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PA's Solar Future: Alternative Ratemaking and Rate Design

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Organizational Background

The Keystone Energy Efficiency Alliance (KEEA) is a non-profit, tax-exempt 501(c)(6) corporation dedicated to promoting the energy efficiency and renewable energy industries in Pennsylvania.

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Changing Utility Industry

3 Major Drivers of Change in the Utility Industry:

1. Advances in technology
2. Public policy goals
3. Environmental regulations

Result:

1. New and different costs
2. Changes in how customers interact with the grid
3. Flat or declining energy consumption
   - 0.44% annual load growth projected through 2019
   - Declining load growth in residential and commercial sectors
   - Efficiency and Distributed Energy Resources (DERs) both play a role

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Growing Pains

Traditional ratemaking and rate-design does not sufficiently encourage the development and deployment of advanced energy resources

Advanced energy resources provide a number of benefits:

1. Energy System Benefits
2. Ratepayer Benefits
3. Societal Benefits

However, utilities may face financial disincentives to investment

1. Programs add additional expenses
2. Successful programs and technology deployment may reduce and/or destabilize revenues
3. Policies that are easiest to implement may not incentivize innovation on the customer side of the meter

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Timeline of Recent Activity

February 2016-PECO and PPL hold collaboratives on alternative ratemaking, namely how revenue decoupling may reduce the disincentive to pursue energy efficiency

March 2016- PUC holds *en banc* hearing on alternative ratemaking, solicits testimony and comments from stakeholders.

March 2017-PUC issues expanded order seeking comment on broad array of ratemaking and rate design methodologies.

July 31 2017- Most recent rounds of stakeholder comments are submitted to PUC.

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What was Discussed?

- Revenue Decoupling
- Lost Revenue Adjustment Mechanisms
- Performance Incentives
- Performance Based Ratemaking
- Demand Charges
- Time-of-Use rates
- Increased Fixed Charges
- Straight Fixed Variable Rate Design
- Multi-Year Rate Plans
- Value of Solar

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KEEA's Suggested Approach

- **Revenue Decoupling**
  - Remove disincentives that utilities have to invest in EE and other technologies
  - Keep rate volumetric for rate-payers
- **Performance Incentives**
  - Reward utilities for Performance, not investment, in meeting several different performance metrics
- **Time-of-Use rates**
  - Best manifestation of cost-causation principles
  - Assists with peak reduction
  - How it interacts with net-metering depends on when the on-peak period is
- **Keep Rates Volumetric**
  - Reject rate-designs that would strip customer control over bills, reduce the incentive for innovative technologies, and disproportionally impact low-usage and low-income customers.

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Contact Information

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PUC Docket on Alternative Ratemaking:
http://www.puc.state.pa.us/about_puc/consolidated_case_view.aspx?Docket=M-2015-2518883

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PA Solar Future: Alternative Ratemaking Webinar

Presented by: Alan Cohn
Manager Regulatory Strategy
PECO Energy

August 23, 2017

Background

- ✓ On March 3, 2016, the Commission held an en banc hearing to seek information on the efficacy and appropriateness of alternatives to traditional ratemaking principles for public utilities
- ✓ These topics inquired:
  - whether revenue decoupling or other similar rate mechanisms encourage energy utilities to better implement energy efficiency and conservation programs
  - whether such rate mechanisms are just and reasonable and in the public interest
  - whether the benefits of implementing such rate mechanisms outweigh any associated costs
- ✓ On March 2, 2017, the Commission adopted a Tentative Order continuing its investigation into Alternative Ratemaking Methodologies. The Order also requests comments on questions specifically targeted to each utility industry
  - ✓ Comments are due May 31, 2017and reply comments are due July 31, 2017
- ✓ The Commission seeks additional comments on the reasonableness and efficacy of EDCs/NGDCs utilizing alternative rate methodologies
  - Commissioner Place's statement had specific proposals for electric and gas for which he is seeking comments; This includes 29 specific questions to respond to on the proposals split between the electric and gas proposals

General Principles

- ✓ Rates should reflect cost causation (Fairness)
- ✓ Customer impacts should be minimized or gradual
- ✓ A balanced approach to penalties and incentives should be taken for PBR
- ✓ Utilities should be given flexibility on what to propose, others could then offer input
- ✓ Legislation should be pursued where Commission authority is unclear

