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Utility Solar Business Models in a Time of Transition

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Agenda

- Fair Compensation in a Time of Transition
- Fair Compensation for DG
- Fair Compensation for Large Scale Solar
- The Impact of Solar on Utilities
- Utility DG Models

Fair Compensation in a Time of Transition

- Technology is making customer resources less expensive & enabling customer resource participation
- Large scale renewables are becoming competitive
- Power sector institutions are evolving
- What constitutes fair compensation in a time of transition?

Fair Compensation for ...

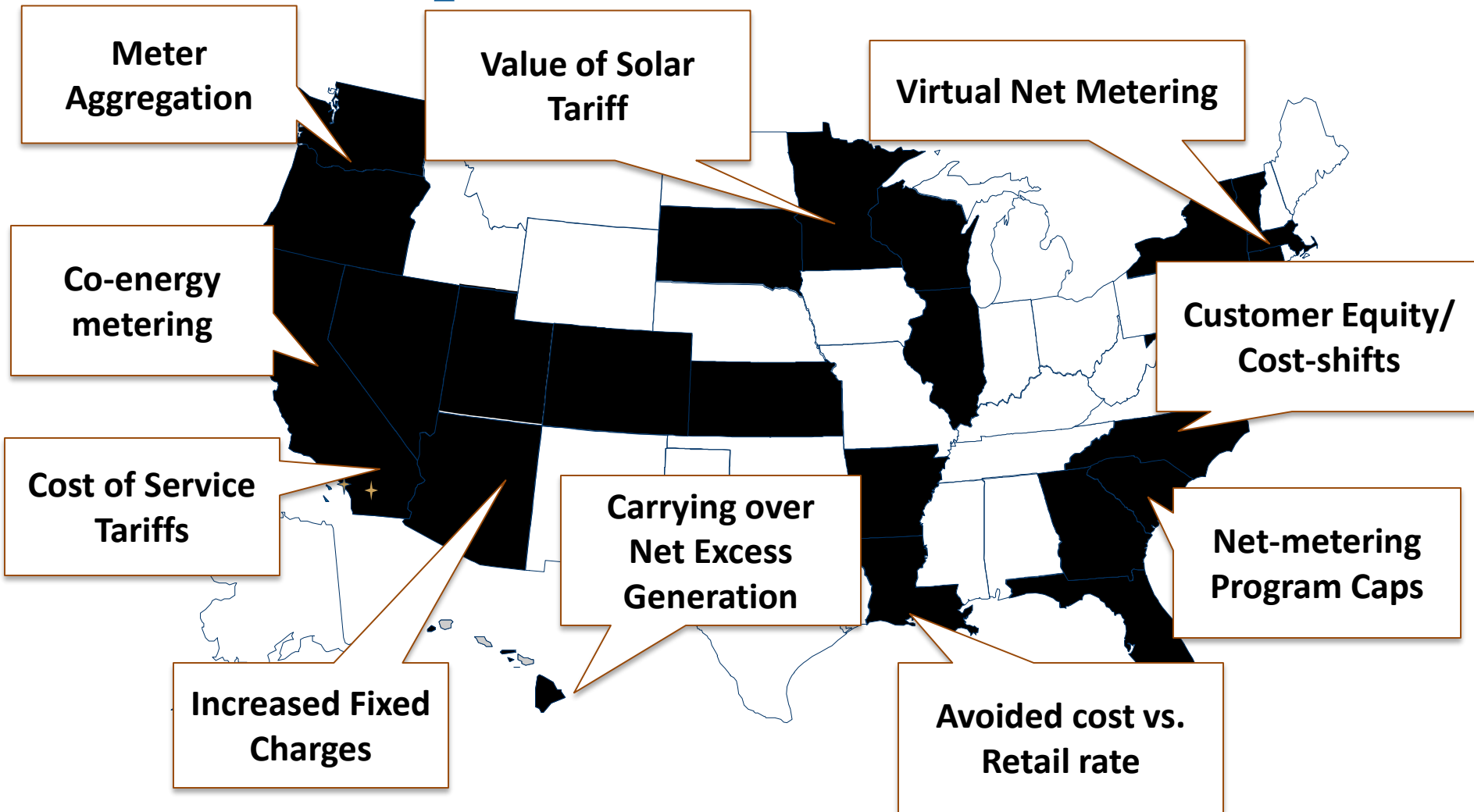
- the solar investor
- all customers; participating, non-participating and “have-nots”
- the utility providing grid services
- third party generation & service providers

