Can Expanding Rooftop Solar Coexist with Traditional Electric Utilities?

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EEI: Low cost solar → “Vicious Cycle”?

SunShot Envisions Dramatic Growth

Total Solar Capacity Under the Range of Cost Reduction Scenarios

SunShot Targets

**2030**
- 302 GW, 505 TWh (11%) PV
- 28 GW, 137 TWh (3%) CSP
- Total: 14% of US demand

**2050**
- 632 GW, 1036 TWh (19%) PV
- 83 GW, 412 TWh (8%) CSP
- Total: 27% of US demand

Or an opportunity?

• “On its face you would look at it and say distributed generation is a threat. But on the other hand we see it as an opportunity because our business is changing. There's no getting around it.”
  - Nick Akins, chief executive of American Electric Power

• Recent examples of utilities investing in DG Solar
  - Direct Energy and Crius Energy Trust formed partnerships with SolarCity
  - Edison International, which owns SCE, bought SoCore Energy (Aug ‘13)
  - Edison International, Duke Energy and two other utilities invest $42MM in Clean Power Finance (H1 ’13)
  - Nextera acquired Smart Energy Capital (May ’13)

Sources: BNEF (09/11/13); Cleantech Finance (07/03/13), 09/23/13); Forbes (08/13/13); Greentech Media (05/16/13); Wall Street Journal (05/28/13).
Potential Utility Solar Business Models

• **Utility Build-Own-Operate**
  - The utility earns a return on DG solar assets and gain revenues from the sale of the electricity generated.

• **Utility-led Community Solar Projects**
  - Utility owns solar asset or purchases production through PPA and sells solar capacity or electricity to a group of customers.

• **Utility Partnership and Investments in 3rd-Party Leasing**
  - Partner with or invest in a third-party leasing company that supplies solar systems to the utility’s customers.

• **Value Added Consulting Services**
  - Some utilities already offer consulting services for energy efficiency; these services could be expanded to distributed generation and demand-side management options.

• **Virtual Power Plant Operator**
  - Utility aggregates the generation from many distributed units on its system.

• **The Energy Services Utility**
  - Utility pricing is not based on the amount of energy provided, but on the value of services provided.

**Sources:** “Regulatory Considerations Associated with the Expanded Adoption of Distributed Solar (Discussion Draft),” prepared by L. Bird, J. Heeter, and J. McLaren of NREL and C. Linvill, J. Migden-Ostrander, R. Sedano, and J. Shenot of the Regulatory Assistance Project for a July 19, 2013 workshop at NREL
Extra Slides
Net Metering Debate

• California AB 327 signed by governor in October ‘13
  o Net metering extended to 2017 (from 2014). California Public Utility Commission (CPUC) must design new standard contract by 2015 which does not shift cost to non-net metered customers
  o 5% net metering cap now explicit but CPUC can raise it
  o Utilities can now charge a fixed fee for solar up to $10/month
  o Rate tiers reduced from 5 to 2 tiers – highest two tiers (which typically offset solar) will see rates decrease

• MN law requiring PUC to develop “value of solar tariff” by Jan. 2014
  o Must take into account 1) value of energy 2) generation capacity 3) transmission capacity 4) reduced transmission and distribution losses 5) and environmental benefits. Guaranteed to be at or above retail for first three years

• Arizona Public Service (APS) applied to revise the state net metering program in July 2013, arguing it shifts costs to non-solar customers
  o In October Arizona Corporation Commission (utility regulator) staff experts recommended that the commission not approve APS proposal
Net Metering Debate (cont)

- **Texas - Austin**
  - Introduced “value of solar” feed-in-tariff in 2012 at $0.128/kWh – higher than the ~$0.09/kWh retail rate
  - Tariff will be recalculated each year and will likely go down over time
  - Austin Energy requires 200 MW of PV be installed by 2020

- **Texas - San Antonio (CPS Energy)**
  - Moved to replace net-metering in April 2013 with “SunCredit” feed-in-tariff, however rate was proposed at $0.056/kWh – lower than the ~$0.08/kWh retail rate
  - Stakeholder backlash has put program on hold until further review in 2014
  - CPS Energy requires 100 MW of PV be installed by 2020

- **Colorado - Xcel Energy**
  - Xcel Energy proposed increasing costs to net-metering customers by charging them a kWh and fixed fee