

Chorus Institutional Investor Briefing

7 October 2014



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Mark Ratcliffe
Chorus CEO



Agenda

- > Introduction
- > Connections and market update
- > Understanding TSLRIC steps and parameters
 - note: this presentation is a summary of Chorus' views to date
- > Chorus scenarios and comparisons
- > Regulatory framework and new Government initiatives
- > Q and A

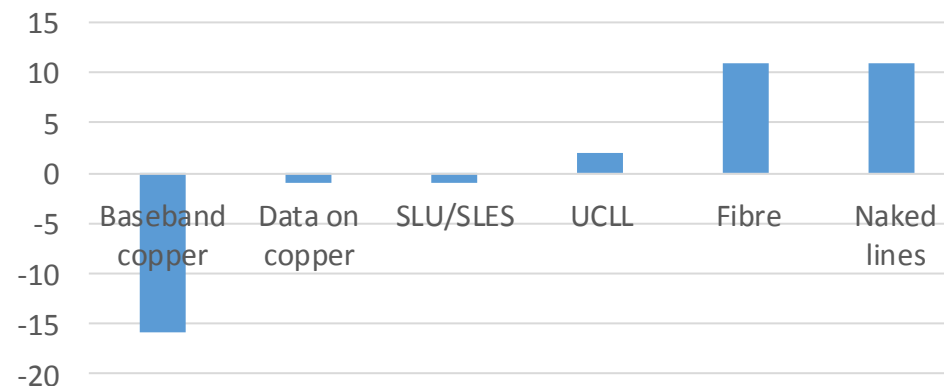
Fixed line connections

Fixed line connections	30 September 2014	30 June 2014
Baseband copper	1,455,000	1,471,000
UCLL	129,000	127,000
SLU/SLES	3,000	4,000
Naked Basic/Enhanced UBA and Naked VDSL	128,000	117,000
Data services over copper	15,000	16,000
Fibre	53,000	42,000
Total fixed line connections	1,783,000	1,777,000*

> Total connections increased by 6,000 lines

- **naked lines** now account for ~7% of connections and **fibre** ~3%
- baseband demand 'inflated' where fibre lines still need copper voice
- *baseband copper decline includes 4,000 connections previously counted as intact but non-revenue generating. FY14 total adjusted accordingly

Q1 change in connections



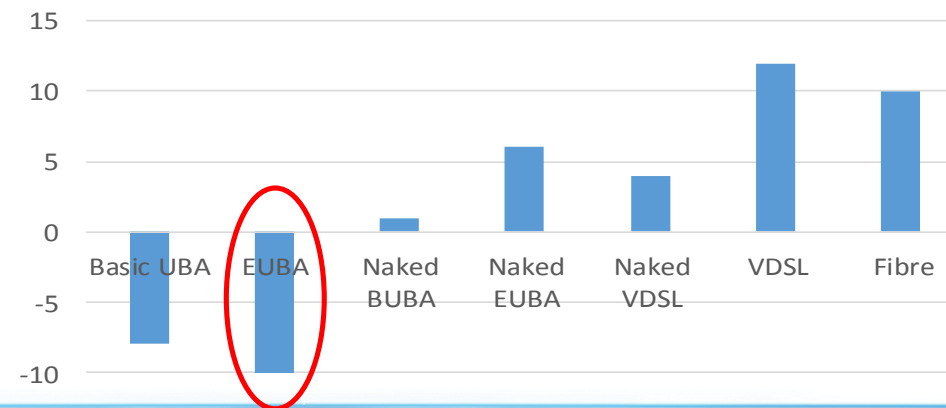
Continuing broadband growth

Broadband connections	30 September 2014	30 June 2014
Basic UBA	156,000	164,000
Naked Basic UBA	10,000	9,000
Enhanced UBA	792,000	802,000
Naked Enhanced UBA	99,000	93,000
VDSL	61,000	49,000
Naked VDSL	19,000	15,000
Fibre (mass market)	41,000	31,000
Total broadband connections	1,178,000	1,163,000

> 15,000 broadband connections added

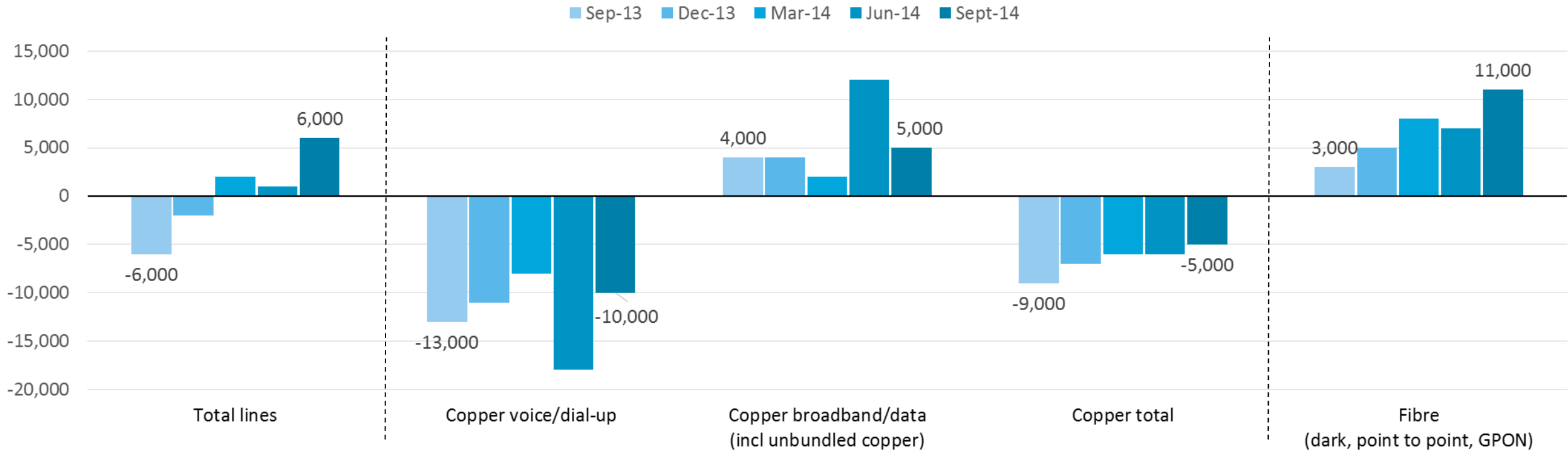
- high speed services (VDSL and fibre) increased from ~8% to ~10% of broadband connections

Q1 change in broadband connections



Steady migration to broadband, data & fibre

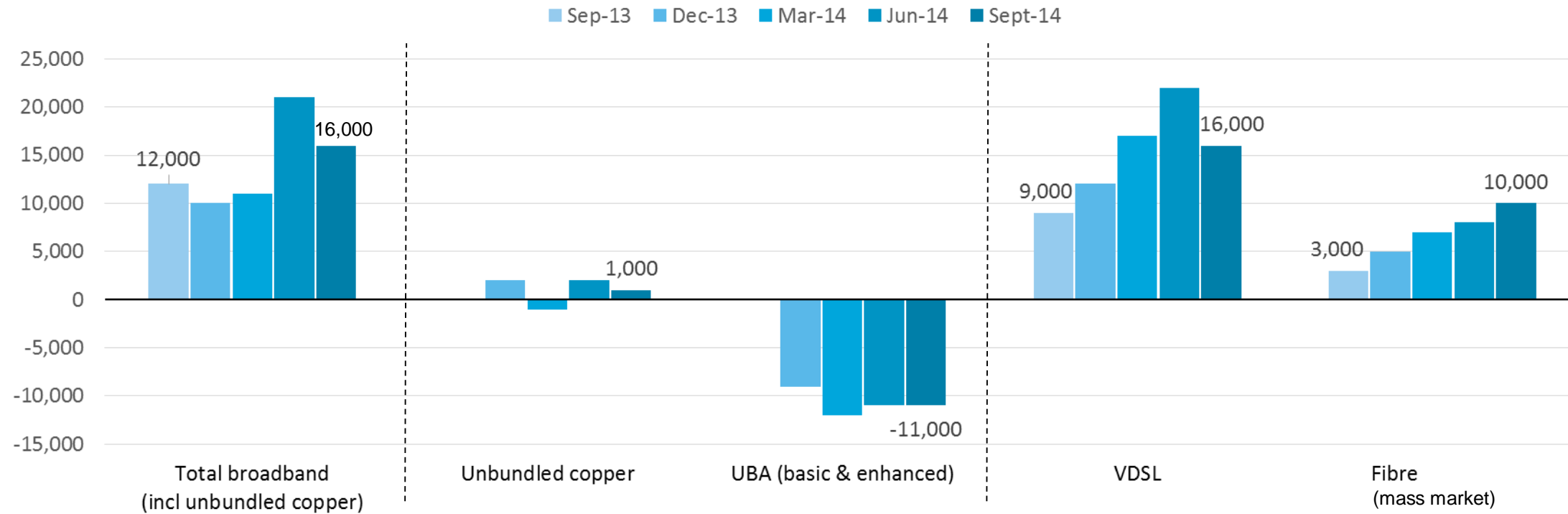
Chorus Access Lines: Quarterly Net Additions



	Sept 14	June 14	March 14	Dec 13	Sept 13	June 13
Baseband copper	1,455,000	1,471,000	1,485,000	1,495,000	1,507,000	1,519,000

Demand for high speed broadband is growing

Chorus Broadband Lines: Quarterly Net Additions

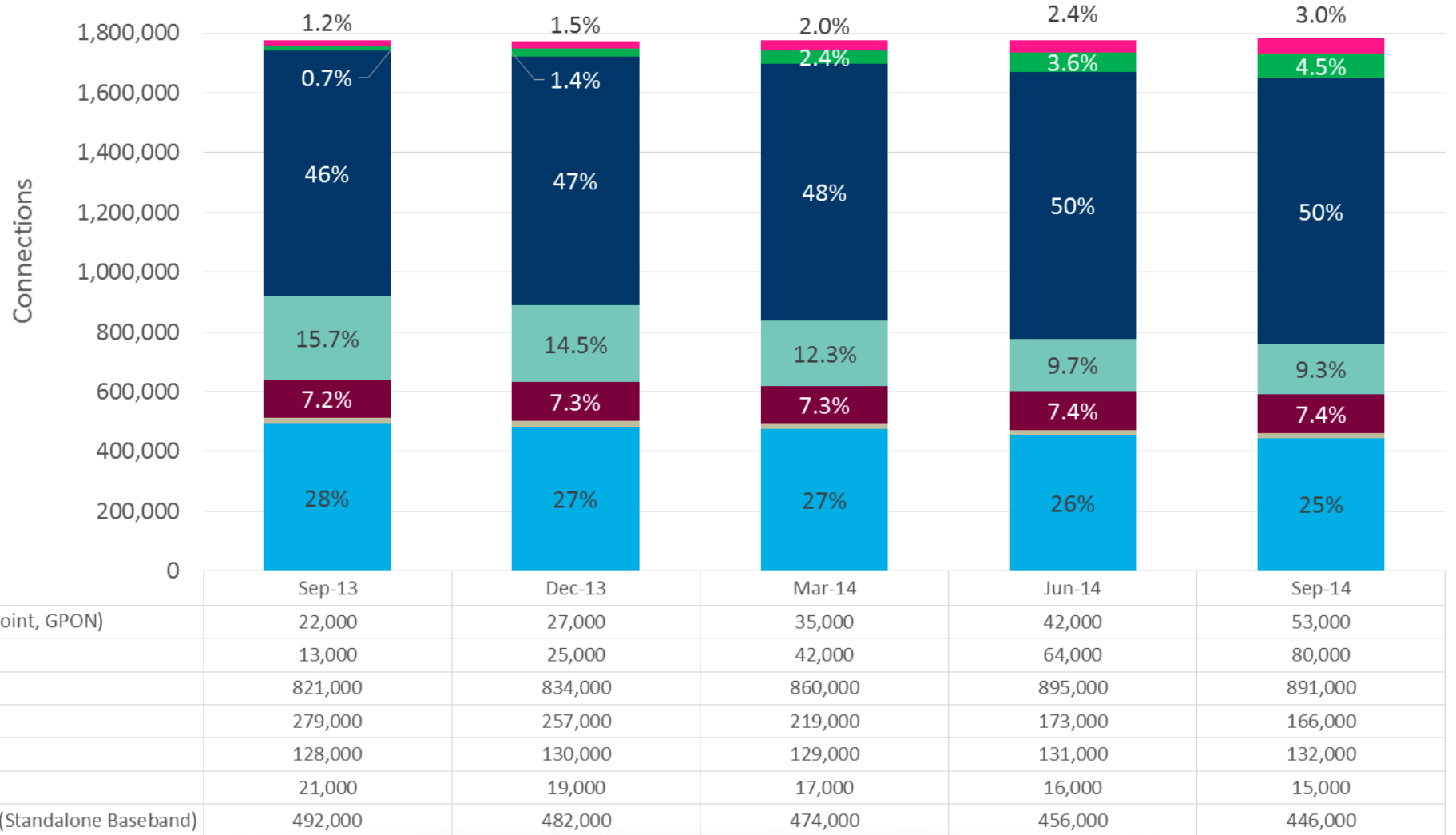


Changing product mix

Steady migration away from basic UBA to EUBA, VDSL and Fibre

Voice/dial-up lines are steadily declining, but still represent a quarter of our connections