Suggested Approach

- ✓ Revenue per customer decoupling model
  - Established in a base rate case
  - Periodic true-ups
  - Remove disincentives associated with EE, DER, and other new technologies
- ✓ Movement toward cost based rates
  - Cost based fixed charge rate
- ✓ Separate rate for net metered customers to reflect the unique load shape of the class of customers
  - Solar customers have no or low load during the day but higher load in the evening
  - Not allowed under current statutes

Alternative Approach

- ✓ Buy All / Sell All
  - Solar customer would buy all its energy needs from the utility and sell all of the output from the solar unit
- ✓ Utility would receive compensation for its costs and the customer would receive compensation for the solar output
- ✓ Raises the issue of the Value of Solar and its components and appropriate recovery mechanism for the cost
  - GSA, Base Rates, other surcharge
- ✓ Other states have started down this path and as always, the devil is in the details (e.g what is the value of solar?)

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Other key points

- ✓ Process should be utility initiated
  - There should be no penalties for adopting an alternative ratemaking methodology (eg. ROE reduction)
- ✓ Rate fairness should be emphasized to send proper price signals and avoid cross-subsidization
- ✓ Avoid overly complex proposals
  - PIM should have clear achievable goals
  - TOU rates require careful design

Conclusion

- ✓ The Commission as well as others recognize that the current regulatory paradigm will be changing as DER and EE expand.
- ✓ A deliberative approach to alternative ratemaking that recognizes the needed regulatory and legislative changes is appropriate.

The Value of Solar

Karl R. Rábago

Pace Energy and Climate Center

Everything we can find about the Value of Solar is at http://voscoe.pace.edu

Solar Market Policy in the Northeast: the Solar Coalition http://nesemc.com

The Ideal Distributed Solar Tariff

- Fair to the utility and non-solar customers
- Fair compensation to the solar customer
- Decouple compensation from incentives
- Align public policy goals (e.g., decouple compensation from consumption)
- Intuitively sound and administratively simple

Historical Antecedents

- PURPA (US Public Utility Regulatory Policy Act of 1978)
- Externalities
- Price ≠ Cost≠ Value
- Green Power
- *Small Is Profitable* (http://www.smallisprofitable.org/)
- Local Integrated Resource Planning

Real Issues with Traditional Net Metering

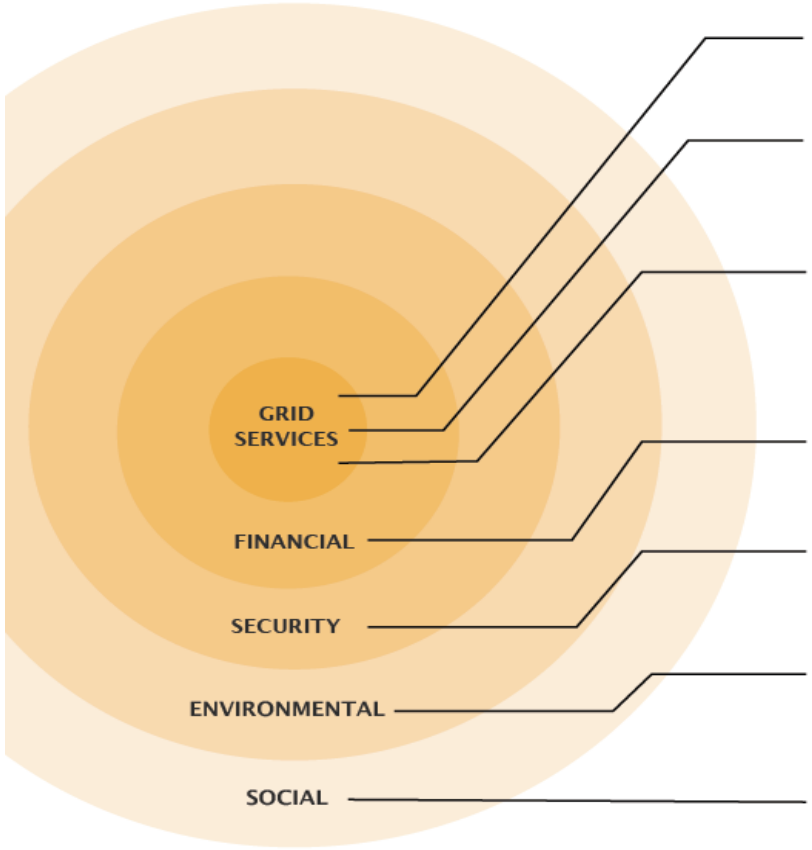
- PURPA legacy
- No direct relationship between retail rates and solar value
- *Accounting* under-recovery for the utility
- Impacts between rate cases (accounting, forecasting, regulatory lag, historic test year)
- Under-compensation for solar offset & excess energy
  - Reduces optimal investment size
  - Encourages consumption during periods of solar production
- Monthly true-up leads to sub-optimal system size; sub-optimal investment per install
- Perverse results with tiered or time-of-use rates

