Rate Design Subcommittee
Why Cooperative Solar?
Pricing
$25/month/block
No contract

5.7 panels
(1.8 kW)

180 – 260 kWh
Bill Example

Walton EMC
Customer-Owned Electric Power
770-267-2505

To Report a Power Outage call (770)267-2505
To Report a Gas Leak
Emergency call (770) 907-4231 or Toll Free 1-866-WMCGAS

Thank you for your business.

To be paid by draft
Project 1
Project 2
Project 3
Totals

6.75 MW Cooperative Solar

5062 Blocks Available

4172 Blocks sold

2,500 Customers

233 Drop outs
Rate Design Subcommittee
RATE DESIGN COMMUNITY
SOLAR
WASHINGTON, DC

Dan Cleverdon
District of Columbia Public Service Commission
2018 NARUC Winter Meetings
DISCLAIMER

• Opinions, conclusions, observations are my own and do not represent the opinions or conclusions of the DC PSC or any DC PSC Commissioner.
DC Characteristics

• Population - 693,972

• Area - 68.34 mi² (7 mi² water) – net 61.3 mi² land area

• Electrical
  • 2017 Number of Customers - 296,455 (90.7 % Residential, 9.3% Commercial)
  • 2017 Load – 2117 MW (24.1% Residential, 75.9% Commercial)
  • 2017 Usage - 10,243,007 MWH (20.2% Residential, 79.8% Commercial)
Net Energy Metering (NEM) in DC

- Restructuring legislation allowed DCPSC to institute NEM
  - DCPSC created NEM rules in 2005 for renewable generators
    - NEM facilities limited to a size no larger than to serve 100% of typical usage
    - Max size 1 MW
    - Excess generation (injections to grid) valued at:
      - <100 kW – full retail rate
      - >100 kW – energy portion of retail rate
    - Values of excess generation expressed in monetary units, not kWh

- Currently:
  - 3,408 PV systems registered with the Commission
  - 47.6 MW
Community Net Metering

• Legislatively determined, Commission has very little discretion
• Designed to allow electric ratepayers to own renewable generation who don’t have suitable roofs.
• Max size 5 MW, ownership share up to 120% of customer/subscriber annual usage
• Needs to have at least two distinct subscribers
• Any form of legal DC ownership allowed
Community Net Metering

• Works through a Community Renewable Energy Facility (CREF)
• Deliberately made flexible in size and ownership to allow for wide adoption.
• CREF Subscriber pays normal utility bill, but has a monetary credit offset based on subscriber’s share of the CREF output.
• Key is how to value CREF output
  • Original legislation had CREF output to subscribers valued at a Standard Offer Service (SOS) rate;
    • CREF sold to SOS Administrator at SOS rate, SOS administrator sold CREF output to SOS customers at SOS rate
    • Purchase and sale at same price, a wash for the SOS Administrator
Community Net Metering

• Solar advocates noted that the compensation scheme did not credit CREF subscribers with “full” retail rate including non-energy portion and claimed that this made CREF subscribers “second class solar citizens.”

• Went to legislature and had the law changed so that residential CREF subscribers received “full retail rate” credit for their share of a CREF output.

• Non-residential CREF subscribers are limited to receiving just the energy portion of the retail rate.
Community Net Metering

- This causes a major problem:
- Say SOS rate is $0.083/kWh and the balance of the retail rate, is $0.048/kWh. Total retail rates is $0.131/kWh.
- SOS Administrator purchases CREF output for $0.131/kWh, but can only sell it at $0.083/kWh. There is a shortfall of $0.48 kWh per kWh.
- There is no mechanism for the SOS administrator to recover this amount.
- If a CREF subscriber offsets his entire annual usage that subscriber would on average received a $370 transfer from other ratepayers.
Community Net Metering

• A regular NEM customer offsetting his entire annual usage would be expected to receive $0.00 transfer from other ratepayers.
• For every 1 MW of CREF capacity the transfer to the CREF subscribers is over $638,558 per year from other ratepayers.
• To date there has not been a long enough history for this transfer to become a problem.
• It is something that the Commission will have to deal with in the near future.
• How would you and/or your Commission solve this dilemma?
Rate Design Subcommittee
Community Solar in the Southeast