Chorus Access Lines by Product



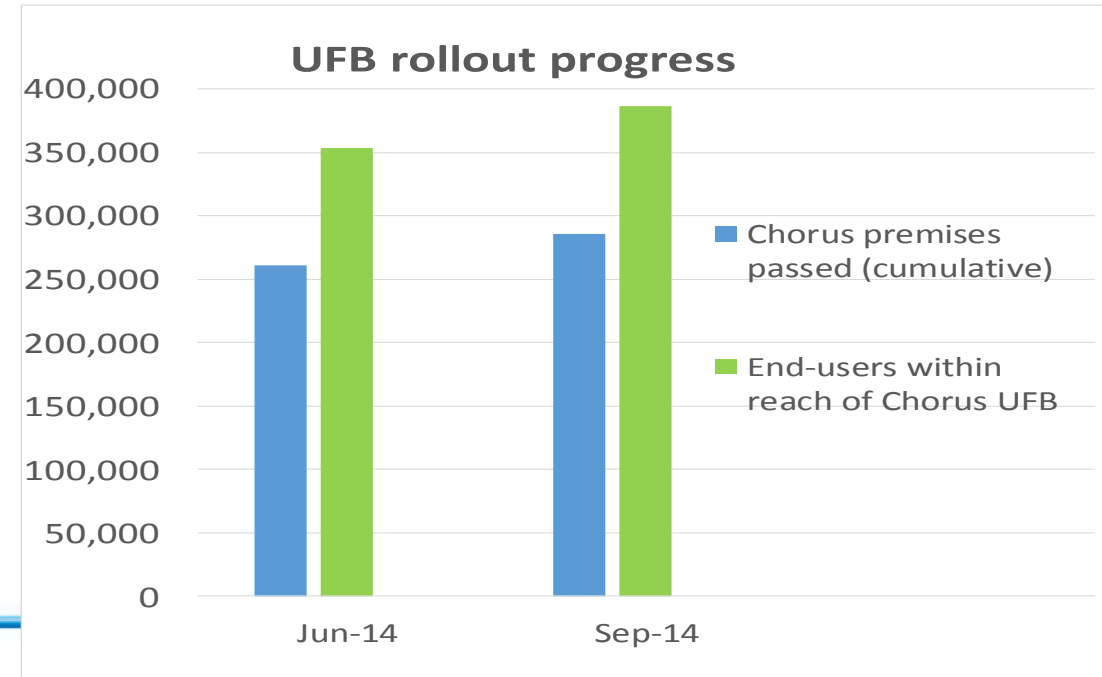
Deployment programmes update

> Rural Broadband Initiative

- **75,000 lines** within reach of better broadband (72,100 at 30 June)
- Uptake ~80%
- East Cape 220km fibre lay complete

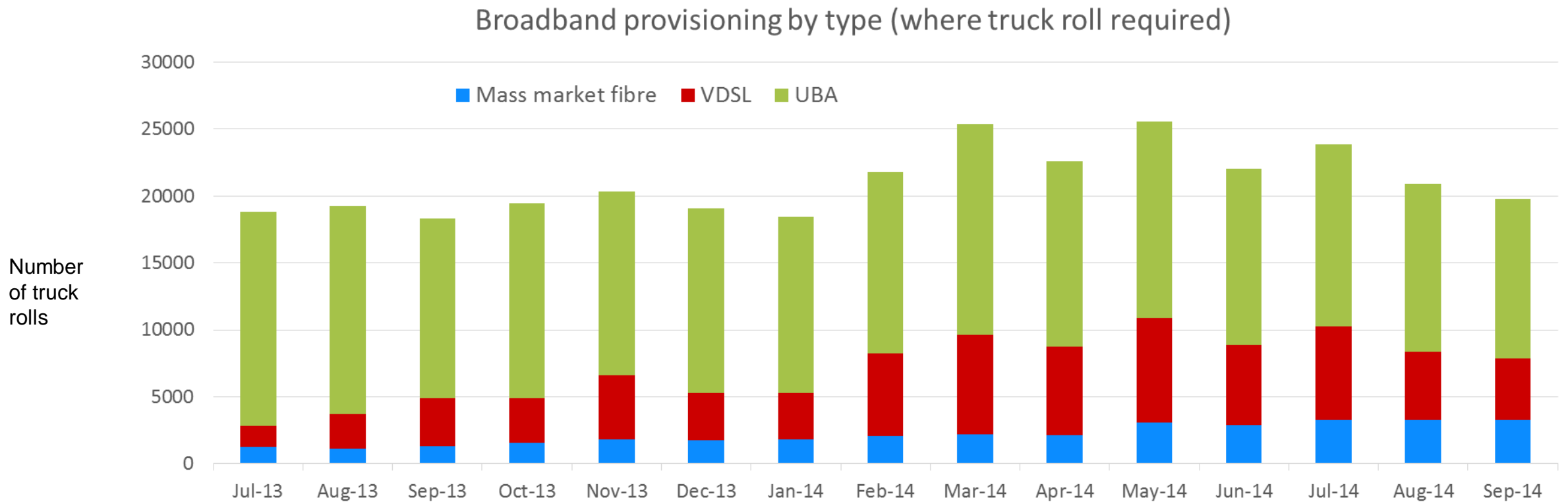
> UFB

- rollout **34%** complete
- **386,000** end users now within reach of Chorus UFB
- Build complete for **286,000 premises** (261,000 at 30 June)
- FY15 target: 106,000 premises passed
- **~37,000** end-users connected within Chorus deployed UFB area



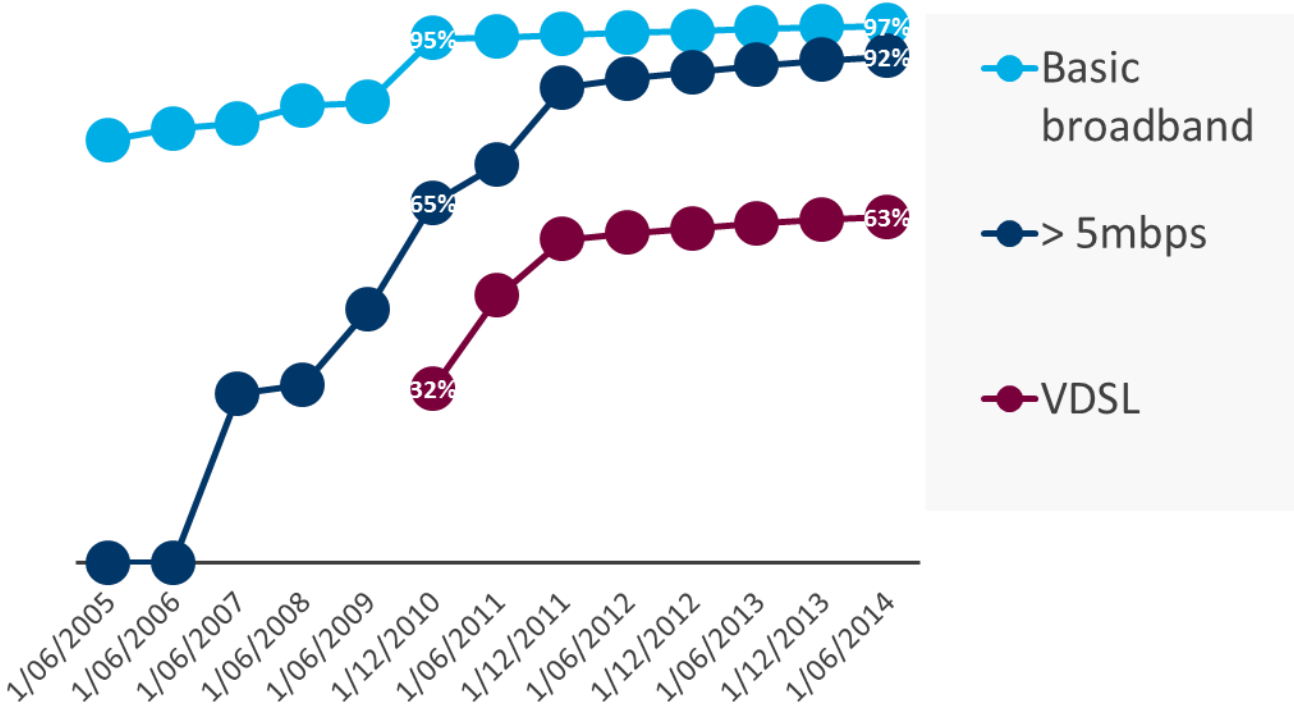
Broadband provisioning mix

> Q1 shows slowdown in provisioning activity, in line with reduced RSP marketing



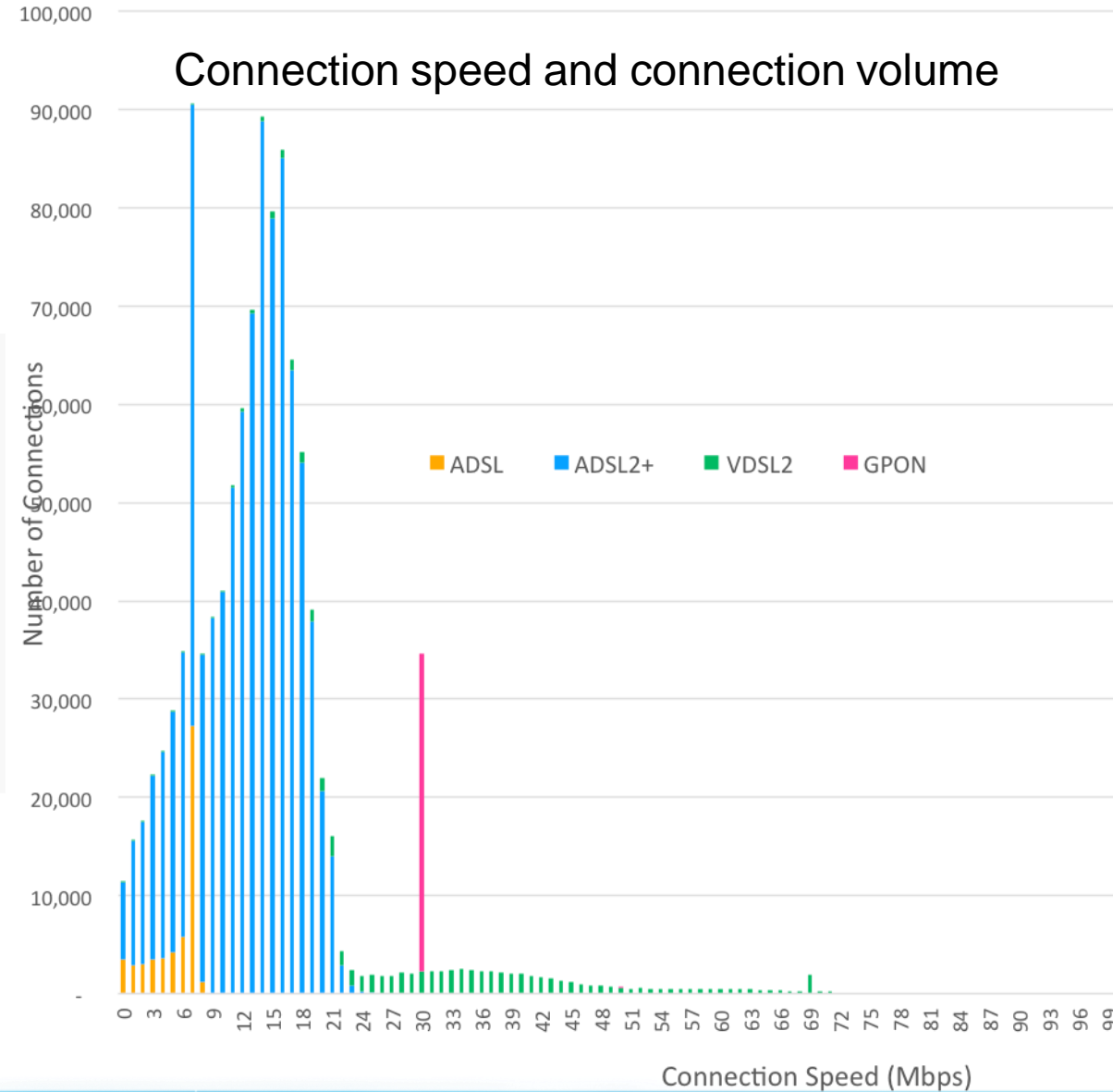
Significant investment in broadband is delivering results