In a Time of Transition, as Always, 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 managing risk is inherently unstable

DG Compensation Question is Active



■ Legislative or regulatory activity on net metering or value of solar

See [Regulatory Considerations Associated with High Adoption Rates of Solar \(NREL/RAP\)](#)

Twelve Observations on Fair Compensation for DG

1. Value is a two (or more) way street
2. Consider all relevant sources of benefit and cost over the long term
3. Select & implement a valuation method
4. Cross-subsidies may flow either way

Consider: Cross-Subsidies Run Both Ways

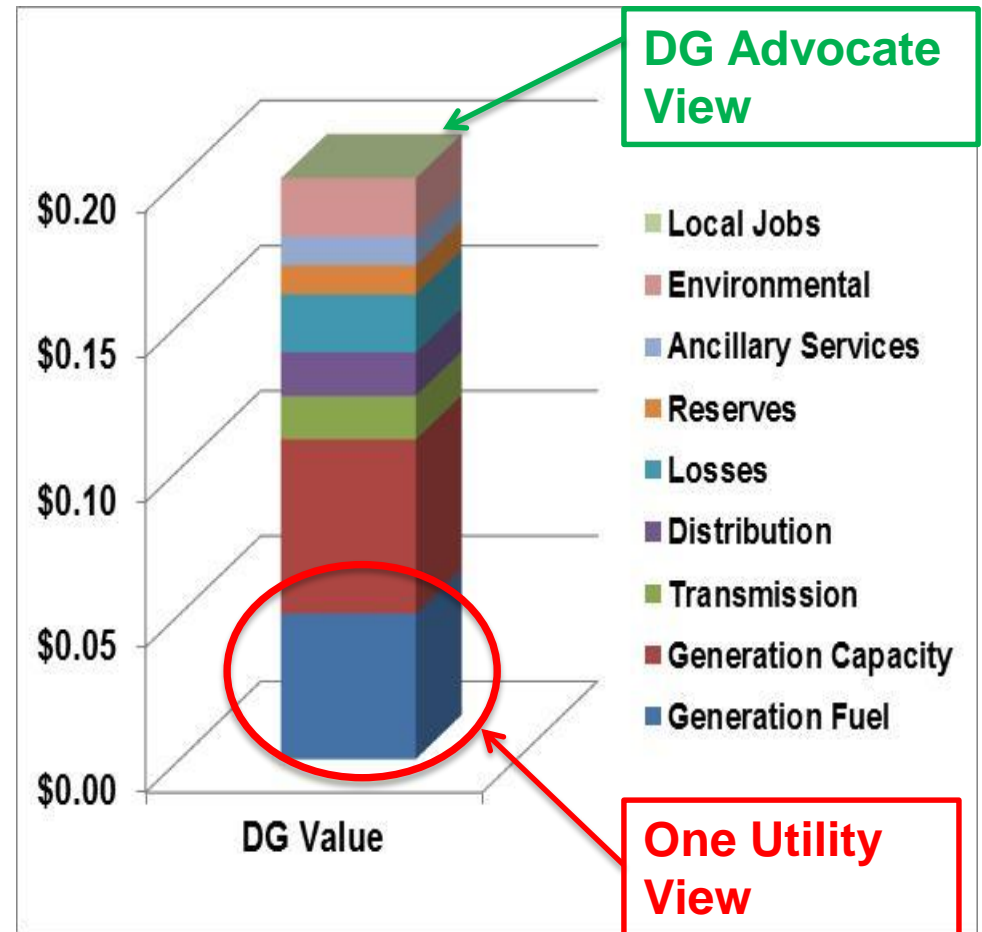
- If value of PV $<$ compensation:
 - Other customers subsidize PV customers
 - Under-recovery of utility's fixed costs
 - Upward pressure on rates (cross subsidy)
 - Reduced utility shareholder returns
- If value of PV $>$ compensation:
 - PV customers subsidize other customers
 - Suppresses PV deployment