Caroline Golin, PhD
NARUC, February 11, 2018
BACKGROUND
SNAPSHOT

Low Cost

3rd party not ubiquitous

Customer Demand

Premium Product
PROGRAM DESIGN DECISIONS

Ownership
- PPA
- Utility-owned

Payment
- Pay as you go
- One-time cost

Value
- Avoided Cost
- Retail Rate

Soft Costs
- Program Cost
- Utility Cost
CURRENT MODELS

GEORGIA:
- Coastal Electric Co-op
- Walton EMC
- Cobb EMC

$25/month Retail Netting

Up-front Cost Retail Netting

NORTH CAROLINA:
- Roanoke Electric

NORTH CAROLINA & FLORIDA:
- DEC/DEP/DEF

Up-Front Cost Avoided Cost

Hybrid Model

South Carolina:
- SCGE
UNDERSTANDING THE TRADEOFFS

Ownership
- Cost
- Risk

Payment
- Broad Customer Base
- Administration Costs

Value
- Customer buy-in
- Cost Recovery/Public Interest

Soft Costs
- Economics
- Cost Recovery/Public Interest
WHAT IS DRIVING THE COMMUNITY SOLAR ‘PREMIUM’

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Projected Estimated Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPA @ approximately $65/MWhr</td>
<td>$284</td>
</tr>
<tr>
<td>Marketing and Customer Engagement</td>
<td>$131</td>
</tr>
<tr>
<td>Enrollment/Billing/Credit</td>
<td>$37</td>
</tr>
<tr>
<td>Call Center</td>
<td>$9</td>
</tr>
<tr>
<td>Program Management</td>
<td>$39</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$500</td>
</tr>
</tbody>
</table>

SOFT COSTS!
Billing, Program Design, Marketing, etc.

DEP and DEC Community Solar Application
Rate Design Subcommittee
Community Solar: Rate Design Considerations

Sean Gallagher
Vice President, State Affairs
Solar Energy Industries Association
Defining Community Solar

• Clarifying what Community Solar is:
  • Distinguish from green tariff and offsite projects for single offtakers
    • Customers can directly participate in a shared solar system
    • Enable participation across rate classes (ensure residential and small commercial participation)
  • Customers realize direct economic benefits from their participation in the program

• Where is community solar?
  • Market is in excess of 700MW installed capacity currently, expected to meet 1 GW later this year
  • 16 states and Washington, DC have state-level community solar programs
    • excluding cooperative and municipal utility programs, which typically do not need legislative or PUC authorization

http://www.sharedrenewables.org/community-energy-projects/
Key rate design principles and considerations

• Principle: bill credits are transparent and predictable, and provide subscribers with an equitable economic benefit

• Overarching bill credit approaches:
  • Retail-rate-based approach
  • Resource Valuation approach

• Methods for implementing approaches
  • kWh credits for kWh of generation from community solar project
  • Monetary crediting: translate generation into monetary credit applied against customer’s bill
## Different State Programs, Different Rate Approaches

<table>
<thead>
<tr>
<th>State</th>
<th>Bill Credit</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minnesota</td>
<td>Retail rate crediting for initial buildout; changing to VOST approach for projects that submitted interconnection app after Dec 2016. Project size cap changing from 5 MW to 1 MW.</td>
<td>~300 MW to be installed thru 2018. But VOST values subscriber credits considerably less than the prevailing ARR value that grandfathered projects receive.</td>
</tr>
<tr>
<td>California</td>
<td>There are a number of charges which fluctuate over time. Only credits are a generation credit and a time-of-delivery credit.</td>
<td>Credit instability and lack of value for transmission and distribution value of projects means there is a net premium for customers. No projects have been developed after 3 solicitations</td>
</tr>
<tr>
<td>Illinois</td>
<td>Energy credited at supply rate in addition to a REC payment that is monetized by community solar providers. REC adders are provided for different types of projects</td>
<td>Provisions in legislation intended to ensure robust participation among small commercial and residential customers</td>
</tr>
<tr>
<td>New York</td>
<td>Uses a &quot;value stack&quot; (currently under further development). A Market Transition Credit is being applied to bring &quot;value stack&quot; closer to retail rate and is stepping down as penetrations increase and Commission continues development of VDER tariff.</td>
<td>Market transition credit has allowed for development while VDER is under development though some utilities have exhausted capacity under existing tranches. Some elements of value stack are unfinanceable due to short duration and volatility. Full analysis won’t be possible until tariff development is complete.</td>
</tr>
<tr>
<td>Maryland</td>
<td>Retail rate credit. Utilities have discretion over applying kWh credit or monetary credit. Credits roll over month-to-month.</td>
<td>Well-intentioned LMI provisions may be too steep to enable successful project development.</td>
</tr>
</tbody>
</table>
Minnesota Subscriber Base

Figure 3.4 Community Solar % of Subscribers by Type

Source: Xcel November Solar Rewards Community Compliance Report

Figure 3.5 Community Solar % of Subscription Capacity

Source: Xcel November Solar Rewards Community Compliance Report
Resources

• Coalition for Community Solar Access (www.communitysolaraccess.org)
• Model Community Solar Legislation
  • One version for vertically integrated markets, one for restructured/competitive electricity markets
• Policy Matrix
• Outlines options and best practices for key program design elements