Show Me the Numbers: Balancing Solar DG with Consumer Protection

Federal Trade Commission
Public Workshop on Solar Distributed Generation

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Synapse Energy Economics
Framework for Assessing Rate Designs & DG Policies

• Many DG policies are developed in a piecemeal fashion
• Few DG policy discussions are informed by quantitative analyses on all of the key issues:
  1. DG development
  2. Cost-effectiveness
  3. Cost-shifting
• We need a framework to assess all issues quantitatively
• Forthcoming Report:
1. DG Development

The development of DG resources under different policy options should be explicitly modeled

• Relatively straight-forward methods:
  ▪ Payback periods
  ▪ Customer adoption rates
  ▪ Penetration rates

• The forecast penetration rates under different policy options can then be input into analyses of
  ▪ cost-effectiveness and
  ▪ cost-shifting
2. Cost-Effectiveness

Value of Solar studies use a variety of different tests:

- Utility Cost: Impacts on utility revenue requirements
- Total Resource Cost: Impacts on host customer and utility
- Societal Cost: Impacts on society (value of solar)
- Rate Impact Measure (RIM): Implications for cost-shifting

• Many studies combine the RIM test with the other tests
• Studies can be very inconsistent, due to different methods
• Consistency would help clarify issues
  - Utility Cost Test
  - TRC Test
  - Societal Test
3. Cost-Shifting

Cost-shifting is one of the most important issues in determining DG policies, but is rarely analyzed quantitatively and clearly.

- The RIM test does not provide meaningful information
  - Results can be misleading

- A long-term rate impact analysis should be used instead
  - Including all the costs and benefits that affect rates
  - Accounting for the impacts of lost revenues on rates

- Implications
  - Lost revenues create upward pressure on rates
  - Avoided costs create downward pressure on rates
  - Cost shifting is a result of the net effect
A Framework to Assess Policy Options

Illustrative Example:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Utility Net Benefits</td>
<td>TRC Net Benefits</td>
<td>Societal Net Benefits</td>
</tr>
<tr>
<td>1. NEM: conventional</td>
<td>$120</td>
<td>$24</td>
<td>$60</td>
</tr>
<tr>
<td>2. NEM: with reduced payment for excess</td>
<td>$60</td>
<td>$12</td>
<td>$30</td>
</tr>
<tr>
<td>3. NEM: plus increased fixed charges</td>
<td>$12</td>
<td>$2</td>
<td>$6</td>
</tr>
</tbody>
</table>

- This information can be used to balance the goals of:
  - allowing sustainable development of distributed PV, and
  - protecting customers.
# Impacts of Solar DG Policies on Payback Periods

Initial, draft results:

<table>
<thead>
<tr>
<th>State</th>
<th>Policy</th>
<th>Before Policy</th>
<th>After Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZ</td>
<td>Mandatory demand charges</td>
<td>14</td>
<td>26</td>
</tr>
<tr>
<td>HI</td>
<td>Reduced payment for excess generation &amp; higher fixed charge</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>MA</td>
<td>Increased fixed charge</td>
<td>4.5</td>
<td>4.7</td>
</tr>
<tr>
<td>NV</td>
<td>Increased fixed charge &amp; reduced payment for excess</td>
<td>11</td>
<td>21</td>
</tr>
</tbody>
</table>
Contact Information

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Related Ratemaking Elements

**Cost of Service Studies**
- **Goal:** cost allocation.
- **Costs:** based on embedded (historical) costs.
- **Connection:** Used as input to rate design. But does not dictate rate design.

**Rate Design**
- **Goals:** revenue recovery, equity, efficient price signals.
- **Costs:** addresses both historical and future (net) costs.
- **Connection:** Price signals influence customer DER decisions.

**Resource Planning**
- **Goals:** to provide low-cost, reliable, safe, electric services.
- **Costs:** based on future (net) costs.
- **Connection:** Will be influenced by customer DER decisions.

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