Solar Value: Analysis-Based

BENEFIT & COST CATEGORIES

Lab Electricity Innovation Lab ROCKY MOUNTAIN INSTITUTE

For the purposes of this report, **value is defined as net value, i.e. benefits minus costs.** Depending upon the size of the benefit and the size of the cost, value can be positive or negative. A variety of categories of benefits or costs of DPV have been considered or acknowledged in evaluating the value of DPV. Broadly, these categories are:



ENERGY
- energy
- energy losses

CAPACITY
- generation capacity
- transmission & distribution capacity
- DPV installed capacity

GRID SUPPORT SERVICES
- reactive supply & voltage control
- regulation & frequency response
- energy & generator imbalance
- synchronized & supplemental operating reserves
- scheduling, forecasting, and system control & dispatch

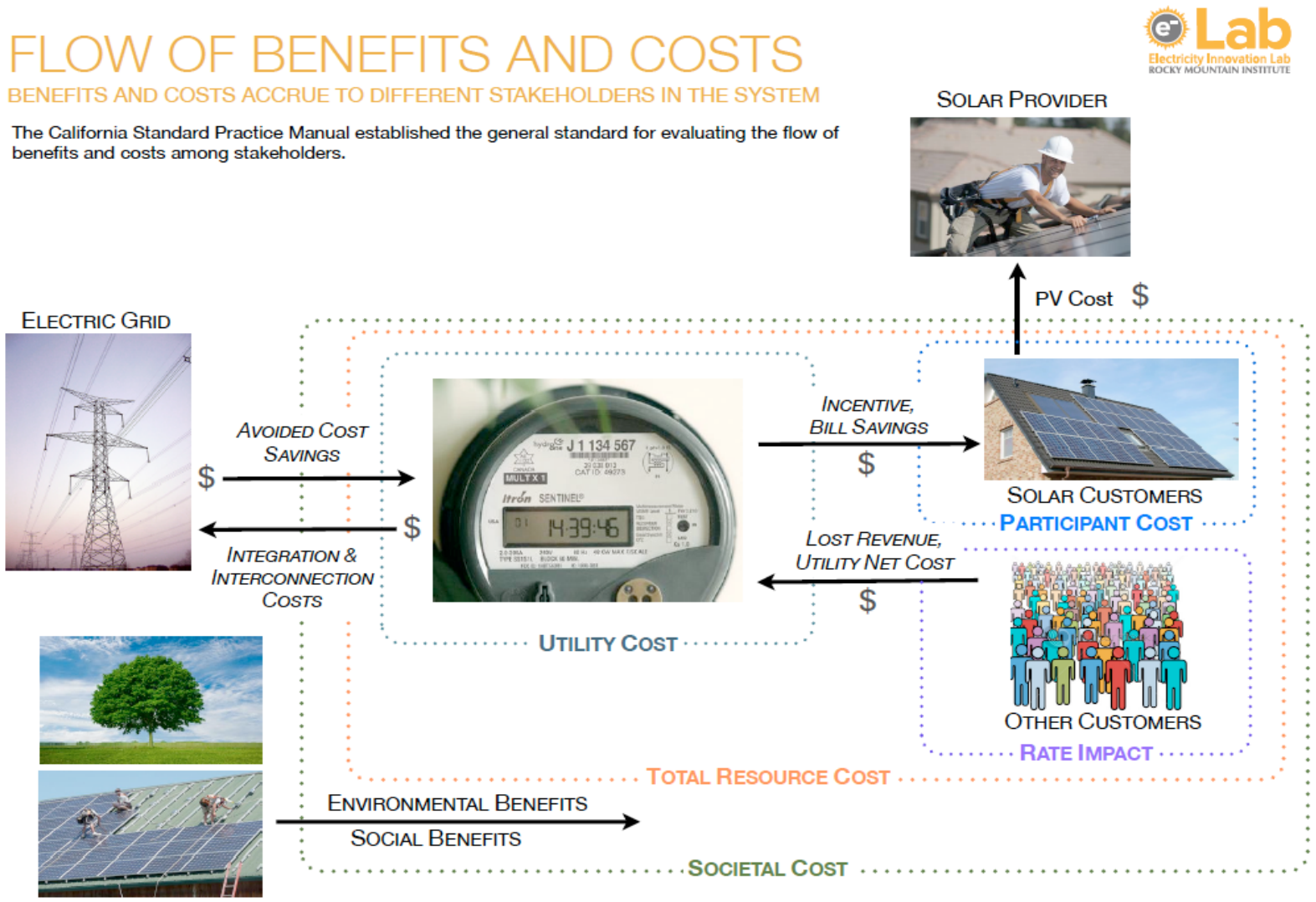
FINANCIAL RISK
- fuel price hedge
- market price response

