Rate Design and Value of Solar

Chris Villarreal
Minnesota Public Utilities Commission

National Conference of State Legislatures
August 24, 2016
Overview

➢ Rate Design Considerations
➢ Move to valuation
➢ NARUC draft DER Manual
➢ Experience in Minnesota
Rate Design and Solar

- On-going discussion around country
- How to compensate solar
- Net Energy Metering, most prevalent
- Costs
- Benefits
- Adoption rates
- Benefits and costs time and location dependent
Specific Concerns

- Utility costs fixed or variable?
  - Short term - costs are fixed
  - Long term - most costs are variable

- Who pays for the system?
  - Solar customers still connected to grid
  - Typical NEM credit against total bill
  - Cost shifting?
  - Benefits of solar?

- Revenue recovery
  - All customers?
  - Create a separate class?
  - Cross subsidies

- How to integrate solar
  - Impacts on reliability
Options

- Leave NEM alone, better identify benefits
  - Argument- NEM necessary for solar adoption
- Implement higher fixed charges or a demand charge
  - Argument- all customers should pay something
  - Related- Minimum bill
- Rate Design
  - Time variant pricing
  - Decoupling
- Remember- impacts from solar dependent on time and location.
NARUC President Travis Kavulla (MT) tasked Subcommittee with developing a Manual:

“This subcommittee will work to create a practical set of tools—a manual, if you will—for regulators who are having to grapple with the complicated issues of rate design for distributed generation and for other purposes.”

Draft released July 21, 2016

Lays out variety of options and considerations

Describes a How To framework for working through options

Does not prescribe solutions; designed to help states wade through these issues and develop solutions appropriate to their state or jurisdiction

Available at http://pubs.naruc.org/pub/88954963-0F01-F4D9-FBA3-AC9346B18FB2

Comments send to responses@naruc.org
Overarching Themes

- Fixed costs
  - In short term, utility costs are fixed
  - In long term, utility costs are variable
- Revenue recovery
- Cost allocation
- Market value
- Technology
- Adoption rates

Graph showing stages of DER adoption:
- Stage 1: Grid Modernization
- Stage 2: DER Integration
- Stage 3: Distributed Markets

Key milestones:
- Very High DER Adoption
- DER Integration & Optimization; Dist. Platform Development
- Multi-party Transactions & Market Operations

Aging Infrastructure Refresh
Advanced grid technologies

Customer Adoption
Valuation

- aka Buy all/Sell or Credit all
- Customer paid for value separate from consumption
- Identifies 3 types of valuation
  - Value of Resource (VOR)
  - Value of Service (VOS)
  - Transactive Energy (TE)
- Technology needs
- Valuation models can change over time as adoption rates progress
  - VOR = low adoption
  - VOS = medium adoption
  - TE = high adoption
Valuation in Practice

- Currently in effect only in Austin Energy territory (Value of Solar)
- Value of Solar soon to be active in Minnesota (Xcel service territory)
- Open proceeding in Arizona
- Trend away from rate case determination to valuation
Valuation in Minnesota

- Legislature directed development of Value of Solar tariff
- Effort led by Minnesota Department of Commerce
  - Rate approved by the Minnesota PUC
- Identified 11 values
  - Avoided Energy/Fuel
  - Energy Losses/Line Losses
  - Avoided Capacity
  - Ancillary Services
  - Transmission and Distribution Capacity
  - Avoided Criteria Pollutants
  - Utility Integration & Interconnection Costs
  - Avoided CO2 Emission Cost
  - Fuel Hedging
  - Utility Admin Costs
  - Environmental Costs
Conclusion

- Valuation is not easy
  - Determine benefits and costs
  - Determine other adjustments
  - Often subjective

- Costs and benefits differ by time and location
  - Some solar may increase utility costs, and should be passed to resource

- Are there other ways to make the utility “whole”? 
- Understand that states and utilities differ
  - 2,000+ utilities across country, no one is alike
Questions?

Thank you!

Chris Villarreal
Director of Policy
Minnesota Public Utilities Commission
651-201-2222
chris.villarreal@state.mn.us