Net Metering Policies Today And Tomorrow

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Key State Net Metering Decisions

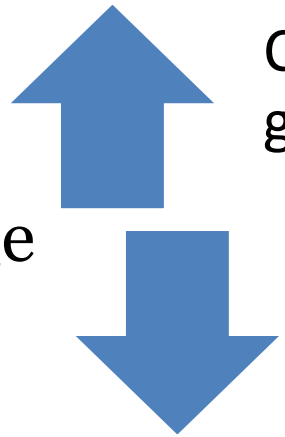
- Participating utilities
- Eligible customer classes
- Eligible resources, systems and applications
- Individual system and total capacity limits
- Treatment of net excess generation
- Standby rates
- Insurance
- Interconnection

Other Issues for States

- Third-party financing/ownership
- Meter aggregation
- Ownership of renewable energy certificates
- Community net metering
- Lost utility revenues and, at high levels of PV penetration, cost-shifting to non-participants (remaining slides)

Revenue Issues for Utilities

- Like energy efficiency, customer-generators reduce utility sales.
- Typically, the fixed monthly charge for small customers does not cover all fixed costs of supply and delivery, and there are no demand charges. Some of these costs are recovered in volumetric charges.
- In a rate case, charges are set so utilities have the opportunity to recover all prudently incurred costs, plus a fair return on investment. *Between* rate cases, more net metering means less revenue to cover fixed costs. One possible solution: decouple rates from sales.



Possible Policies for High PV Levels: (1) "Dual Metering"

- Example: Tennessee Valley Authority's "Generation Partners" program pays participants a premium rate for 100% of output from small distributed generation systems
  - Retail rate + $.12/kWh for solar through year-end 2012 (+ $.03/kWh for wind, biomass and small hydro)*
- Customer-generators still pay for 100% of on-site energy use, so there's no erosion of utility revenue.
- TVA uses the renewable energy credits for its voluntary green power program.
- TVA has a "Renewable Standard Offer" for larger systems.

**In 2013, "Generation Providers" will replace this program, with annual review of premiums (but the premium in place at the time of contract execution applies throughout the contract period) and eligible system size reduced from 200 kW to 50 kW.*

Possible Policies for High PV Levels: (2) Bidirectional Charge

- PV customer-generators pay for the full grid when they take electricity from the utility and pay for local distribution when they are surplus and export energy.
  - Costs for *local* distribution facilities serving immediate area are recovered bi-directionally, at same rate up and down, from all users
- Theory: An appropriately set, time-varying net metering rate recognizes that the value of the PV power sent TO the grid may be more valuable than the power taken FROM the grid. So while PV customers pay about the same for the local grid as other customers, they'll get most of that money back by selling high-value power to the grid on peak and can still achieve a near-zero bill.

Example Bill – Residential Customer

Energy use = 1,000 kilowatt-hours
PV production = 1,000 kilowatt-hours
Assumes Critical Peak Pricing

	Residential Customer Without Net Metering	Traditional Net-Metered Residential Customer	Net-Metered Residential Customer With Bidirectional Charge
Energy Charge	**$99**	**0**	**($27.50)**
Delivery Charge	**Local - $20**	**Local - $0**	**Local - $20**
	Network - $10	**Network - $0**	**Network - $5**
Fixed Minimum Monthly Charge	**$5**	**$5**	**$5**
Total	**$134**	**$5**	**$5**

Source: Jim Lazar, RAP senior advisor. Simplified example; actual results will vary with pricing details, the customer's energy use patterns and PV system output. See "Additional Slides" in back for calculations.

Possible Policies for High PV Levels: (3) Feed-in Tariffs/Reverse Auctions

- FITs require utilities to buy electricity from eligible generators under standard prices,* terms and conditions
- Customer-generators still pay for all energy use, so there's no erosion of utility revenue.
- Features that improve value to ratepayers
  - Base standard offer on cost & performance of more cost-effective projects
  - For larger systems, use simple auctions to identify incentive rates needed
  - Start with a pilot that caps total program capacity, costs or both
  - Ration standard offer capacity to discover rates needed to achieve targeted investments and to limit cost impacts (as costs decline over time)
  - Raise the bar on applications to protect against speculation
  - Require utilities to identify locations where PV systems could defer distribution system upgrades and set FIT rates accordingly
  - Transfer renewable energy credits to utility for RPS compliance or sale

*Set high enough to attract the types and quantities of renewable energy desired

About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power and natural gas sectors. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

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Additional Slides

Example Bill – Residential Customer on Critical Peak Pricing Without Net Metering

Basic Rates:				Residential - Grid	
Bulk power				Usage	Cost
Critical		$ 0.50		50	$ 25
On-Peak		$ 0.12		250	$ 30
Mid-Peak		$ 0.08		300	$ 24
Off-peak		$ 0.05		400	$ 20
Total kWh				1,000	$ 99
Network Distribution					
$/kW		$ 4.00			$ -
$/kWh		$ 0.01		1,000	$ 10
Local Distribution					
Down	$/kWh	$ 0.02		1,000	$ 20
Up	$/kWh	$ 0.02			
Billing and Collection		$ 5.00		1	$ 5
Decoupling		+/- ~2%			
Total					$ 134

Customer pays $30 for delivery service

Source: Jim Lazar, RAP senior advisor. “Down” means energy utility delivers to customer; “up” means energy customer exports to utility’s distribution system.

Example Bill – Residential Customer With PV Supplying 100% of Energy Use on Balance in Month With Traditional Net Metering

Basic Rates:				Net-Metering Customer		
Bulk power				Usage	PV Output	Cost
Critical		$ 0.50				$ -
On-Peak		$ 0.12				$ -
Mid-Peak		$ 0.08				$ -
Off-peak		$ 0.05				$ -
Total kWh		$ 0.10		1000	1000	$ -
Network Distribution						
$/kW		$ 4.00				
$/kWh		$ 0.01				$ -
Local Distribution						
Down	$/kWh	$ 0.02				$ -
Up	$/kWh	$ 0.02				$ -
Billing and Collection		$ 5.00				$ 5
Decoupling		+/- ~2%				
Total						$ 5

Customer pays no delivery charges in this simplified example

Source: Jim Lazar, RAP senior advisor

Example Bill – Net-Metered Customer on Bi-Directional Tariff, PV Supplying 100% of Energy Use on Balance in Month

Basic Rates:		Residential PV Customer					
Bulk power		Usage	PV Output	Used on-Site	To Grid	From Grid	Cost
Critical	$ 0.50	50	100	30	(70)	20	$ (25.00)
On-Peak	$ 0.12	250	300	150	(150)	100	$ (6.00)
Mid-Peak	$ 0.08	300	350	150	(200)	150	$ (4.00)
Off-peak	$ 0.05	400	250	170	(80)	230	$ 7.50
Total kWh	$ 0.10	1000	1000	500	-500	500	$ (27.50)
Network Distribution							
$/kW	$ 4.00						
$/kWh	$ 0.01					500	$ 5.00
Local Distribution							
Down $/kWh	$ 0.02					500	$ 10.00
Up $/kWh	$ 0.02				500		$ 10.00
Billing and Collection	$ 5.00				1		$ 5.00
Decoupling	+/- ~2%						
Total							$ 5.00

$25 for delivery service

Source: Jim Lazar, RAP senior advisor. The net-metered customer pays $25 for delivery service, about what the customer would pay without net metering, but offsets most of that cost by exporting energy when it is most valuable to the utility. Example uses critical peak pricing and assumes utility will call sufficient CPP events.