Helping Utilities Make Smart Solar Decisions

How Rooftop Solar Is Changing The Business of Electric Utilities

Johns Hopkins SAIS seminar - November 12, 2013

Bob Gibson, VP, Education and Outreach, SEPA
SEPA is an educational non-profit (501 c3)

- Celebrating 20 years of service to utilities and solar
- Membership based - 900+ members
- Providing unbiased information focused on supporting utilities and their needs as they relate to solar adoption
- Providing exclusive member programming, research, education, collaboration and consulting services

Membership

- 420+ Utility
- 52% of electricity customers
- 500+ solar industry & stakeholder
- +90% of installed solar capacity

About SEPA

Helping Utilities Make Smart Solar Decisions
Solar Is Here To Stay

- More than 8 GW of solar tied to U.S. grid
- In 2012, utilities interconnected 2.4 GW
- In 2013, utilities will connect well more than 3 GW
- Utility scale solar output now priced at 7 to 10 cents/kWh
- Residential solar is priced as low as 13 to 16 cents kWh
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Solar Module Prices vs. NatGas & Coal Fuel Prices

Source: EIA/Navigant/SNL
Nominal rates
Power Plant Capital Cost by Fuel Type

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Source: Lazard
Nominal rates
High range in coal is due to calculation for carbon sequestration

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Levelized Cost Of Energy: Solar PV - Natural Gas - Coal

Source: Lazard
Nominal rates
High range in coal is due to calculation for carbon sequestration
### Annual Solar Capacity

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<th>Year</th>
<th>Utility</th>
<th>Non-Residential</th>
<th>Residential</th>
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<tr>
<td>2010</td>
<td>228</td>
<td>282</td>
<td>217</td>
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<tr>
<td>2011</td>
<td>471</td>
<td>854</td>
<td>295</td>
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<td>2012</td>
<td>1172</td>
<td>883</td>
<td>469</td>
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2012 Solar Capacity Additions

- **Behind-the-meter projects** accounted for > 50% of capacity and **99% of newly installed systems in 2012**

- **Currently ~ 3.5 GW of net metered projects in U.S.**

- **80% concentrated in 5 states:** CA, NJ, AZ, HI, MA
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"Why The U.S. Power Grid’s Days Are Numbered"
- Bloomberg Businessweek, August 22, 2013

"On Rooftop, A Rival for Utility"

"Electric Utilities Must Evolve or Die: Are They Up To The Task?"
- The Energy Collective, August 19, 2013
”More and more often, companies are starting to see organizations such as EnerNOC or Solar City or their campus microgrid provider as their energy partner. Or seeing themselves as needing to become as self-sufficient as possible. In either case, the utility gets relegated to the role of necessary evil. And that is not a great platform for future growth and prosperity.” - Jesse Berst, Smart Grid News
Solar Value Proposition For Customers Is Changing Rapidly

Until recently …
• Solar was expensive
• Long payback
• A ‘lifestyle’ choice, not economic

Now…
• Solar is “affordable”
• An economic choice - ‘no money down’
• Immediately reduces utility bills
Rooftop Solar Today, “Utility” Services Tomorrow

• Solar leasing companies, led by Solar City, are building solar generation on thousands of rooftops.

• But solar is just the start – these companies have plans to sell a suite of inter-related energy services to homes and businesses, including demand response and on-site battery storage.
If consumers want choice...

- In some respects, solar delivers the kind of energy choice promised by deregulation, but rarely delivered on.
Net Metering: Battle Lines are Drawn
“Rooftop Solar Is Killing Your Utility!”

“Arizona Utility Wants To Kill Solar”
- Daily Kos, July 12, 2013

“Some Utilities Try To Slow Down The Solar Boom”
- Associated Press, August 22, 2013
To this point, utilities have invested in solar in order to...

- Meet a regulatory or legislative mandate
- Satisfy community interest
- Local economic development
- Meet a threat to core business
- Build hands-on understanding of a disruptive technology
In the future, utilities may well invest in solar to...

• Leverage the grid value of distributed solar
• Participate in a new wave of energy service opportunities
• Utilize a cost-competitive resource
Community Solar A Good Fit

- Opens access to solar to more customers
- Local and visible
- Puts utility in control
- Better equity and fairness for customers
- More cost-effective than smaller installations
“We believe that solar is an important way for our co-op to demonstrate value to – and connect to – the new generation of co-op members.”

- Electric co-op CEO from Oregon, June 2013
Opportunities exist for utilities to impact the cost of deploying DG resources

Soft Costs Include
- Customer acquisition
- Design and permitting
- Interconnection
- Finance and risk mitigation
- Production assurance
- Profit

Seel, Barbose, & Wiser, “Why are Residential PV Prices in Germany So Much Lower Than in the United States” September 2012
Can Utilities Re-invent Their Businesses?

- European utility RWE (25 million customers) plans to “radically change course” from large scale coal and nuclear to be a “project enabler, operator and system integrator” of renewables
- Duke Energy (7 million customers) has established a renewable energy group for its regulated utilities, starting with solar
Contact Bob Gibson
bgibson@solarelectricpower.org
www.solarelectricpower.org

SEPA’s report on Net Metering: