can be found in Tab 10, Financial Statements, of this proposal.

Jacobs

The Jacobs organization has a talent force of more than 55,000, approximately $13 billion in revenue, and over 300 global operating entities, with approximately 100 operating entities in the United States and Canada. Jacobs provides a full spectrum of services including scientific, technical, professional, construction, and program management for business, industrial, commercial, government, and infrastructure sectors. Our corporate profile and public filings can be found at http://invest.jacobs.com/investors/default.aspx#corporate. From time to time and in the ordinary course of its business, the Company is subject to various claims, disputes, terminations, arbitrations, litigations, and other legal proceedings. It is the Company's practice to defend itself in such actions, many of which are generally subject to insurance and none of which are expected to have a materially adverse effect on the Company's consolidated financial statements.

JLC Infrastructure

With respect to the requirements referenced in Tab 13 of the RFP, JLC Infrastructure does not have any judgments entered into against the firm by any federal, state, or local courts within the past 10 years; any criminal convictions ever issued against the firm or its owners or principals, and any civil, criminal, and administrative proceedings pending against the firm at this time.

Zyter*

As with most international businesses of a similar size in its industry, Infinite is occasionally subject to legal disputes. However, Infinite has not been subject to any disputes that could have a material impact on the services to be provided to its customers.

**Infinite is Zyter's parent company*

Tab 14 - **Forms**

Forms

14

Per the RFP, this section includes the following forms:

- DBE Compliance Form 3 – DBE Participation Plan
- Attachment C – Affidavit of Conflict of Interest Disclosure

OFFICE OF SUPPLIER DIVERSITY

CITY OF NEW ORLEANS

DBE Compliance Form-3 | **DBE PARTICIPATION PLAN**

Contact Office of Supplier Diversity for questions on completing this form.
Via email: supplierdiversity@nola.gov

RESPONDENTS: ***This completed form must be furnished to the Bureau of Purchasing with your proposal. You must complete every section of the form or your proposal may be deemed non-responsive. If a section is not applicable to your proposal, you must explain why it is not applicable or your proposal will be deemed non-responsive. You must submit your response on the DBE Responsiveness Form 3 or your proposal will be deemed non-responsive. You may use additional pages as warranted.***

RFP/RFQ/Solicitation #: 1193 Date: 6/17/2021

Description: Advanced Broadband and Smart City Systems

Name of Respondent: Smart+Connected NOLA (a consortium comprising Qualcomm, Jacobs, JLC, and Z

Please check the appropriate space:

☑ **The respondent is committed to the contract goal of 35 % DBE utilization. (If selected, you must complete and submit DBE Compliance Form 1 in order to be awarded a contract.)**

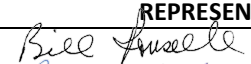
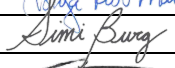
☐ **The respondent is unable to meet the DBE contract goal, but is committed to a minimum of _____% DBE utilization and will submit documentation demonstrating good faith efforts.(If selected, you must complete and submit DBE Compliance Form 1 and/or DBE Compliance Form-2 along with all required supporting documentation in order to be awarded a contract.)**

SECTION I - DBE COMMITTEMENT TO CONTRACT GOAL: You must list all DBE firms that you have identified to participate on the contract. PLEASE NOTE: Every DBE firm listed must be utilized on the project. To remove and/or replace a DBE firm you must submit a DBE Removal/Substitution Request Form 4 and receive approval from the Office of Supplier Diversity to remove and/or replace the firm.

DBE FIRM & NAME of DBE	PHONE	SOURCE OF CERTIFICATION (SLDBE or LAUCP)	SCOPE OF WORK TO BE PERFORMED BY THE DBE	ESTIMATED VALUE of PROPOSED DBE CONTRACT (If Known)	ESTIMATED % OF TOTAL CONTRACT
1. Bright Moments	504.592.1800	LAUCP	Stakeholder involvement	$215000	0.65 %
2. Gaea Consultants, LLC	504.962.5360	SLDBE	Flood mitigation and modeling	$35000	0.11 %
3. HLB Lighting Design	305.748.2151	LAUCP	Lighting	$111910	0.34 %
4. ILSI Engineering	504.523.1619	SLDBE	and electrical engineering and field inspe	$474190	1.44 %
5. HD and Associates	5044153112	SLDBE	stallation and field services, procureme	$3536205	10.72 %
6. Malone Electrical Services	504.288.4000	SLDBE	Installation services, procurement	$7249221	21.97 %
7.				$	%
8.				$	%
9.				$	%
10.				$	%
TOTALS				$11621526	35.2 %

Contact Office of Supplier Diversity for questions on completing this form.
Via email: supplierdiversity@nola.gov

SECTION II - DBE CONFIRMATION: For the DBE firms listed above, please provide the name and signature of the firm's authorized representative.