Percentage of copper lines by broadband capability



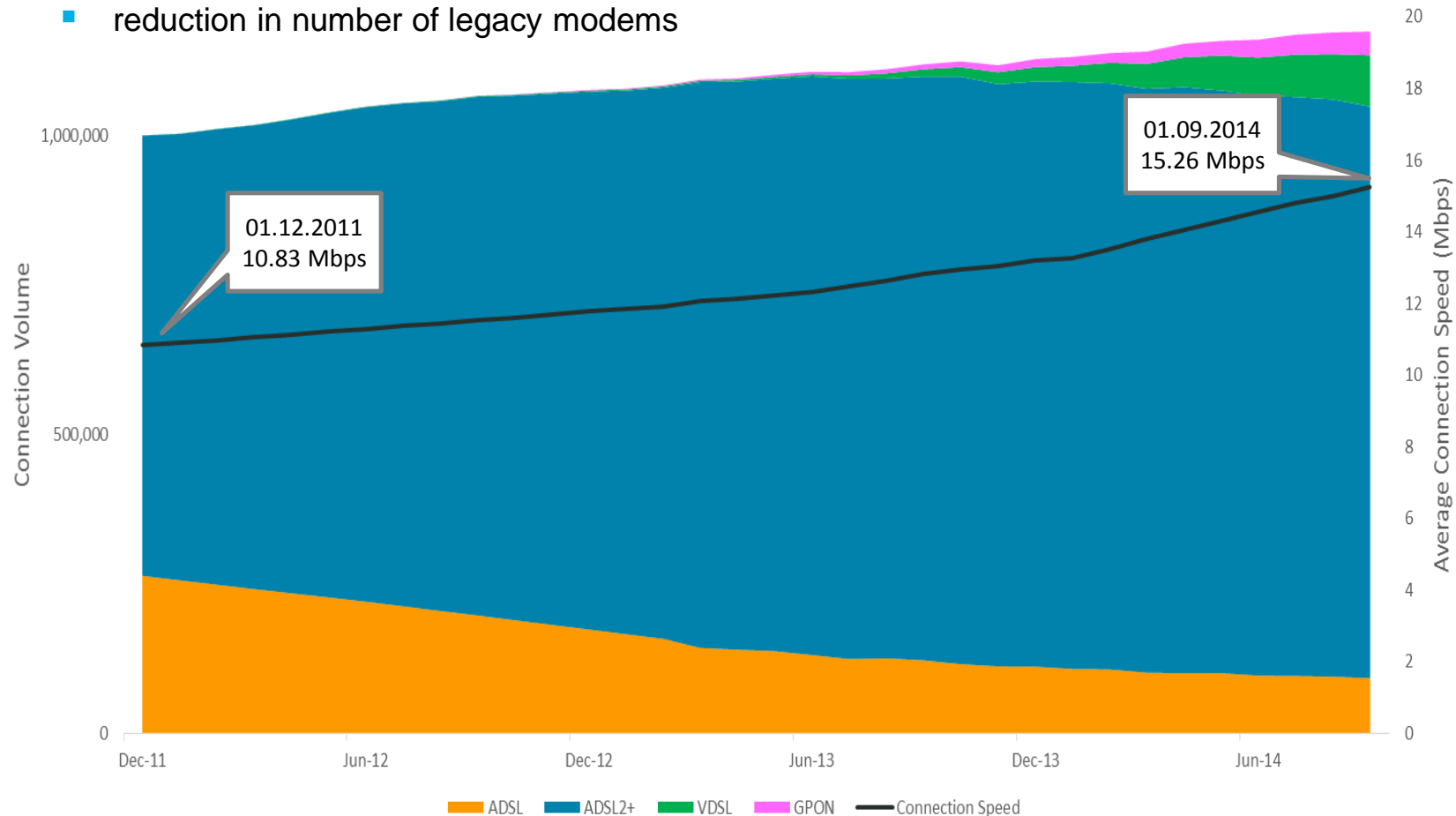
Note: UFB % is based on household passed while VDSL, >5mbps, and basic broadband is based on lines.

Connection speed and connection volume

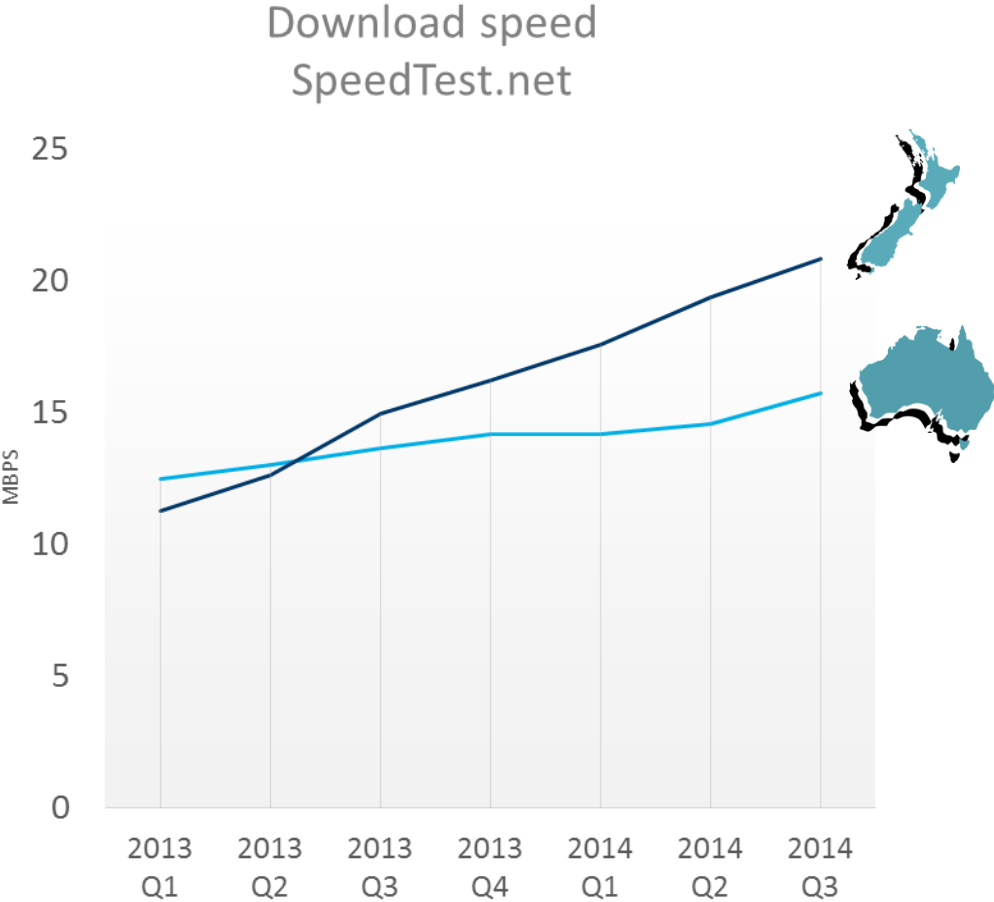


Average connection speed has increased steadily

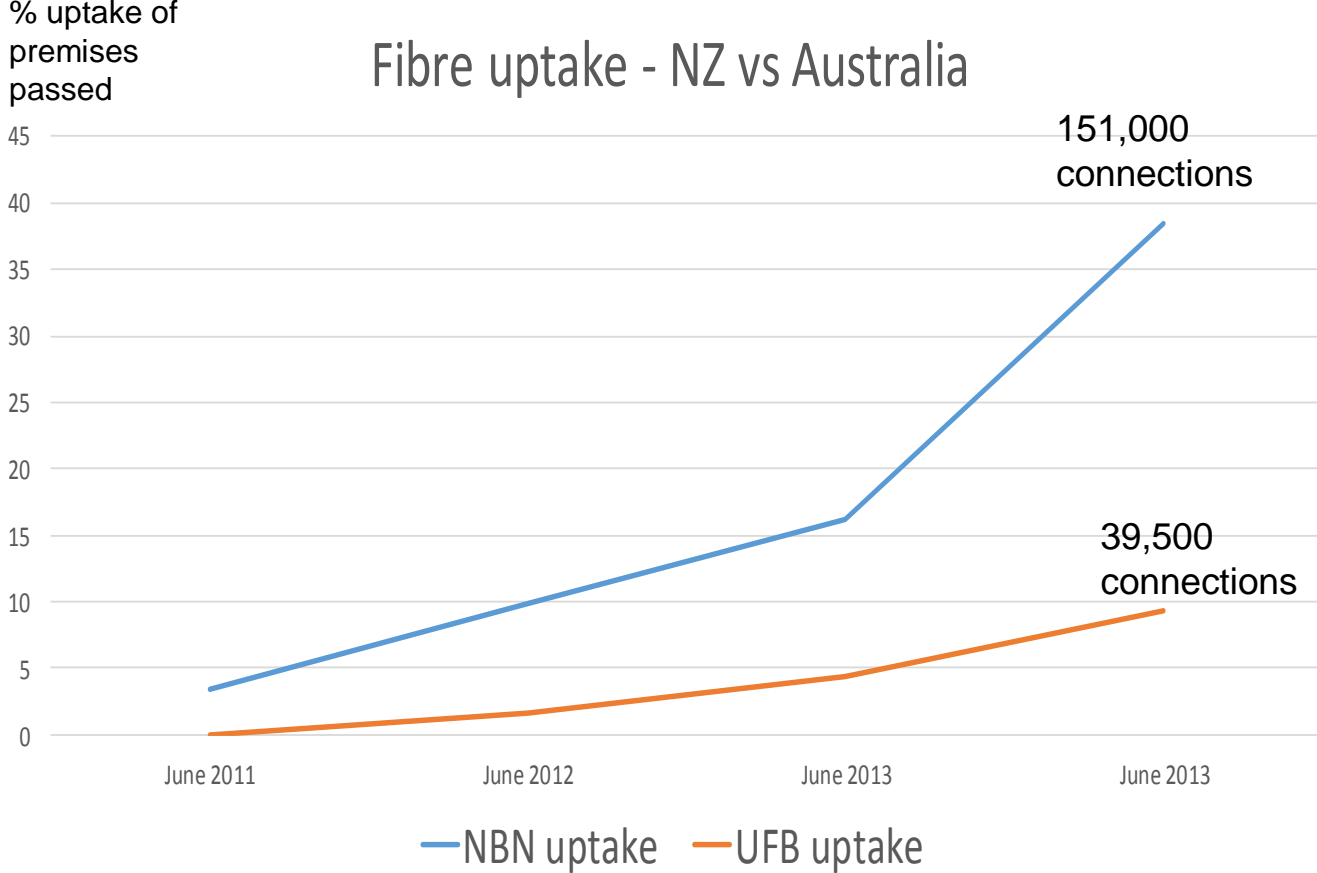
- Average connection speed within Chorus' network, reflecting:
 - network capability enhanced through fibre to the node (ADSL2+, VDSL) and fibre rollouts
 - customer uptake of VDSL and mass market fibre
 - reduction in number of legacy modems



NZ is outperforming Australia on speed, not uptake

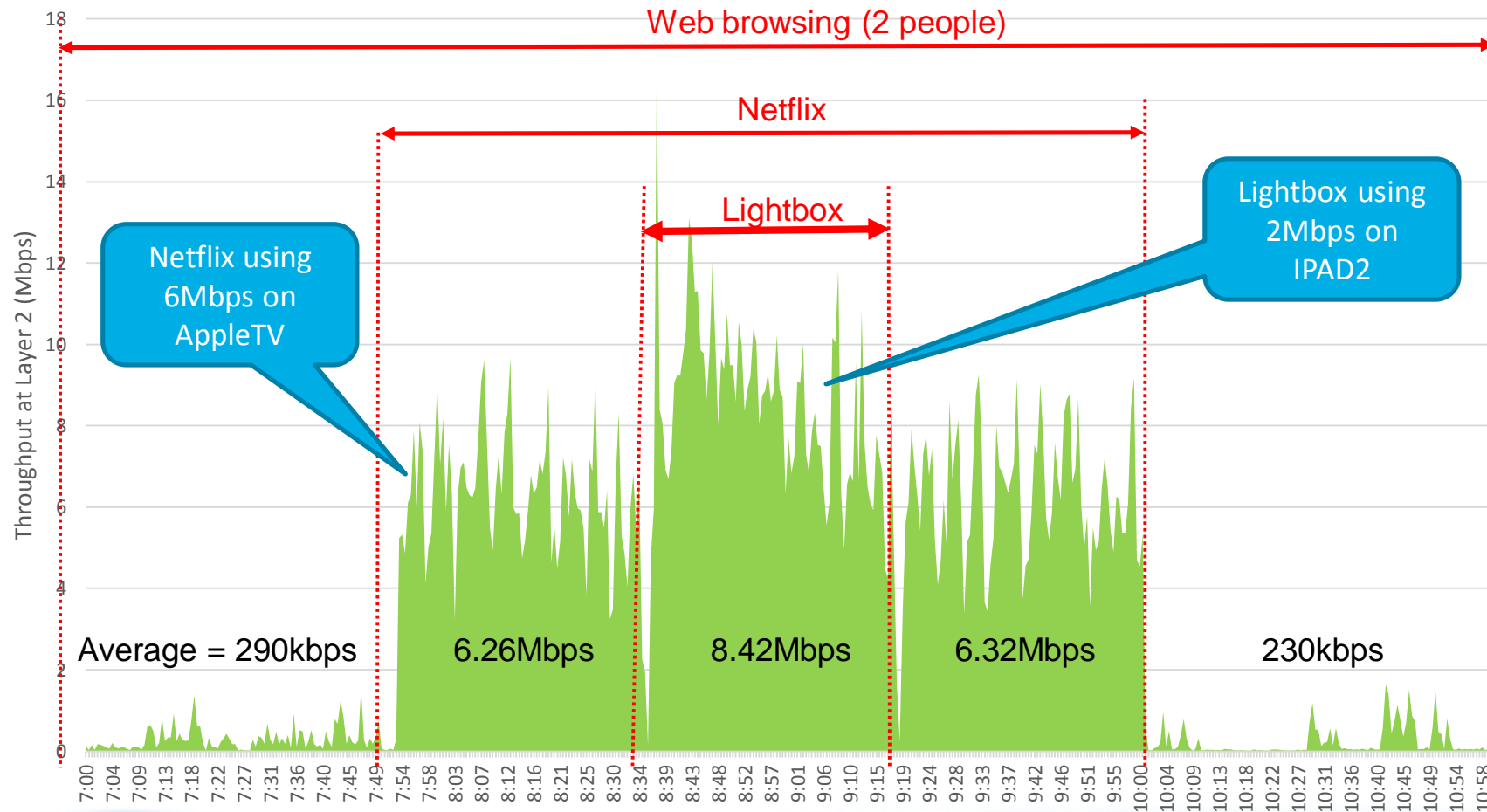


Source: Ookla, TrueNet



Sustained HD video impacts throughput

- Low concurrent usage is what enables a good (but not perfect) experience today
- Significant increases in concurrent use will drive network challenges, as traffic is aggregated through the network



