



Synapse
Energy Economics, Inc.

Show Me the Numbers: Balancing Solar DG with Consumer Protection

**Federal Trade Commission
Public Workshop on Solar Distributed Generation**

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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:
 - Synapse Energy Economics, *Show Me the Numbers: A framework for assessing distributed generation policies*, prepared for Consumers' Union, due November, 2016

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:

Policy Options:	1. Cost-Effectiveness			2. Rate Impacts	3. DG Development	
	Utility Net Benefits (PVRR)	TRC Net Benefits	Societal Net Benefits	(Long-Term Average)	Customer Payback (years)	DG Penetration (10 years)
1. NEM: conventional	\$120	\$24	\$60	0.8%	10	12%
2. NEM: with reduced payment for excess	\$60	\$12	\$30	0.6%	14	8%
3. NEM: plus increased fixed charges	\$12	\$2	\$6	0.0%	20	2%

- 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:

State	Policy	Before Policy	After Policy
AZ	Mandatory demand charges	14	26
HI	Reduced payment for excess generation & higher fixed charge	6	7
MA	Increased fixed charge	4.5	4.7
NV	Increased fixed charge & reduced payment for excess	11	21

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Appendix

Related Ratemaking Elements