NAME OF DBE FIRM	PRINT NAME OF DBE FIRM'S AUTHORIZED REPRESENTATIVE	SIGNATURE OF DBE FIRM'S AUTHORIZED REPRESENTATIVE	DATE
Bright Moments	Bill Rouselle		06/14/21
Gaea Consultants, LLC	Tonja Koob Marking		06/14/21
HLB Lighting Design	Simi Burg		06/14/21
ILSI Engineering	Iam Tucker		06/14/21
HD and Associates	John Davillier		06/14/21
Malone Electrical Services	Danah Malone		06/14/21

SECTION III - SPECIFIC PORTIONS OF WORK IDENTIFIED FOR DBE SUBCONTRACTOR: You must list all selected scopes or portions of work that you identified to be performed by DBE(s) and the estimated percentage value of each scope of work identified in order to increase the likelihood of meeting the contract goal for this project.

	SCOPE OR PORTIONS OF WORK IDENTIFIED FOR DBE PARTICIPATION	ESTIMATED % OF CONTRACT VALUE
1.	Stakeholder involvement	.65%
2.	Flood mitigation and modeling	.11%
3.	Lighting	.34%
4.	Civil engineering and field inspection	1.22%
5.	Installation and field services	6.63%
6.	Procurement	26.05%
7.	Electrical engineering	.22%
8.		
9.		
10.		
TOTAL		35.2%

Contact Office of Supplier Diversity for questions on completing this form.
Via email: supplierdiversity@nola.gov

SECTION IV - PAST PERFORMANCE: You must provide details of your firm's past performance in compliance with DBE goals.

AGENCY NAME	PROJECT NAME	COMPLETION DATE	DBE PARTICIPATION ACHIEVED	OSD VERIFICATION
ept. of Education Recovery Sc	Rebuild New Orleans Parish Schools (Jacobs)	Ongoing	30%	
age and Water Board of New C	Hurricane Water Related Restoration Program (Jacobs)	2019	36%	
City of New Orleans DPW	ck Pearl Roadway Enhancement & Reconstruction (Jaco	Ongoing	47.6% (projected)	
uthority of New York and New a	Guardia Airport Central Terminal B Redevelopment (JLC	Ongoing	30.2%	
epartment of Heath and Huma	Statewide Automated Child Welfare Information System	Ongoing	20%	

SECTION V - OTHER: Please provide narrative details of any other efforts your firm will conduct to attain the DBE goal.

Please see Tab 6 of this Smart+Connected NOLA proposal for further details about the efforts we will contact to attain the DBE goal.

ATTACHMENT C
CITY OF NEW ORLEANS
AFFIDAVIT OF CONFLICT OF INTEREST DISCLOSURE

STATE OF New York

COUNTY/PARISH OF New York

Before me, the undersigned authority, came and appeared Andrew Kim, who, being first duly sworn, deposed and said that:

1. He/She is the Managing Director and authorized representative of MJE-Loop Capital Partners LLC, d/b/a JLC Infrastructure, sponsor of Smart+Connected NOLA, hereafter called "Respondent."

2. The Respondent submits the attached proposal in response to City of New Orleans Solicitation No. 1193.

3. The Respondent hereby confirms that a conflict(s) of interest *(check the applicable box)*

- ☑ does not exist
- o exists
- o may exist

in connection with this solicitation which might impair Respondent's ability to perform if awarded the contract, including any familial or business relationships that the Respondent, the proposed subcontractors, and their principals have with city officials or employees.

(*If a conflict(s) of interest exists and/or may exist, describe in a letter the nature of the conflict, the parties involved and why there is a conflict. Attach said letter to this form*).

Respondent Representative (Signature)

Andrew Kim
(Print or type name)

88 Pine Street, New York, NY 10005
(Address)

Sworn to and subscribed before me, Mowsumi Begum Notary Public, this 12th day of June 2021.

Notary Public (signature)

Mowsumi Begum
Notary Public (print)
Notary ID#/Bar Roll # 01BE6404837

MOWSUMI BEGUM
Notary Public - State of New York
NO. 01BE6404837
Qualified in Bronx County
My Commission Expires Mar 2, 2024

[ATTACHMENTS D THRU I ON FOLLOWING PAGES]

Contact Information:

Qualcomm

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Jacobs

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JLC | MJE-Loop Capital Partners

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