- Location = Auckland
- Connection = 70Mbps VDSL; 30 second samples
- Netflix (HD) on Apple TV with wifi to standard router,
- Lightbox on IPAD (Gen 2)

Moving forward – latest product proposals

Boost VDSL

10 Mbps throughput
commitment over 15mins

- > Proposing to launch 1 December
 - \$44.99 price until 31 December 2015 including applicable install charges

Basic VDSL

99% probability of 32kbps
throughput average over 15mins

- > Existing basic VDSL to continue to be available from 1 Dec
 - Existing VDSL connections drop to \$39.44 (where \$5 connection and wiring uplift applies)
 - New 'Basic' VDSL connections \$44.44 (where \$10 connection and wiring uplift applies)

Boost HD

5Mbps throughput commitment
over 15mins

- > On hold
 - small number of customers interested but too difficult with current uncertainties

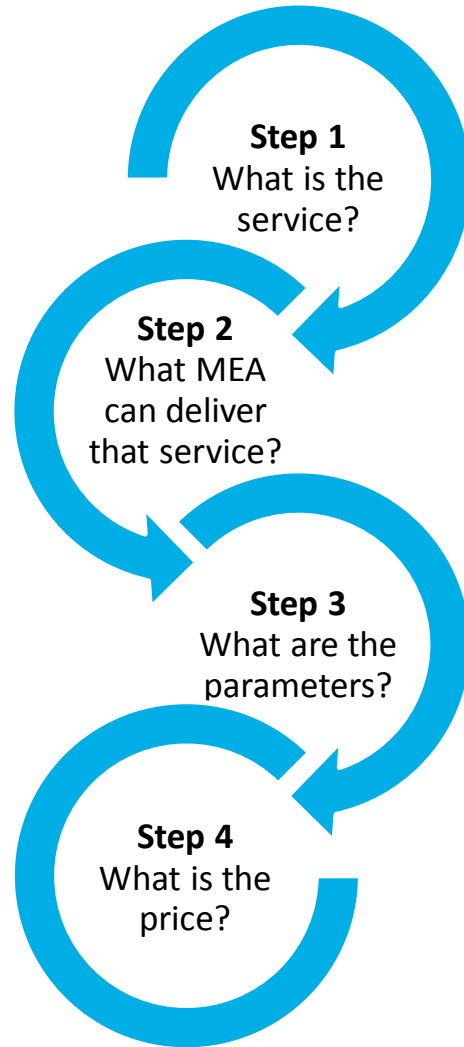
Traffic management

- > UBA currently best efforts and unmanaged
- > Chorus will reassess once FPP outcomes known
 - view it as permitted under the STD and expect we will need to do it in future
 - expect overall average throughput will grow from 230kbps today to 300kbps by around mid next year



Regulatory update
Anna Moodie

Total Service Long Run Incremental Cost (TSLRIC)



The service:

- > Can be unbundled
- > Has the full functionality of UCLL/UBA (network built for STD, voice, TSO etc)

MEA Options:

- > Copper – orthodox, real world data
- > GPON fibre and fixed wireless cannot be unbundled and/or deliver functionality
- > P2P fibre – lacks precedent, would need to include cost of adding functionality. Likely to be higher cost

Key parameters:

- > Asset valuation (e.g. trenching cost, equipment costs)
- > Cost of capital, asset lives, demand, opex

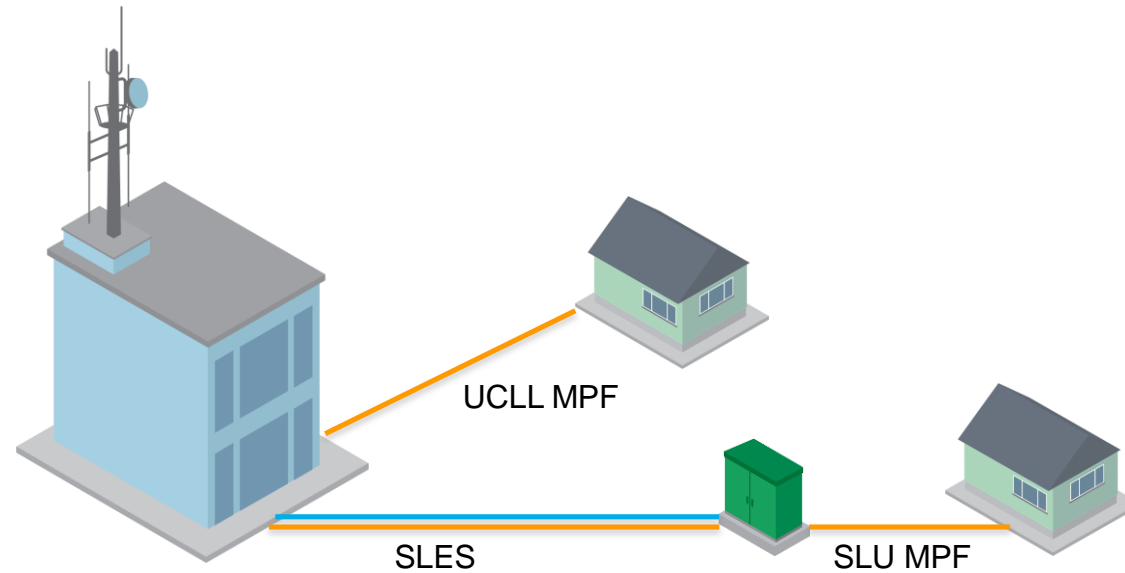
Price includes:

- > Monthly charges
- > Sundry charges (e.g. connection charges)

= A price for services offered in New Zealand on a New Zealand network

Step 1

The UCLL & SLU services



The service:

- > Can be unbundled (so precludes fixed wireless)
- > Has the full functionality of UCLL (network built for STD, voice, TSO etc)
- > Expect average TSLRIC of non-cabinetised UCLL lines approximately equals average TSLRIC of SLU lines
- > Note: UCLFS incorporates SLES + SLU so UCLFS cost is higher than UCLL/SLU

Step 1

Understanding Chorus' network reach

- > Chorus is required by TSO to connect 100% of end-users within its 2001 footprint
- > approximately 1.8m address points nationwide
- > 97% xDSL broadband coverage today and wholesaled to RSPs


Fibre to the node (FTTN) zones summary

Zone 1	High density areas of Auckland, Hamilton, Wellington, Christchurch and Dunedin	48% of all switched lines
Zone 2	High density areas of 28 provincial centres. Key satellite towns of the five main centres.	24% of all switched lines
Zone 3	High density (i.e. 50km/h) areas of small towns with greater than 500 lines	9% of all switched lines
Zone 4	Remaining very small towns, low density areas and remote locations (e.g. Chatham Islands, Great Barrier Island)	19% of all switched lines

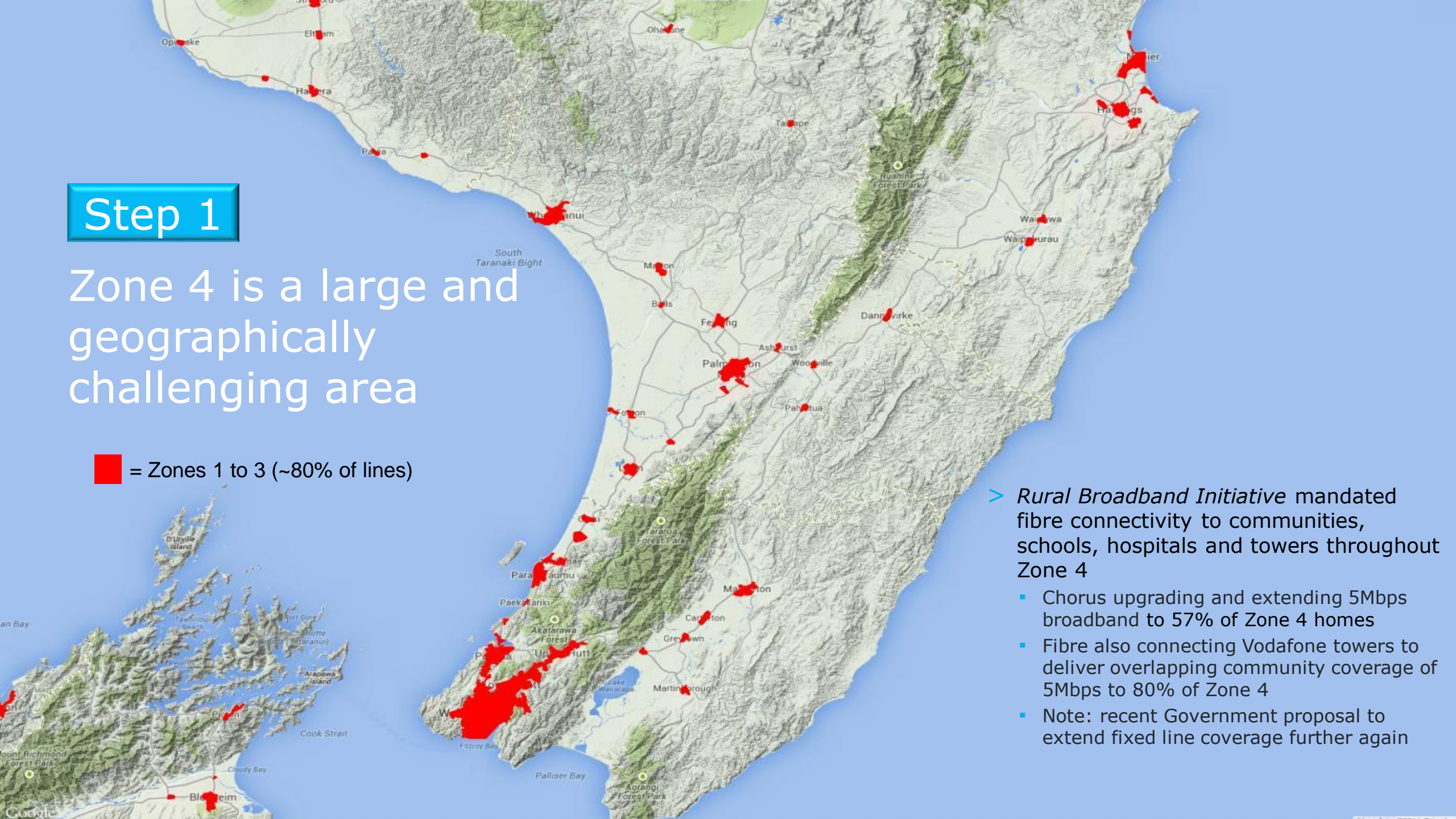
- > 81% of all switched lines
 - FTTN investment 2008-2012
 - UFB planned to 75% by 2020
 - Government proposal to extend UFB to 80%
- > Focus of Government's *Rural Broadband Initiative*
 - RBI target of broadband coverage to 252,000 households via fixed + wireless

