

# Alternative Energy

## COMMENT

### A Maturing Renewables Industry

*We attended the Renewable Energy Finance Forum Wall Street (REFF) this week in New York. The event was attended by lenders, tax equity providers, and major renewable developers.*

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- **Bottom line – Signs of a Maturing Industry:** A deeper and cheaper renewables financing environment is positive for US-based solar and wind asset operators and developers (NEE, NEP, RUN), as well as pure developers (FSLR, SPWR). Key takeaways from the event: (1) the impact of tax reform on project economics and tax equity supply was better than expected; (2) Section 201 tariffs and steel/aluminum tariffs could have been much worse but the supply glut in the solar industry helps; (3) developers are upbeat on growth beyond tax credits given technology and cost improvements; (4) spreads are compressing across asset classes; (5) lenders are comfortable with offshore wind given European experience; (6) the storage industry still needs to identify monetization structures to gain financial support; (7) the market is seeing shorter duration PPAs and even outright merchant renewables (no PPA) as costs continue to decline.
- **The Cloud Gets Clean:** Historically some corporate customers bought renewable energy credits (RECs) on the open market to offset their carbon footprint. However, corporates, notably data centers, are increasingly adopting renewable energy in their consumption mix through power purchase contracts (PPA) as end customers are demanding a lower carbon footprint. Lower fixed long-term PPAs have also helped avoid fuel pricing risk. We were surprised to learn that RFPs for cloud services from end-customers for the big data center operators also include questions on carbon footprint. To balance reliability needs vs renewable goals, most data centers sign a financial PPA that acts more like a swap contract for clean energy, which is different from a conventional PPA with physical electric deliveries. Corporates seem hopeful that with declining battery costs, renewable+storage could be directly used for critical options in the future.
- **More Discussions Around Shorter PPAs and Merchant Risk:** Over the past year, we have been observing more discussions regarding shorter PPAs (10-15 years) among tax equity and debt providers, especially as 20-year wind and solar contracts are now below \$20/MWh (wind) and <\$25/MWh (solar) and cheaper than other technologies/merchant markets. Many investors are now more comfortable with merchant power risk, though most still need insurance products to cover unhedgable long term weather and basis risk.
- **Life without contracts implies some value for renewals:** As merchant projects gain popularity, price discovery should help resolve the residual value question for long-term solar contracts. For example, for residential solar assets, we assume a 50% contract renewal probability post contract.

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- **Storage – More Interest, But PPA/Financing Structures Not Yet Clear:** A common question across most of the panels was the impact of new technologies like battery storage on solar/wind adoption. Developers expect the cost of energy storage to decline from current levels, and the new revenue streams through grid services could translate into higher returns. However, the industry still needs to identify a monetization/PPA structure. For example, we saw energy storage part of a joint solar+storage PPA until earlier this year through an energy PPA, while Nevada's RFP earlier this month procured storage via capacity PPA. Given the nascent industry, lenders also admitted that financing structures haven't yet evolved and still far away from a cookie-cutter template. See our 6/13 report [NEE: Solar+Storage -- Cheaper Than You Thought](#).
- **Long-term clearing price – solar+storage+capacity charge:** Solar and wind are increasingly competitive vs energy and capacity prices in various markets; however, valuing merchant or post contractual pricing risk hinges on the forward curve. Near-term capacity and energy prices are determined by assumptions from PJM and other RTO/ISOs; however, many seem skeptical of assumptions behind a longer-dated forward prices. Theoretically, and assuming no government interference, the lower cost of energy should be the main pricing driver in the future. This could very well be cheap solar, coupled with storage and giving some value for capacity charge. LCOE of solar+ 4-hr storage is ~\$30/MWh in 2021 in sunny regions, which we believe could decline to <\$20/MWh by 2030 for a bigger battery size (i.e. >8hrs/day of storage).
- **Tax Equity Lights are Still On:** Financial institutions and developers see no shortage of tax equity supply in the market, confirming similar trends seen earlier this year are proving sustainable. Recall that this stands contrary to earlier fears of a tax equity shortage due to a lower corporate tax rate and the BEAT tax reform. Only one large US based tax equity supplier has exited the market; however, [European-based financial institutions with significant cross-border dealings are comfortable that US operations can be effectively structured to avoid BEAT tax](#). The higher returns, and a demand rush prior to tax credit sunset after 2021, have also attracted many new financial and non-financial institutions.
- **Debt coverage ratios improving:** Debt coverage ratio for large scale solar projects has come down from 1.3x last year to 1.25x without any insurance, and to 1.1x for P50 insurance (which guarantees energy production).
- **Lower Risk Construction Debt Gets Cheaper:** Construction debt from NTP to COD is available for as low as L+80 bps for high-quality projects with identified buyers and lower execution risk. On average lenders are seeing terms at L+150-225 bps. We would note that RUN had refinanced its credit facility for National Grid's residential solar portfolio at L+225 bps in March 2017 (see our note for details [RUN: Renewables Financing Gets Cheaper](#)).
- **Rising Rates Helped by Compression, but Would Need Equity Rates to Step Up:** Compressing Project debt spreads help offset some concerns around rising rates, but developers don't expect any significant change in the cost of financing, absent any near term spikes in interest rates. However, some on the panels do expect cost of equity to rise if rates rise further. [However, longer term, not many are worried given a flatter debt curve](#).
- **Catch Them Young:** Pension funds, infrastructure funds, PE, and even insurance companies have emerged as major acquirers of renewable assets given long-term contracted cash flows, easy maintenance and lack of commodity fuel risk. While previously long-term holders of these assets acquired projects at completion date (COD), many are increasingly now comfortable with acquiring projects at notice to proceed (NTP), when all necessary permits, land, and PPAs are in place.

- **Manufacturers Endowing Developers:** Industry stakeholders feel more and more comfortable that technology improvements, higher efficiency solar panels, larger wind turbines, and declining equipment costs have benefited developers in the past (in the form of higher than expected project returns), and will also help offset declining tax credits and rising rates in the future. Near-term, stakeholders believe that decline in solar module prices due to an oversupplied industry will help partially offset US import tariffs in 2019/20.
- **Oversupply Could Revive Protectionist Tariffs Globally:** An oversupplied solar manufacturing value chain will lead to strong price declines globally. While this naturally impacts international solar manufacturers, some developers fear that the lower solar PPAs could also negatively impact wind demand and wind turbine manufacturers globally stroking fears of protectionist repercussions in more countries beyond major solar markets.

**Companies Mentioned** (Price as of 21-Jun-2018)

**First Solar** (FSLR.OQ, \$52.31)  
**NextEra Energy Inc.** (NEE.N, \$163.37)  
**NextEra Energy Partners** (NEP.N, \$44.98)  
**SunPower** (SPWR.OQ, \$7.98)  
**Sunrun** (RUN.OQ, \$13.69)

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