Solar Market Development in Texas

Steve Wiese – DSM / Austin
WHEN AND WHERE I WORKED

1996-2000  |  TEXAS SOLAR MARKET SHAPERS
Electricity market deregulation, demonstration projects, schools, marketing/education, rural solar, data acquisition

2000-2007  |  REC market formation and trading, early solar leases and power purchase agreements, early (and expensive) incentive programs, early data acquisition companies

2007-2015  |  Mainstream incentive programs, energy price shocks, stock market upheaval, rapid expansion of solar companies

2015-2017  |  Waning incentives, greater interest in grid-scale solar, grid interaction & large scale systems research

2018-2019  |  Emerging solar/storage opportunities, electric vehicles, grid-scale expansion & challenges
Frontier Energy

- 5 companies joined in 2016 and 2017
- $33+M annual revenue
- Offices in California, New York and Texas
- Fuel agnostic, work on electricity, hydrogen, biogas, and conventional fuels

Areas of Core Expertise

- Demand-Side Management
- Building Research and Energy Consulting
- Commercial Foodservice
- Transportation and Power
- Software Solutions
Frontier Energy – Current TX DSM Activity

• **Low Income Weatherization** programs
  AEP Texas, CenterPoint Energy, El Paso Electric, Texas-New Mexico Power Company, Xcel Energy

• **Multifamily** programs
  AEP Texas, Atmos Energy, CenterPoint Energy, Texas-New Mexico Power Company, Xcel Energy

• **Residential Standard Offer** programs
  Texas-New Mexico Power Company

• **Other Programs:**
  - **Gas Appliance** rebates: Atmos Energy
  - **Solar** incentive programs: AEP Texas
  - **Demand Response** programs: Xcel Energy
  - **Small Business**: Xcel Energy
  - **Commercial Cooking**: Atmos Energy
Part One, A Look Back
Renewable Energy Art & Essay Contest

- Award-winning submission by a Texas grade schooler, 1997
- Part of the Renewable Energy, the Infinite Power of Texas campaign funded by SECO
My Last Visit w/ NTREG, 2011
ARRA/SECO DRETP, $53M, 20% match; estimate assumes $8/w, all PV = 8.2 MWdc

My Last Visit w/ NTREG, 2011
My Last Visit w/ NTREG, 2011

Peak Hours (top 10%)

- ERCOT
- MCPE
- W Texas Tracking PV
- W Texas Wind
- W Texas Fixed PV
Part 2, Trends

SOLAR PANEL TECHNOLOGY

SO HOT RIGHT NOW
Installed Costs - US

Installed Costs - Texas

I’m seeing $3.09 - $3.22/Wdc in 2019

Solar Incentives - US

Solar Incentives - Texas

2008-2018

Rebate/ownership programs only
Part 3, Concerns for the Future

SCIENTISTS WARN: IF MORE PEOPLE USE SOLAR ENERGY, THE SUN WILL RUN OUT OF POWER, AND GO OUT
Key questions, goals

• How do we turn solar from a single-measure specialty energy efficiency or “market transformation” program into a commodity energy efficiency measure applicable anywhere?

• How do we begin incorporating solar into programs designed to reduce the electric bills of low income residents?

• How do we justify retaining solar incentives at all?

• What incentives do utilities have for supporting solar among other alternatives?
Solar as a commodity measure

- Solar in residential and commercial “standard offer” programs
  - Like HVAC, expensive, incentive typically pays a small portion of the total cost
  - But, solar baseline is zero whereas HVAC baseline is typically replacement at the current efficiency standard – bigger savings potential with solar
  - Design incentive rates and structures that mirror those of other measures, like HVAC systems, insulation, etc.
    - In some programs, that means flat rebate, $/Wdc, or $/kW and/or $/kWh savings
  - Encourage comprehensive treatment – make it easier for EE contractors to offer solar; encourage solar contractors to offer other EE measures
Solar as a commodity measure

• Barriers/Challenges
  ○ The utility interconnection function provides a perceived free ridership problem that is unique to solar
  ○ The demand structure for solar is different - everyone “needs” to replace their HVAC system from time to time, but no one “needs” to add solar
Solar for low income & multifamily

- Solar in low income & multifamily programs
  - A more difficult fit, but there are some models worth exploring
    - CPS Energy Solar Host SA
    - Community solar models – Austin Energy, CPS Energy
    - Retail choice models – Green Mountain, Austin Energy

- Barriers/Challenges
  - Installation cost
    - Split incentives between owners and renters
    - Reduced expected contribution from resident/owner (means more must be provided by program)
  - Reliance on Utility Cost Test (UCT) and Savings to Investment Ratio (SIR)

All rely on rate-basing the higher costs of solar
In sum

- Distributed solar’s future is bright and here to stay (but soft costs still have a long way to fall)

- In the distributed solar market, utilities and direct incentives are already playing, and will continue to play, a diminishing role
  - For some good reasons - and also for some not-so-good reasons

- There are always areas where intervention can do some good
  - Multifamily and low income energy markets face unique challenges
  - Keeping energy prices low overall is always a good role for regulators
  - There is little political support in Texas for energy efficiency programs or other interventions
Questions?
Discussion?

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