Step 1

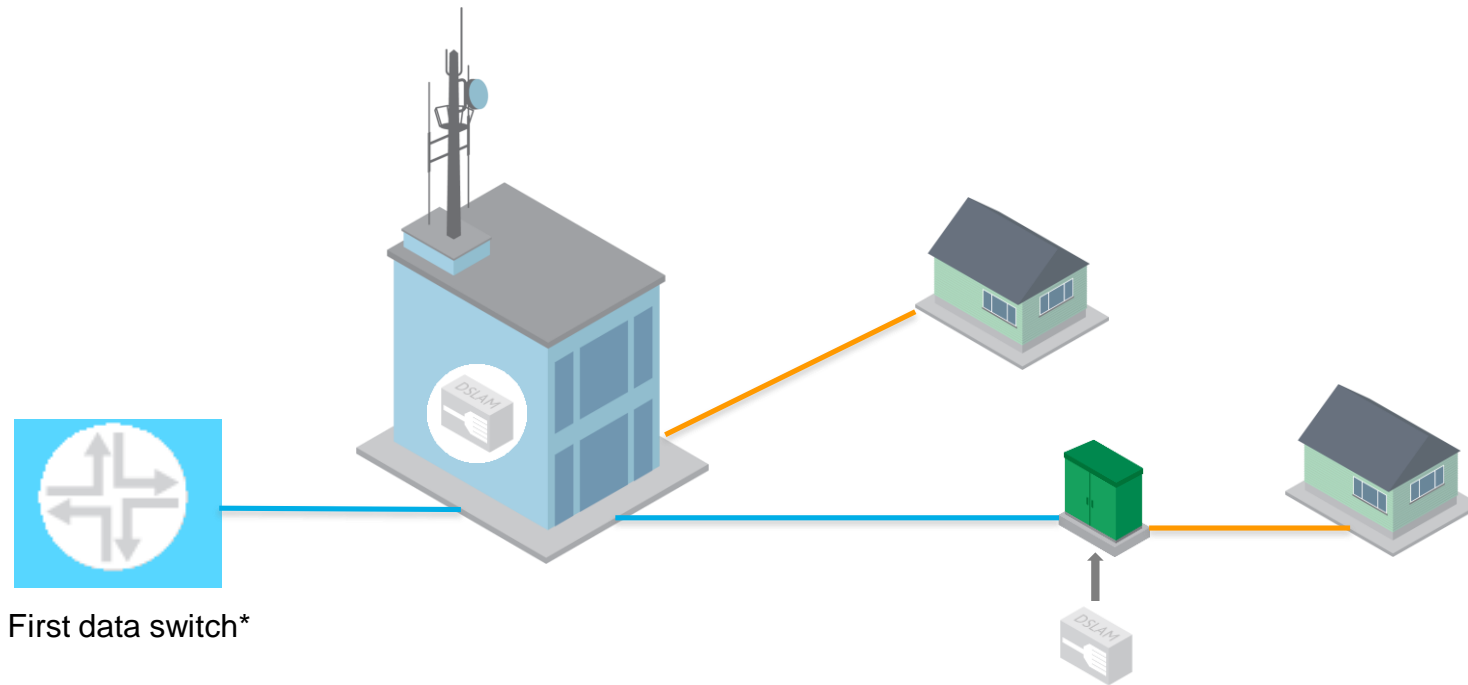
Zone 4 is a large and geographically challenging area

 = Zones 1 to 3 (~80% of lines)

- *Rural Broadband Initiative* mandated fibre connectivity to communities, schools, hospitals and towers throughout Zone 4
 - Chorus upgrading and extending 5Mbps broadband to 57% of Zone 4 homes
 - Fibre also connecting Vodafone towers to deliver overlapping community coverage of 5Mbps to 80% of Zone 4
 - Note: recent Government proposal to extend fixed line coverage further again



Step 1 This is the UBA service



> An RSP wanting to replicate the UBA service would:

- Purchase UCLL on non-cabinetised lines, and invest in DSLAMS in the exchange;
- Purchase SLU on cabinetised lines, invest in DSLAMS in the cabinet, and purchase backhaul to the exchange;
- Also invest in fibre to the first data switch, which may be located at a distant exchange (rather than the local exchange).

Step 2

The Modern Equivalent Asset (MEA)

MEA
selection

UCLL MEA

UBA MEA

Commerce Commission views to date

July: a TSLRIC model to determine the costs incurred by a hypothetical operator using the most efficient means to provide the service. Not constrained by Chorus' existing network. Concept of "core functionality".

July: FTTH for the majority of the network, and fixed wireless in less dense rural areas.
Will also model a copper network.
The cost of building functionality used by end users today (e.g. alarms, facsimiles) will not be accounted for.

July: copper network based on Chorus' copper-based inputs

Chorus views

A forward looking TSLRIC modelling approach should reflect the efficient cost of providing regulated services in the real world NZ context. Step 1) what is the service; Step 2) what is the MEA that can deliver that service

Any MEA should be able to deliver the regulated services that needs to support services required by regulation and/or used by end-users today, such as alarms, Sky set top boxes and phones that work in a power cut.

The simplest approach is to model a copper MEA.
Alternatively, the Commission could model point-to-point fibre and include cost of fixes.

Fixed wireless cannot be unbundled and has challenges achieving 100% coverage. (Sweden: 2%; Australia: 1%; Denmark: 0%)

Agree with Commission approach

Step 2

Civil costs are common across MEA choices

- > 70 to 80% of network costs are in the civil works required to deploy cable whether it is copper or fibre
- > TERA's 2013 analysis for the Danish regulator showed copper network can be cheaper than fibre (note: TERA did not model wireless)

Figure 1: Chorus' Network

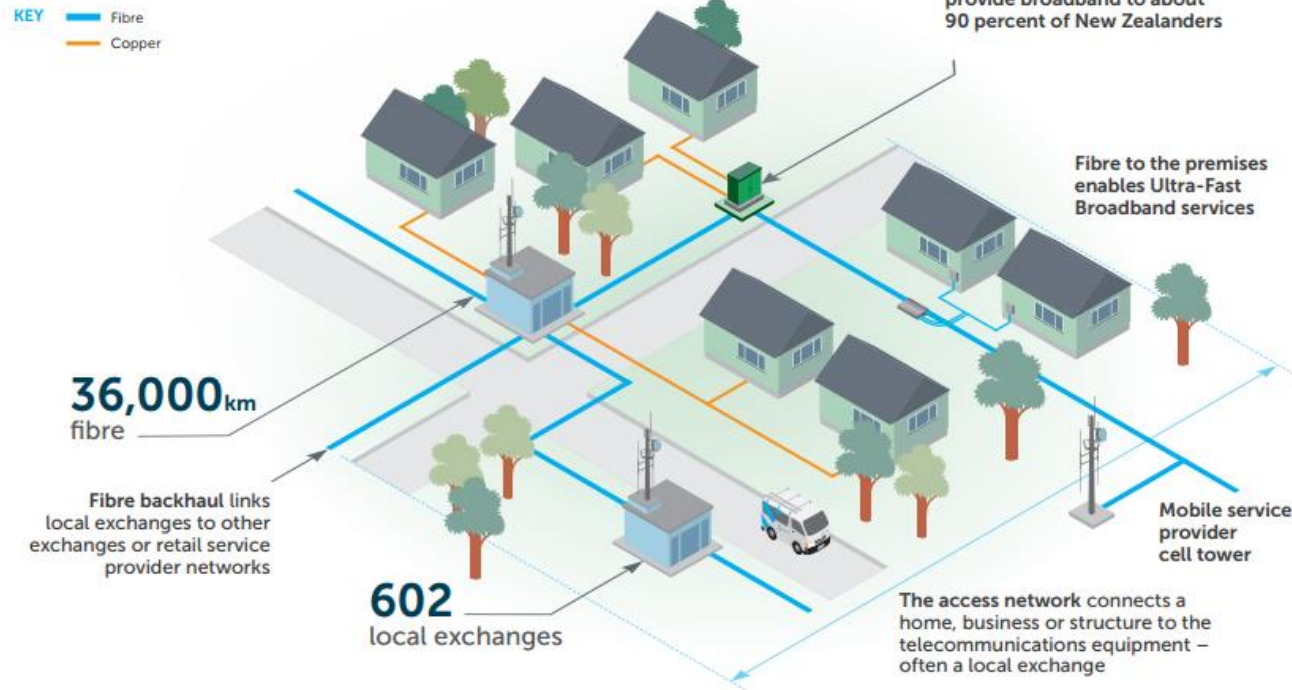
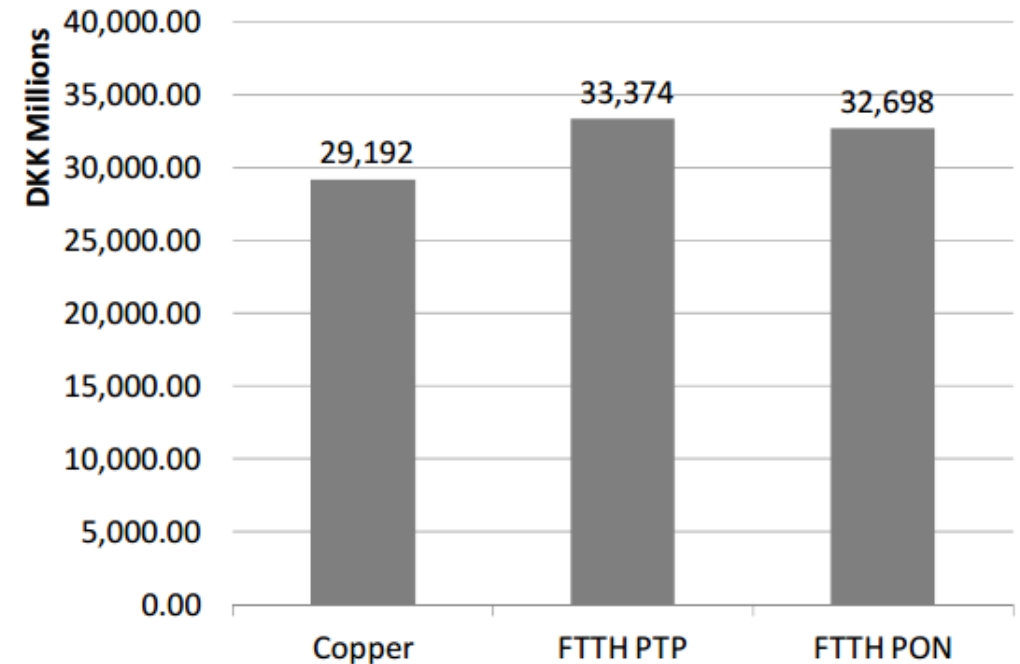
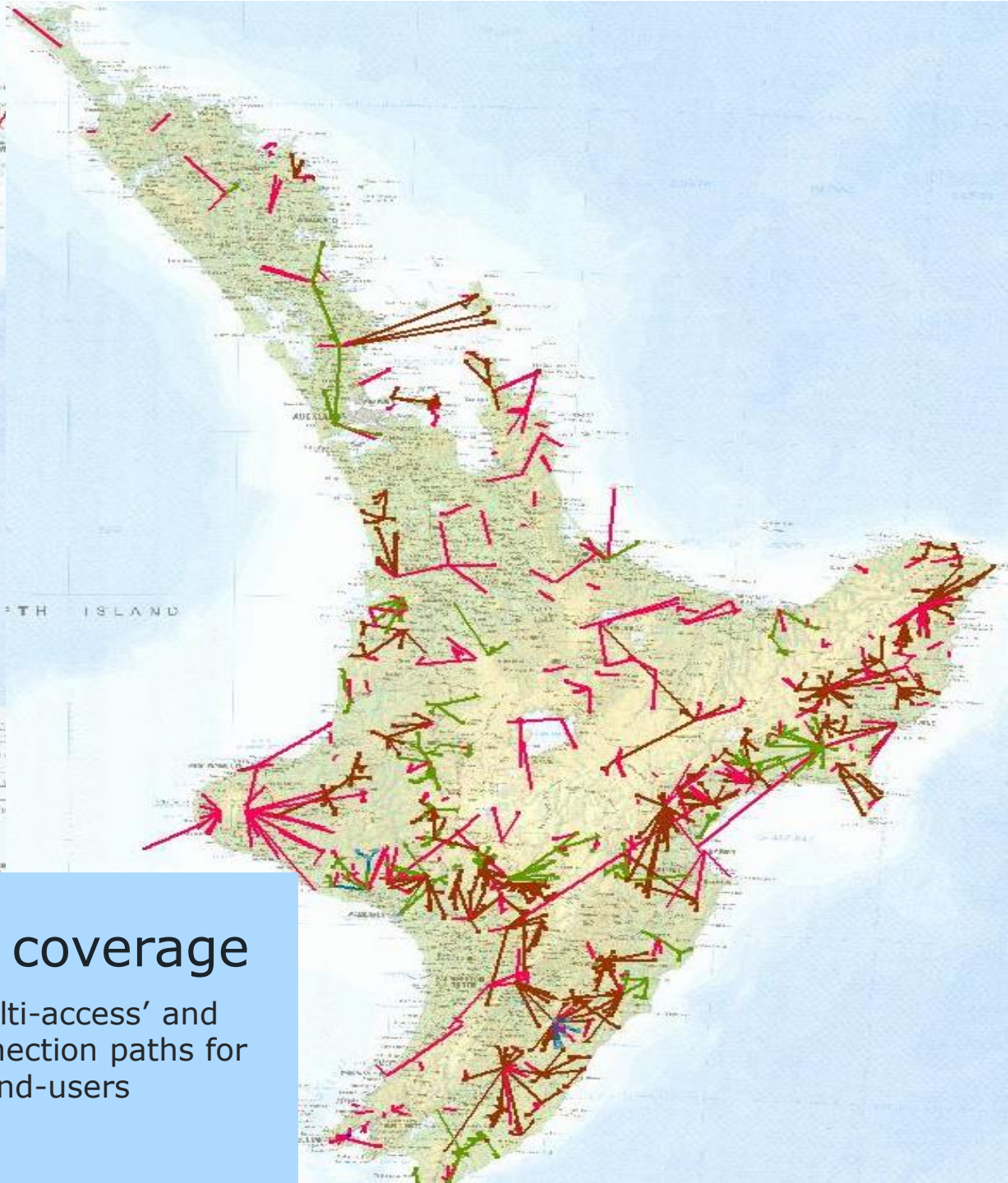


Figure 7 – Comparison of the investment required for a standalone FTTH Point to Point, a standalone FTTH GPON, for a standalone copper access network (excluding CPE and active equipment)



Source: MEA assessment, Danish Business Authority, May 2013

Step 2



Achieving 100% coverage

- Map shows Chorus 'multi-access' and 'country set' radio connection paths for most remote ~7,000 end-users

Step 3 Key parameters

Asset valuation

Commerce Commission views to date

July: Optimised replacement cost (ORC), irrespective of whether Chorus' existing assets could be re-used. Scorched node.

