RAP Energy solutions for a changing world

"Designing Distributed Generation Tariffs Well" – Some Tariff/Rate Design Takeaways

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Twelve Main Points of Designing DG Well

- Value is a two (or more) way street
- Consider all relevant sources of benefit and cost over the long term
- Select & implement a valuation method
- Cross-subsidies may flow either way
- Extrapolating from extreme situations is misleading
- Infant industry subsidy tradition

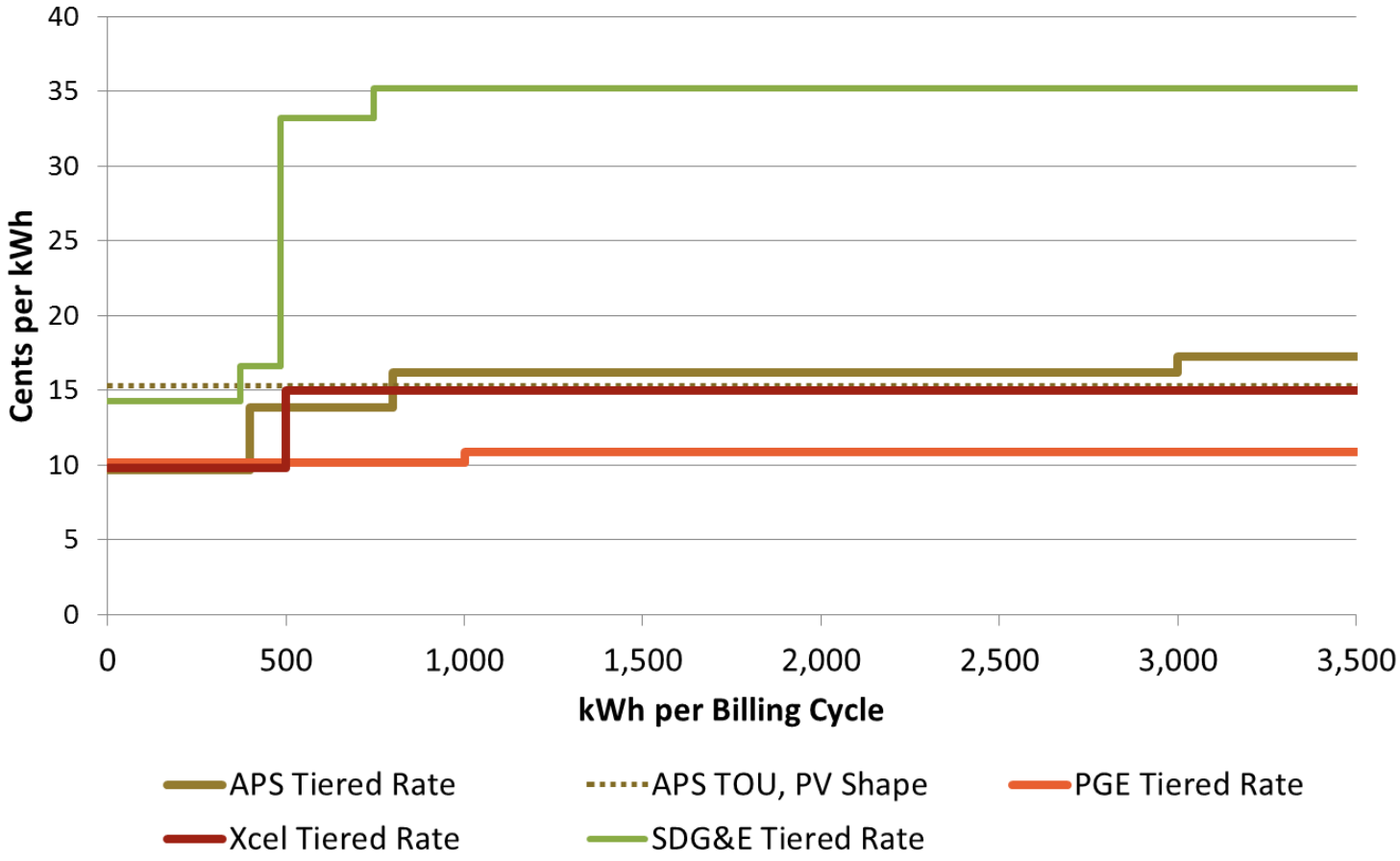
Twelve Main Points

- Rules matter (e.g. interconnection)
- No more complicated than necessary
- Support innovative power sector models
- Keep incentive decision separate from rate design
- Keep decoupling decision separate from rate design
- Consider mechanisms for “have-nots”

Consider: Cross-Subsidies run both ways

- If value of PV < volumetric charges:
  - Other customers subsidize PV customers
  - Under-recovery of utility's fixed costs
  - Upward pressure on rates (cross subsidy)
  - Reduced utility shareholder returns
- If value of PV > volumetric charges:
  - PV customers subsidize other customers
  - Suppresses PV deployment