SECURITY RISK
- reliability & resilience

ENVIRONMENTAL
- carbon emissions
- criteria air pollutants (SOx, NOx, PM10)
- water
- land

SOCIAL
- Economic development (jobs and tax revenues)

Solar Value: Analysis-Based



Major Benefits of VOS Approach

- Reduces or eliminates arguments about class subsidies
- Complements efficiency programs
- Frequent adjustment reduces over- or under- payment as utility costs change
- Better aligns with sound rate making principles
- Reduces simple payback; reduces pressure on incentives
- No less financeable than net metering
- No reasonable risk of tax consequences

Maine Value of Solar Study

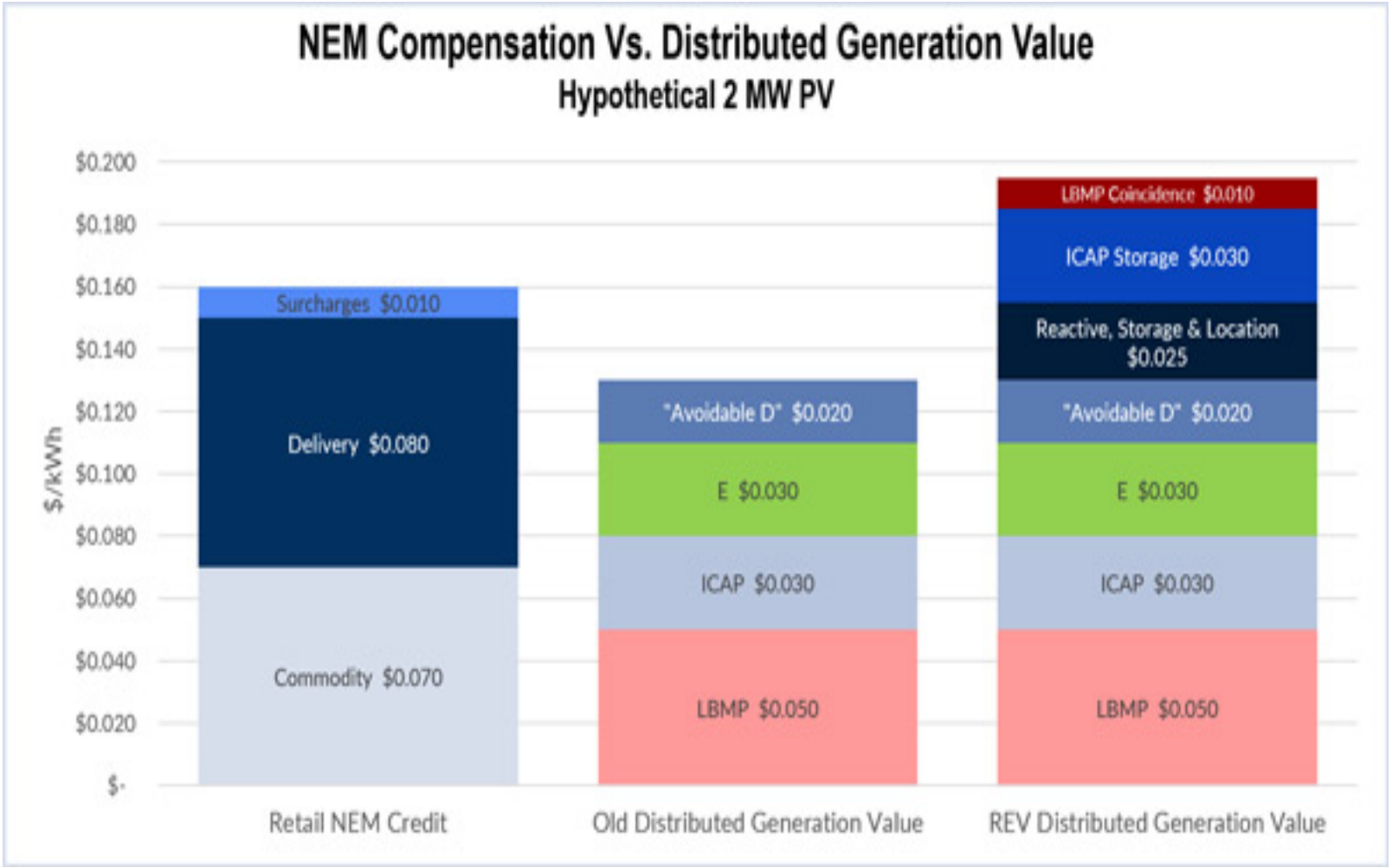
Figure ES- 2. CMP Distributed Value – 25 Year Levelized ($ per kWh)

25 Year Levelized		Gross Value A ($/kWh)	×	Load Match Factor B (%)	×	Loss Savings Factor (1+C) (%)	=	Distr. PV Value D ($/kWh)	
Energy Supply	Avoided Energy Cost	$0.076				6.2%		$0.081	Avoided Market Costs $0.138
	Avoided Gen. Capacity Cost	$0.068		54.4%		9.3%		$0.040	
	Avoided Res. Gen. Capacity Cost	$0.009		54.4%		9.3%		$0.005	
	Avoided NG Pipeline Cost								
	Solar Integration Cost	($0.005)				6.2%		($0.005)	
Transmission Delivery Service	Avoided Trans. Capacity Cost	$0.063		23.9%		9.3%		$0.016	
Distribution Delivery Service	Avoided Dist. Capacity Cost	*Placeholder, Utility Data Not Available, or No Planned System Investments*							
	Voltage Regulation								
Environmental	Net Social Cost of Carbon	$0.020				6.2%		$0.021	Societal Benefits $0.199
	Net Social Cost of SO_2	$0.058				6.2%		$0.062	
	Net Social Cost of NO_x	$0.012				6.2%		$0.013	
Other	Market Price Response	$0.062				6.2%		$0.066	
	Avoided Fuel Price Uncertainty	$0.035				6.2%		$0.037	
								$0.337	

Gross Values represent the value of perfectly dispatchable, centralized resources. These are adjusted using

- Load Match Factors to account for the non-dispatchability of solar; and
- Loss Savings Factors to account for the benefit of avoiding energy losses in the transmission and distribution systems.

NY Value of DER – Exports Only



Beyond Value of Solar

A Foundation for New Rates that Reduce Subsidies, Support Innovation, and Target Investments

- Value of Storage - Stationary, and soon, the electric vehicle kind (operating in V-to-Grid settings)
- Value of Smarts - smart inverters, home, local grids, substations and feeders
- Value of Security - smart, self-healing, storm-resistant, secure grids and micro grids
- Value of Savings - customer or utility controlled curtailable and shape-able loads interacting in dynamic curtailment markets

Thanks!

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