Route optimisation

Most efficient route between node and premises.

Aerial deployment

No detailed views expressed to date.

Chorus views

Agree with the Commission's position. Optimisation must be reasonable, realistic and achievable.

Optimisation must be reasonable, realistic and achievable.

Requires real world considerations given local conditions and restrictions. Chorus targeting 20% aerial distribution in UFB areas. Chorus' actual network that delivers copper is substantially lower

Step 3 Key parameters

Asset sharing

Commerce Commission views to date

July: Model will allow for asset sharing with third parties – such as use of electricity poles

WACC

Commission determined 75th percentile for electricity industry. This has been re-opened and the 67th percentile is under submission.

Tilted annuity

Tilted annuity methodology as a proxy for economic depreciation

Chorus views

Opportunities for sharing on third party assets should be considered but only if they are realistic given current NZ circumstances.

The HNE displaces Chorus, so no sharing can be assumed with Chorus.

Telecommunications higher risk than electricity industry due to technology change and network competition factors.

Tilted annuity based on past cost/price trends except where some future prices have been negotiated.

Step 3 Real world costs vary from area to area

- > As Chorus has found with its UFB deployment, costs vary widely from area to area reflecting:
 - council and other authority conditions (e.g. aerial consent, reinstatement, conservation access)
 - local geography (e.g. volcanic rock in Auckland)
 - availability and cost of access to other networks

Faster internet under threat



Patrick O'Sullivan
Business Editor

Hawke's Bay enjoys more streets free from the clutter of overhead power cables than many other regions, but the rush for fast internet has revealed a regional disconnect between councils on the practice.

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Napier City Council is in talks with Unison and Chorus on the issue of fibre. The district plan prohibits new fixtures overhead and Chorus wishes to install overhead lines on new poles where it desires. “If there is an existing overhead line and if it is copper, then yes, but if there is no existing line it has to go underground,” Napier City Council chief executive Wayne Jack said.

Step 3

Other key parameters and key considerations

- > **Opex** – Chorus' view is actual opex should be taken into account
- > **Demand** – Chorus' view is that migration off copper (e.g. to other LFCs) should be accounted for
- > **Cost allocation** – Chorus' view is that capacity based method is appropriate
- > **Transaction charges** – currently under consultation
- > **Backdating** – two phase process in the Act is well known and supports TSLRIC replacing “quick and cheap” initial benchmarked prices. Backdating is consistent with Court of Appeal judgement and investor and industry expectations.

Valuation overview

Andrew Carroll



Step 4 What is the TSLRIC price?

- > Commission due to report draft prices 1 December
 - recent Commission letter anticipated completing FPP by April 2015
 - modelling being conducted for Commission by TERA (recently completed Danish modelling)
 - participants required to submit own models to Commission on 1 December

- > Chorus has engaged Analysys Mason to undertake analysis of Chorus data
 - Chorus has consistently said it believes evidence does not support aggregate copper pricing below demerger levels
 - and UCLL pricing is too low, with rebalancing likely between Layer 1 (UCLL/UCLFS) and Layer 2 (UBA) pricing

- > The following scenarios are provided to assist understanding of parameters in the FPP process but there are obvious caveats:
 - these reflect Chorus' views, as detailed in submissions to date
 - Commission is yet to articulate views on all parameters and Chorus scenarios do not necessarily reflect Commission approaches/modelling
 - Chorus is competing with other fixed line and mobile networks and would take that into account if FPP pricing was materially above aggregate UBA+UCLL pricing at demerger (i.e. \$45.92)

Chorus scenarios overview

Current network
replacement cost

- > this reflects replacement cost of the existing copper-based UCLL and UBA network with some optimisation assumed

Scenario A

- > reflects potential adjustments to the current network replacement cost
 - doubles the adjustment for optimisation and sharing
 - introduces a miscellaneous downward adjustment to allow for regulatory uncertainty

\$45 case*

- > indicative of the type of adjustments necessary to produce today's \$44.98 aggregate pricing
 - arbitrary adjustments made to optimisation and miscellaneous downward adjustment factors

Chorus network valuation scenarios: hybrid copper MEA

Parameter	Current network replacement cost	Scenario A assumptions	\$45 case assumptions	Comment
Optimisation	10%	20%	50%	TSLRIC modelling may optimise network relative to current route
Misc adjustment	0%	10%	23%	Miscellaneous other downward adjustments in other assumption(s)
Sharing	5%	10%		Estimated 5% of Chorus distribution network is shared with utilities
Aerial deployment	20%			2% of Chorus communal network is aerial (excluding drops). Target of 20% for UFB. Any increase in aerial assumption implies an increase in opex.
Cost allocation methodology	Connections-based for trenching costs sharing between copper and UFB, capacity-based for some network elements			Simple and transparent allocation method.
Depreciation	Demand adjusted tilted annuity			Conventional technique for price smoothing and recovery of efficient costs over time
Opex	Chorus opex with appropriate allocation to UCLL and UBA			Conventional TSLRIC starting point
Demand	Chorus copper demand – flat			Conventional TSLRIC approach to use incumbent demand
UBA throughput	230 kbps average			Average throughput on Chorus network today
WACC	8.1% (post-tax nominal)			Consistent with current WACC; some analysts higher

Chorus TSLRIC illustrative scenario outputs

Current network replacement cost

Network valuation
~\$16bn

~\$83 per month

UCLL ~\$67

UBA ~\$16[^]

Scenario A

Network valuation
~\$13bn

\$69 per month

UCLL ~\$55

UBA ~\$14[^]

\$45 case*

Network valuation
~\$8bn

\$45 per month

UCLL ~\$33

UBA ~\$12[^]

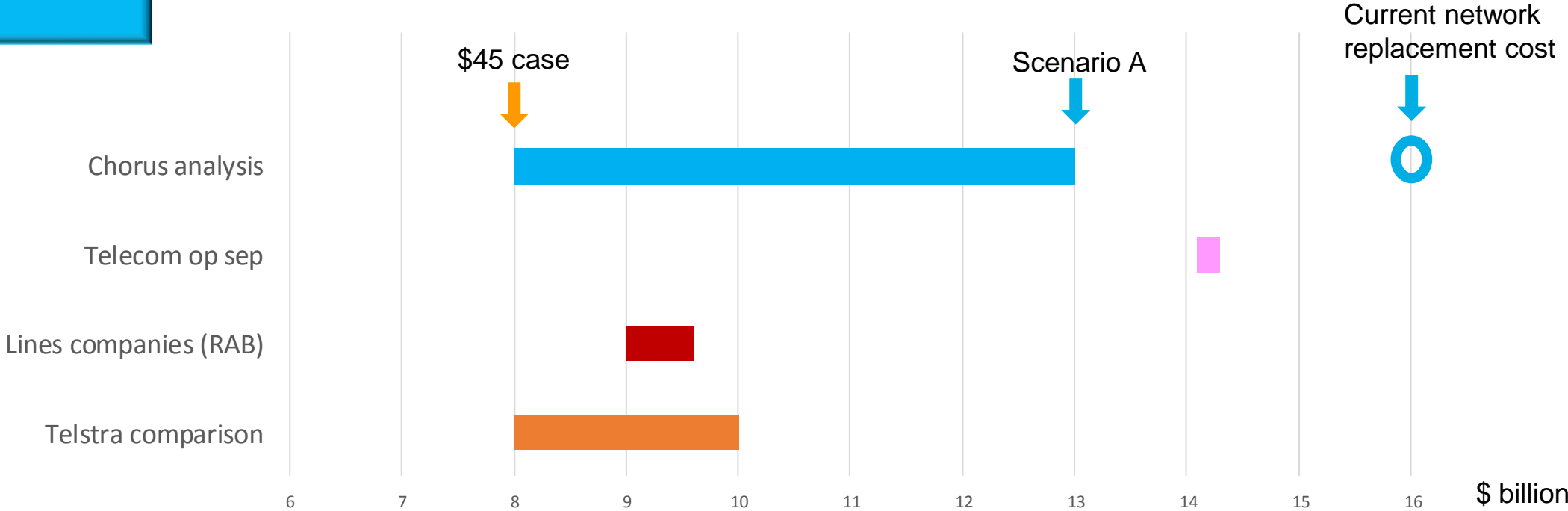
Note: Amounts above are not necessarily additive due to rounding

[^] UBA pricing shown makes assumption *Boost* is available and reduces cost allocated to UBA

* Involves arbitrary changes to parameters solely to achieve \$45 outcome

Valuation sense checks

Network valuation sense check



Chorus analysis

- Replacement cost for UCLL + UBA assets only
- Range shows valuation from Scenario A to \$45 case

Telecom op sep

- 2010 op sep accounting replacement cost valuation for access services group – did not include UBA electronics
- Pre-dated FTTN/RBI and trenching cost increases.

Lines companies

- Commission info disclosure data indicates \$8.98b in 2011 increased to ~\$9.6b in 2013.
- RAB uses ODV/DORC so ORC value would be higher
- Excludes equivalent of Chorus Layer 2 assets and Transpower assets

Telstra comparison

- Various cost estimates for Telstra access network only.
- Estimates adjusted forward and for NZ population. Converted to \$NZ.

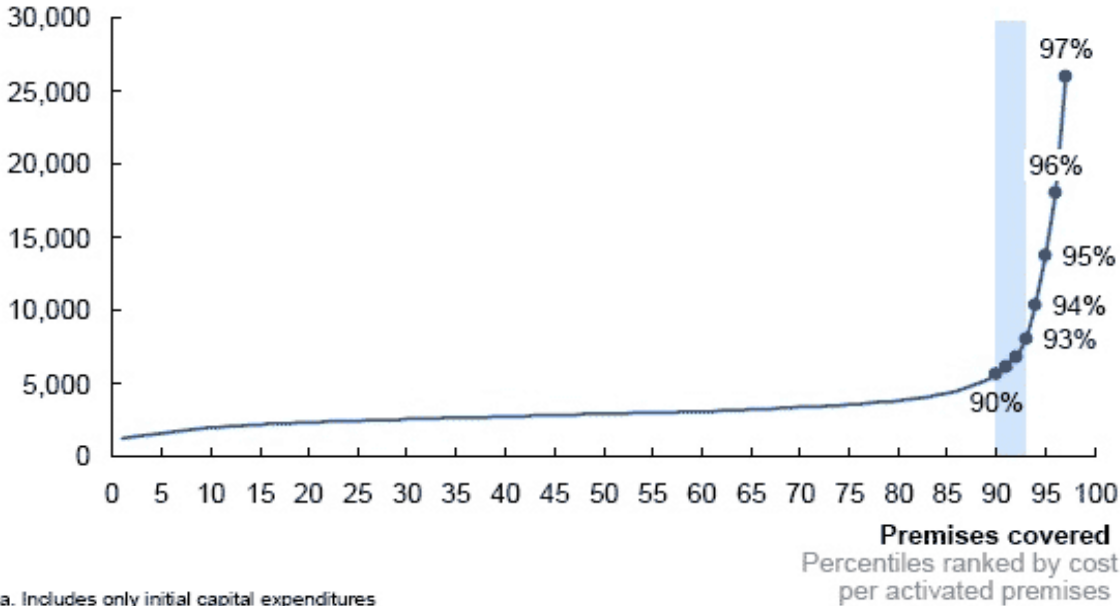
Valuation sense checks

FTTP rollouts as a proxy for TSLRIC

- > General rule of thumb that rural rollouts cost same amount again as urban
 - Treasury FTTP cost study (2009) estimated rollout to 75% at ~\$5b-\$8.6b
 - Nordic state comparison (favoured by NBN) suggests NZ 100% rollout of NZ\$8b-\$13b