Consider: Don't Extrapolate from Extremes
Tail Block Rates Vary (E3, 2013)



Takeaways on well-designed tariffs:

- Align valuation with the Public Interest
- Fair value paid for DG services and Grid services
- Tail block rates set at LRMC in most places, forward looking in all places
- Set other tariff and rate design parameters accordingly
- Administrative simplicity matters
- Consider incentives & decoupling separately

Consider: Many Possible Alternative or Supplemental Tariff Policies

- Fixed charges
- Demand charges
- Minimum monthly bills
- Time-based rates
- Stand-by rates
- Two-way rates (i.e., value of solar)
- Separate PV customer class

Illustration of Alternative Rate Designs

Type of Charge	Unit / Usage	Typical Current Residential Tariff	Option 1 Fixed Monthly Charge	Option 2: Demand Charge	Option 3: Bidirectional Distribution Charge
Monthly Fixed Charge:	$/Month	$ 5.00	$ 35.00	$ 5.00	$ 5.00
Demand Charge	$/kW/Month		$ -	$ 3.00	$ -
Distribution Charge	$/kWh		$ -	$ -	$ 0.03
Off-Peak Energy	$/kWh	$ 0.145	$ 0.08	$ 0.08	$ 0.08
On-Peak Energy	$/kWh	$ 0.145	$ 0.15	$ 0.15	$ 0.15
Average Customer Bill					
Fixed Charge	Per Customer	$ 5.00	$ 35.00	$ 5.00	$ 5.00
Demand Charge	10 kW Demand	$ -	$ -	$ 30.00	$ -
Distribution Charge	1,000 kwh total energy	$ -	$ -	$ -	$ 30.00
Off-Peak Energy	500 kWh on-peak	$ 72.50	$ 40.00	$ 40.00	$ 40.00
On-Peak Energy	500 kWh off-peak	$ 72.50	$ 75.00	$ 75.00	$ 75.00
		$ 150.00	$ 150.00	$ 150.00	$ 150.00

Each alternative produces $150/month from a customer using 1,000 kWh/month

Breakdown of Hypothetical PV Customer Bill

Rate Element	Typical Current Residential Tariff	Option 1 Fixed Monthly Charge	Option 2: Demand Charge	Option 3: Bidirectional Distribution Charge
Fixed Charge	$ 5.00	$ 35.00	$ 5.00	$ 5.00
Demand Charge	$ -	$ -	$ 30.00	$ -
Distribution Charge	$ -	$ -	$ -	$ 30.00
Off-Peak Energy	$ 72.50	$ 40.00	$ 40.00	$ 40.00
On-Peak Energy	$ (72.50)	$ (75.00)	$ (75.00)	$ (75.00)
Total Bill:	$ 5.00			
Total Distribution Service:	$ 5.00	$ 35.00	$ 35.00	$ 35.00

Assumptions: 10 kW maximum demand; 1,000 kWh total consumption, 50% on-peak; 1,000 kWh total on-site production. 500 kWh imported from grid off-peak; 500 kwh exported to grid on-peak

Fixed Charges disproportionately affect Low Volume Customers

Type of Charge	Unit / Usage	Typical Current Residential Tariff	High Fixed Charge	Demand Charge	Bidirectional Distribution Charge
Monthly Fixed Charge:	$/Month	$ 5.00	$ 35.00	$ 5.00	$ 5.00
Demand Charge	$/kW/Month		$ -	$ 3.00	$ -
Distribution Charge	$/kWh		$ -	$ -	$ 0.03
Off-Peak Energy	$/kWh	$ 0.145	$ 0.08	$ 0.08	$ 0.08
On-Peak Energy	$/kWh	$ 0.145	$ 0.15	$ 0.15	$ 0.15

Impact on Customer Average Bills	Average User (1,000 kWh)	$ 150.00	$ 150.00	$ 150.00	$ 150.00
	Small Use (500 kWh) Bill:	$ 77.50	$ 92.50	$ 77.50	$ 77.50
	PV Customer Total Bill	$ 5.00	$ -	$ -	$ -
	PV Customer Distribution	$ 5.00	$ 35.00	$ 35.00	$ 35.00

Consider: Sound Decision-making benefits all

- For consumers: Keep more $$, Quality
- For utilities: Corporate health, purpose
- For investors: Safety, value, expectations
- For employees: safety and welfare, pride
- For the regulatory process: confidence
- For society: key role for power in society

A process that promotes shifting risk rather than minimizing risk is inherently unstable

In Fact, though often not in appearance,

- Consumer, Utility, Third Party and Investor interests are intertwined
- All are served by strategies that promote fair compensation for each party that provides services
- **But who advocates for this societal perspective?**

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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Designing DG Tariffs Well:
http://www.raponline.org/document/download/id/6898

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