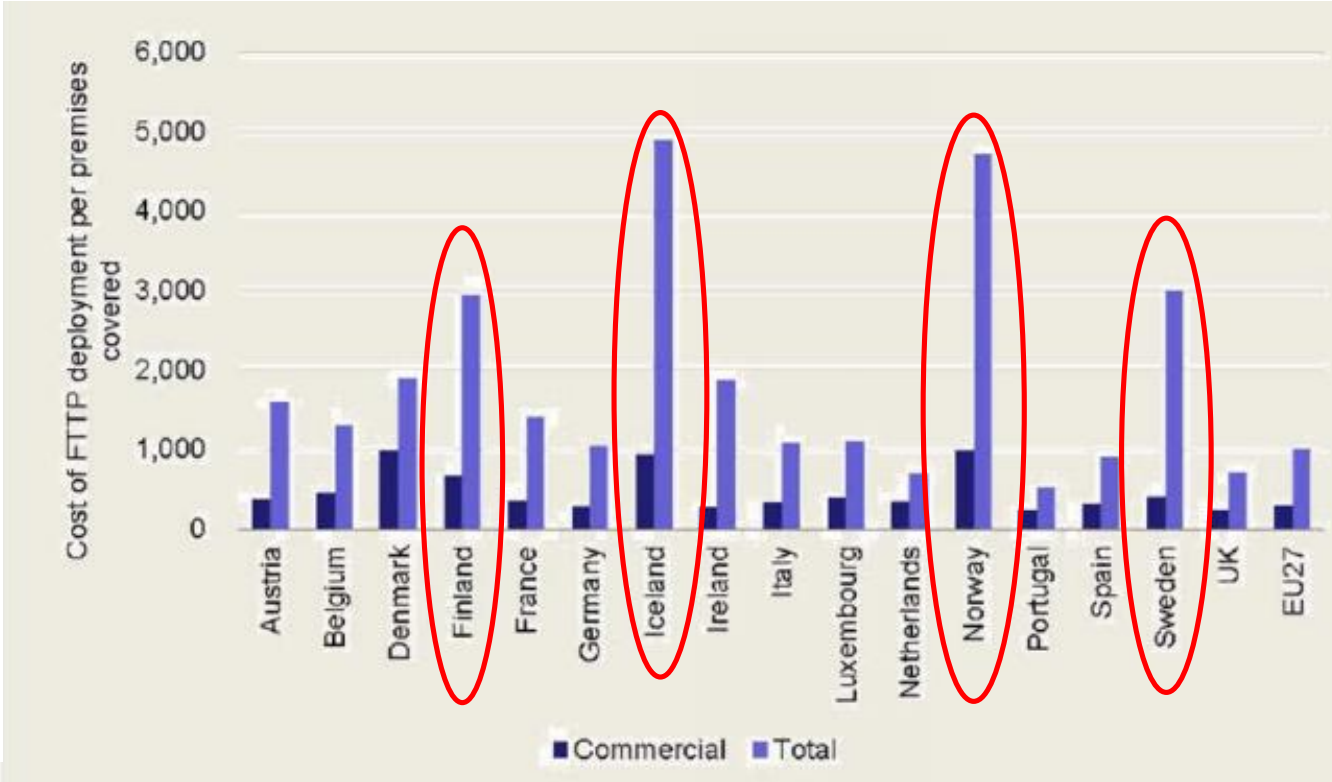
NBN Implementation Study, page 207

Capital cost per premises activated^a
\$ per premises



a. Includes only initial capital expenditures
SOURCE: Implementation Study

European Commission FTTP costs per premises for commercial deployment and full coverage – Western Europe



Telecom 2010 accounting separation valuation

- > Commission's "high level" bottom-up review (2011) of Telecom's \$14 billion passive network valuation:
 - recognised multiple trenches are common and justified in CBDs
 - said Telecom route distances were "consistent with a modern copper or fibre network design"
 - applied significant (34%) trenching price adjustment to reflect anticipated "major works prices"
- > Chorus' UFB rollout experience supports Telecom's 2010 trenching cost views
 - reversing 34% adjustment implies Telecom 2010 valuation of ~\$10b

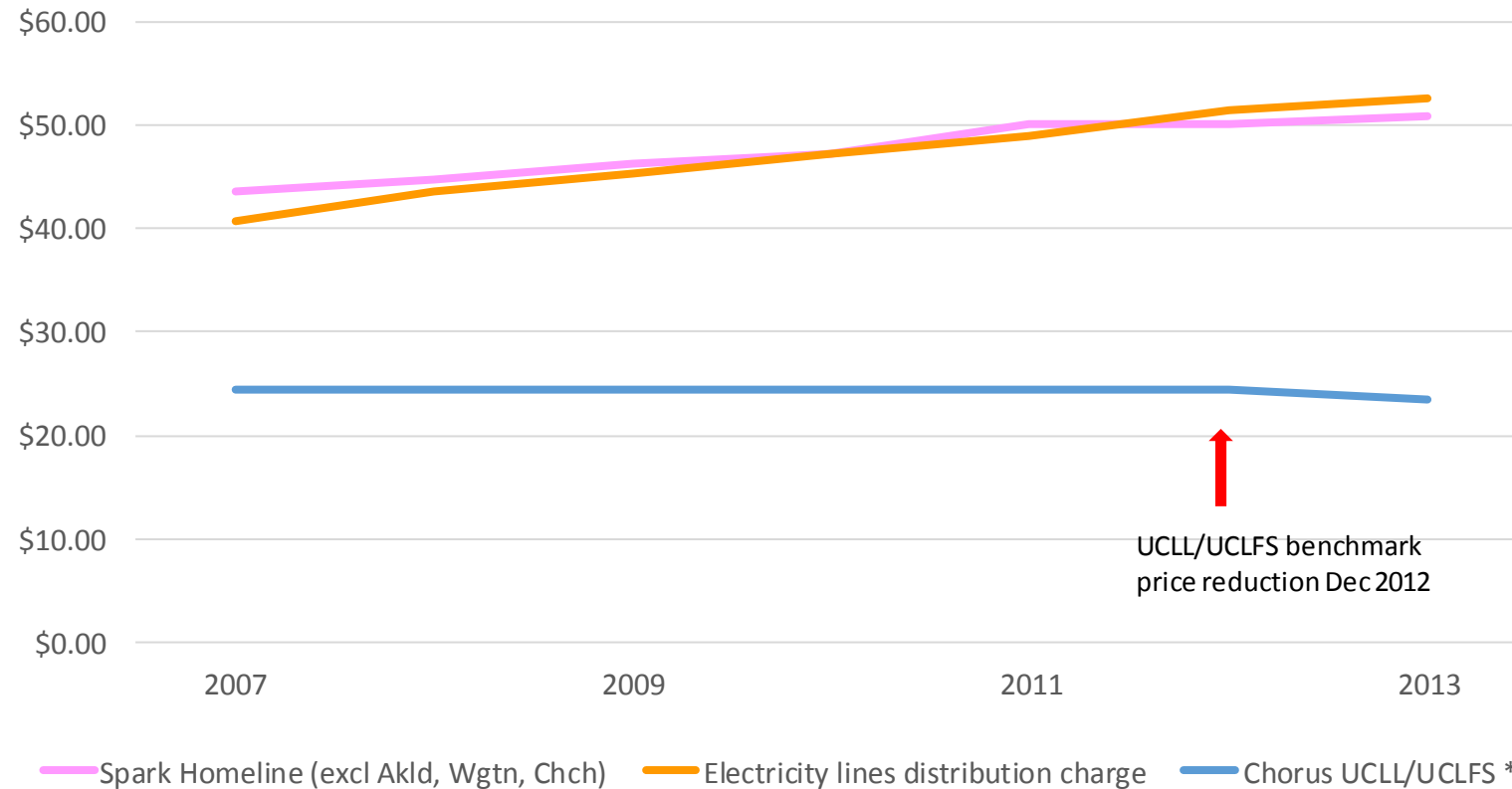
Pricing sense checks

UCLL/UCLFS pricing out of step

- > Spark *Homeline* charges and average electricity lines distribution charges* have increased significantly from 2007-2013
- > Chorus regulated line charges have declined over same period despite substantial network investment (urban FTTN and RBI)

* Based on MBIE Quarterly Survey of Domestic Electricity Prices data for distribution across New Zealand and the average price for a modelled consumer using 8000kWh per year

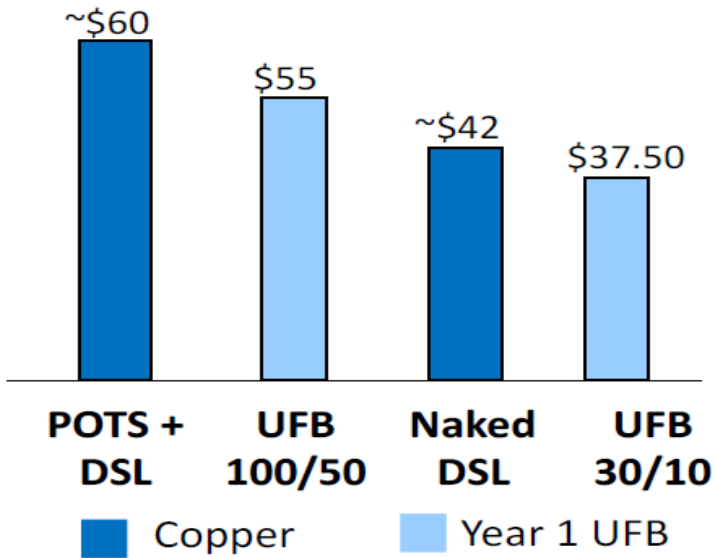
Monthly charge comparison (2007-2013)



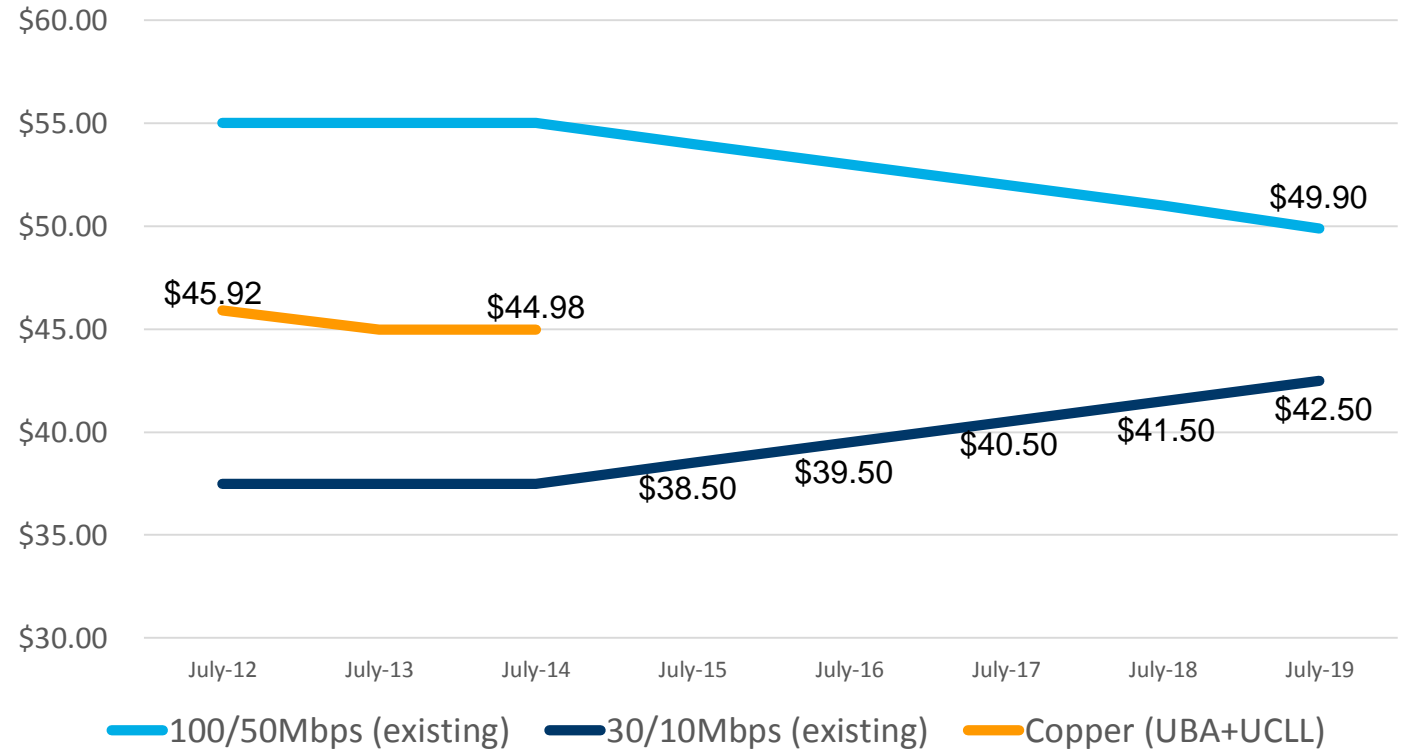
Pricing sense checks

UFB pricing was set relative to copper

Mass Market (GPON) Price Caps



Contracted UFB prices vs copper



GPON attractively priced vs Copper

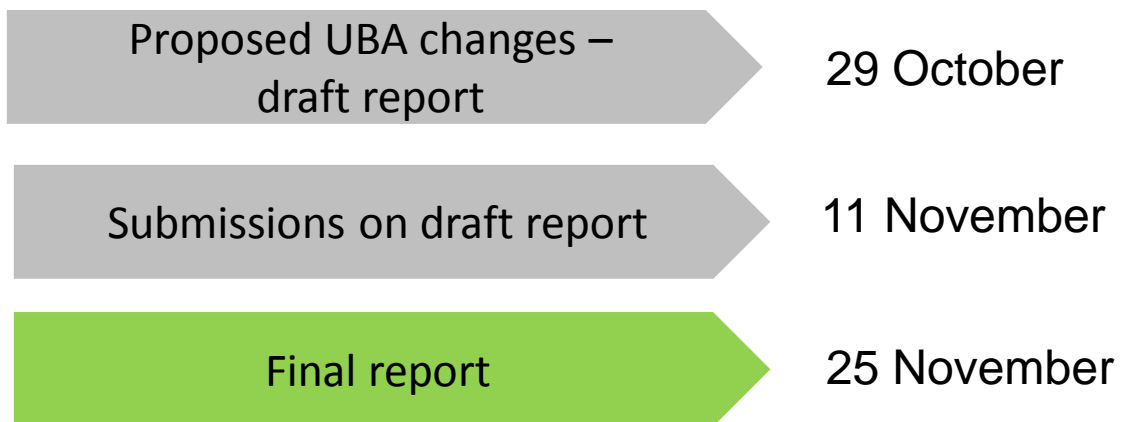
Source: Graham Mitchell, CEO of Crown Fibre Holdings "Progress & Opportunities, New Zealand's Ultrafast Broadband FTTH Initiative", presentation to the FTTH Council Asia Pacific Conference



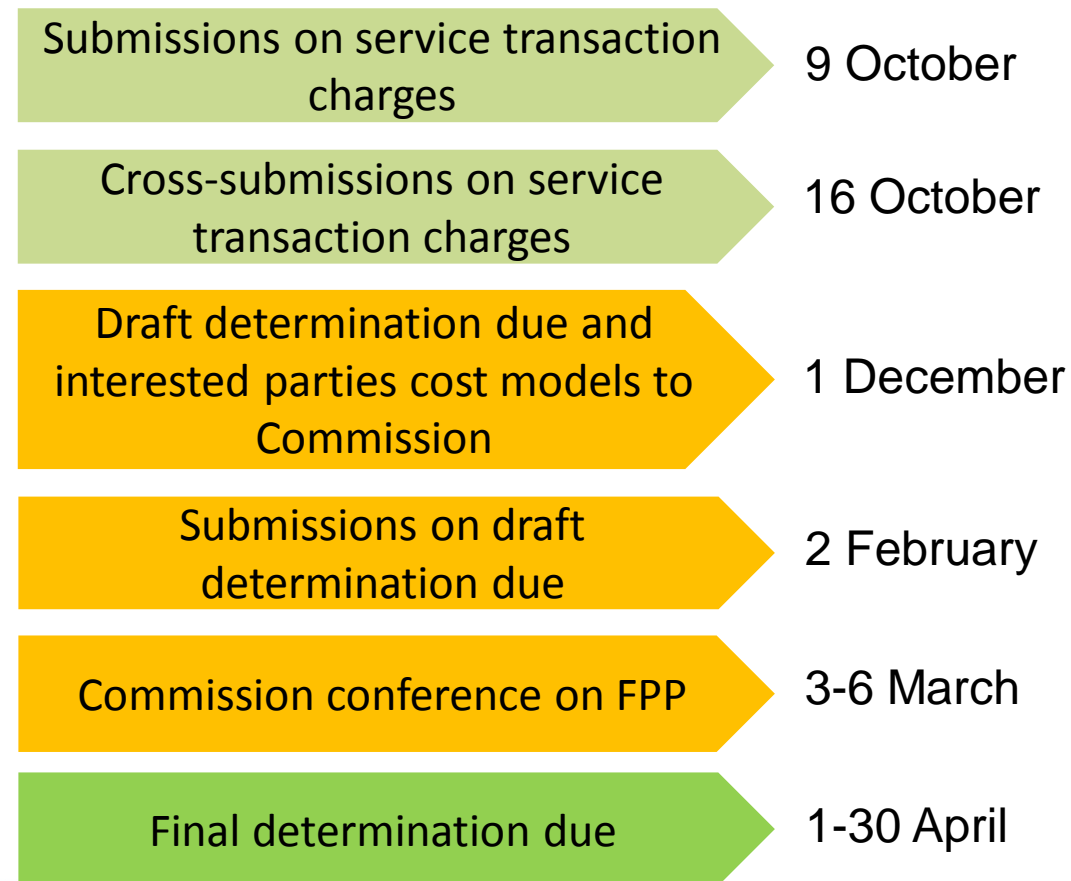
Looking ahead

Regulatory calendar

Boost and UBA process



Final pricing principle process



New Government initiatives

UFB

Pre-election announcement:

- Expand UFB from 75% to 80% of population
- Crown funding of \$152m to \$210m
- Competitive bid process to consider cost of deployment, consumer demand and regulatory and other assistance from local authorities

RBI

Pre-election announcement:

- \$100m additional funding from Telecommunications Development Levy
- Contestable funding available June 2016 to June 2019
- Objective to improve community connectivity through fixed broadband to homes and businesses
- Separate \$50m available to extend mobile phone coverage in remote areas

Delivering better broadband, faster



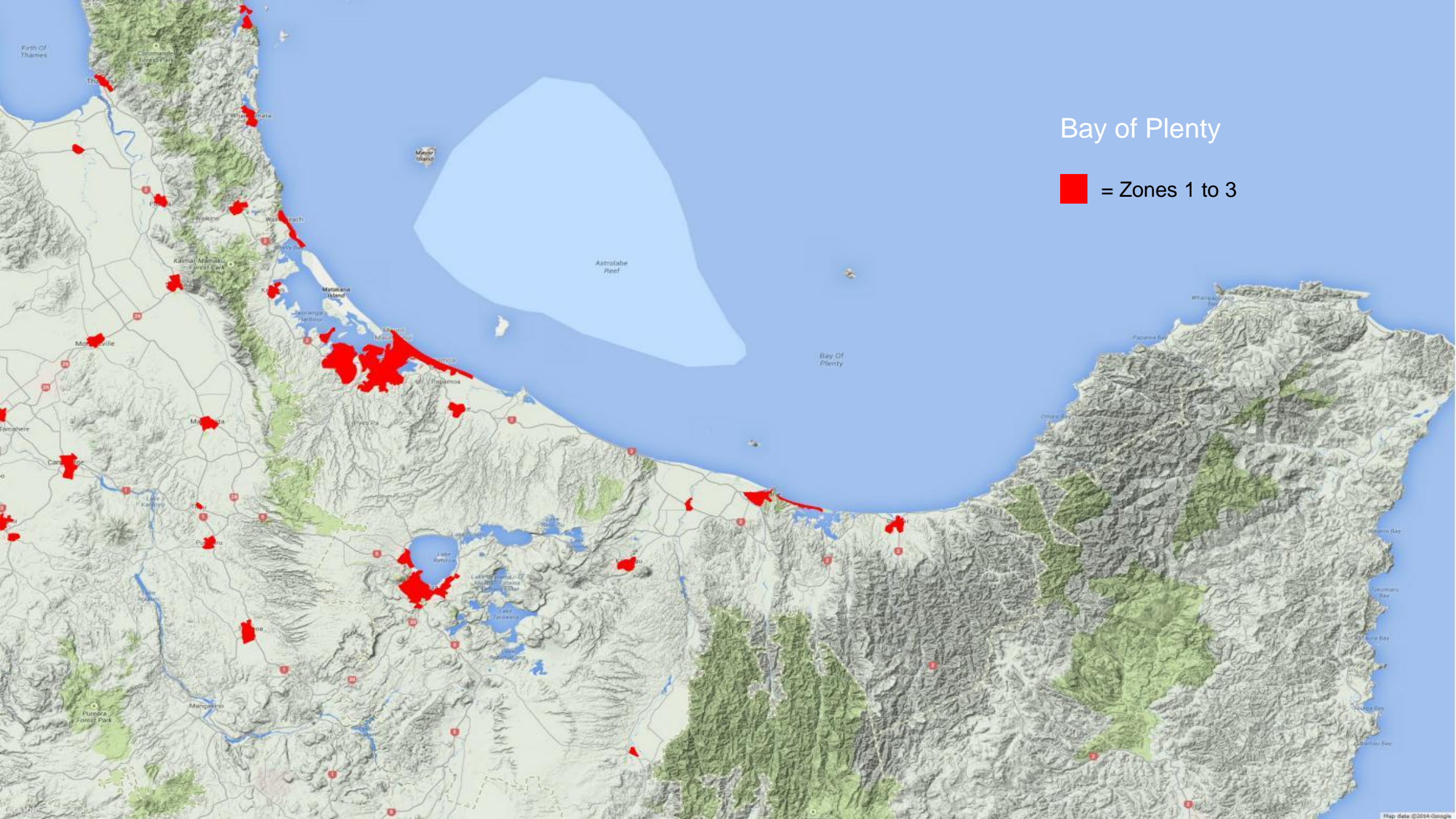
Consents

Post 2020 framework

TSO review

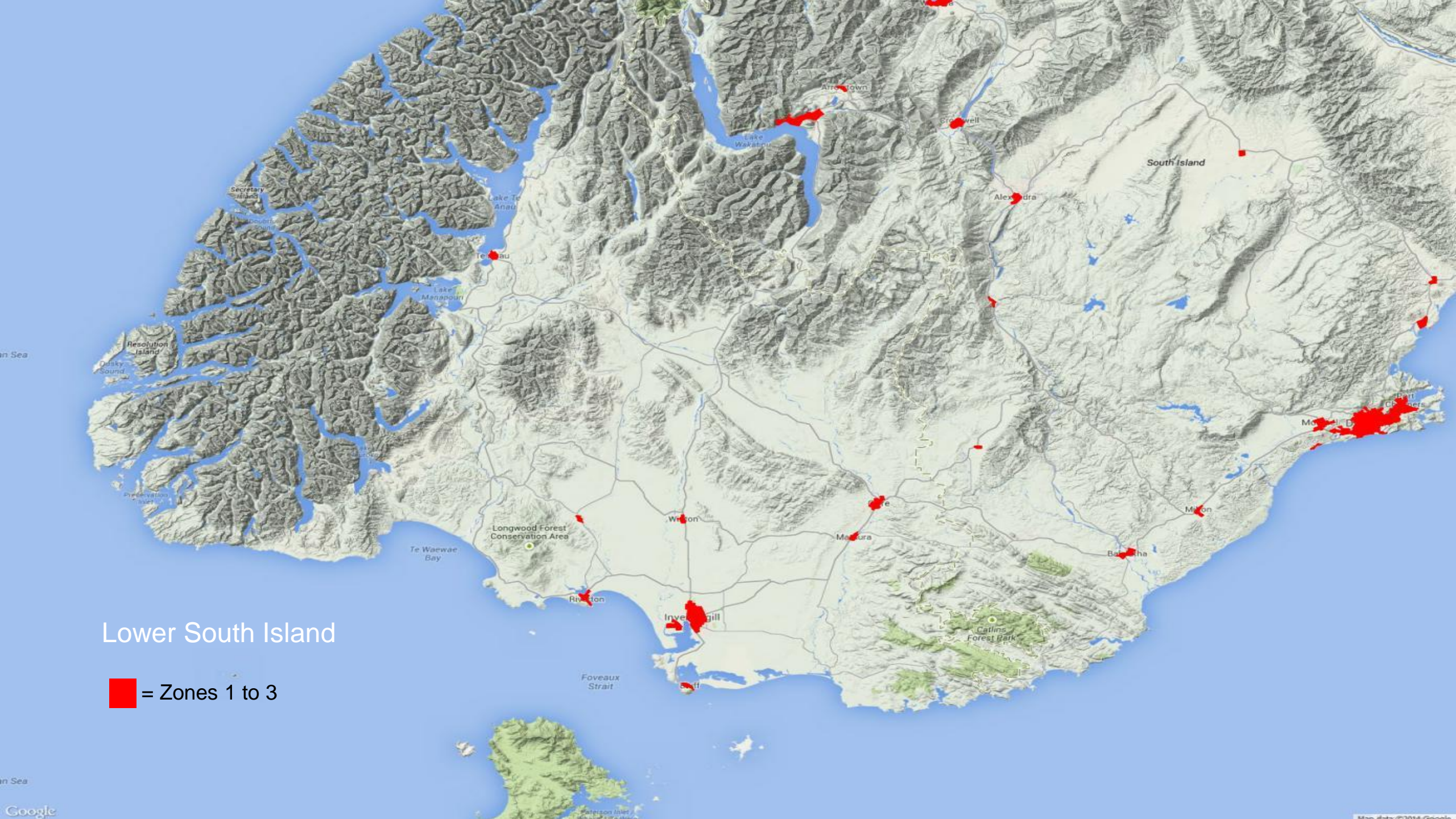
Any questions?





Bay of Plenty

 = Zones 1 to 3



Lower South Island

■ = Zones 1 to 3