Value of Solar Tariff (VOST)

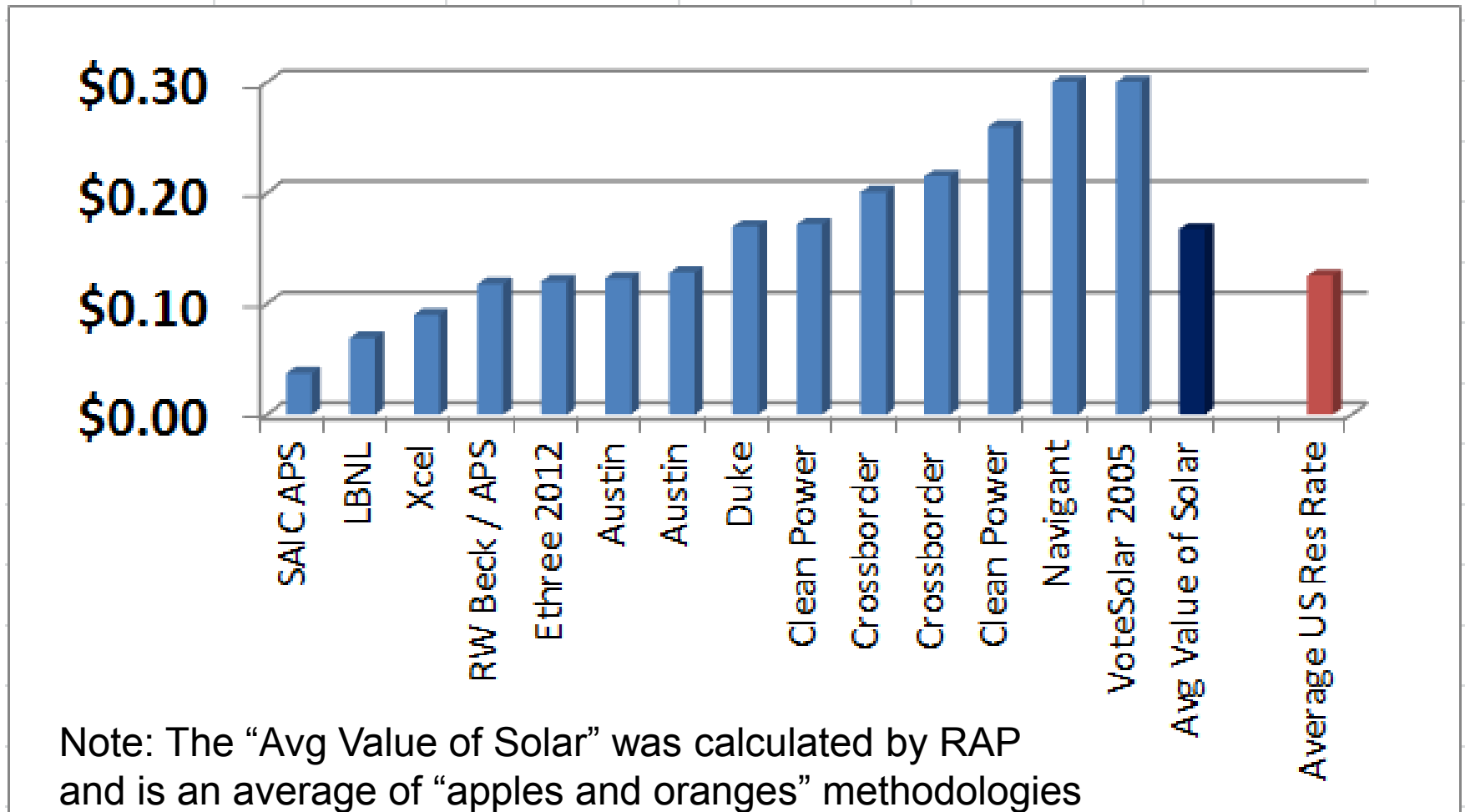
A Form of Feed-In Tariff

Customer receives “value” for energy, capacity, and other services solar provides.

Consumer buys all power at normal retail rate.



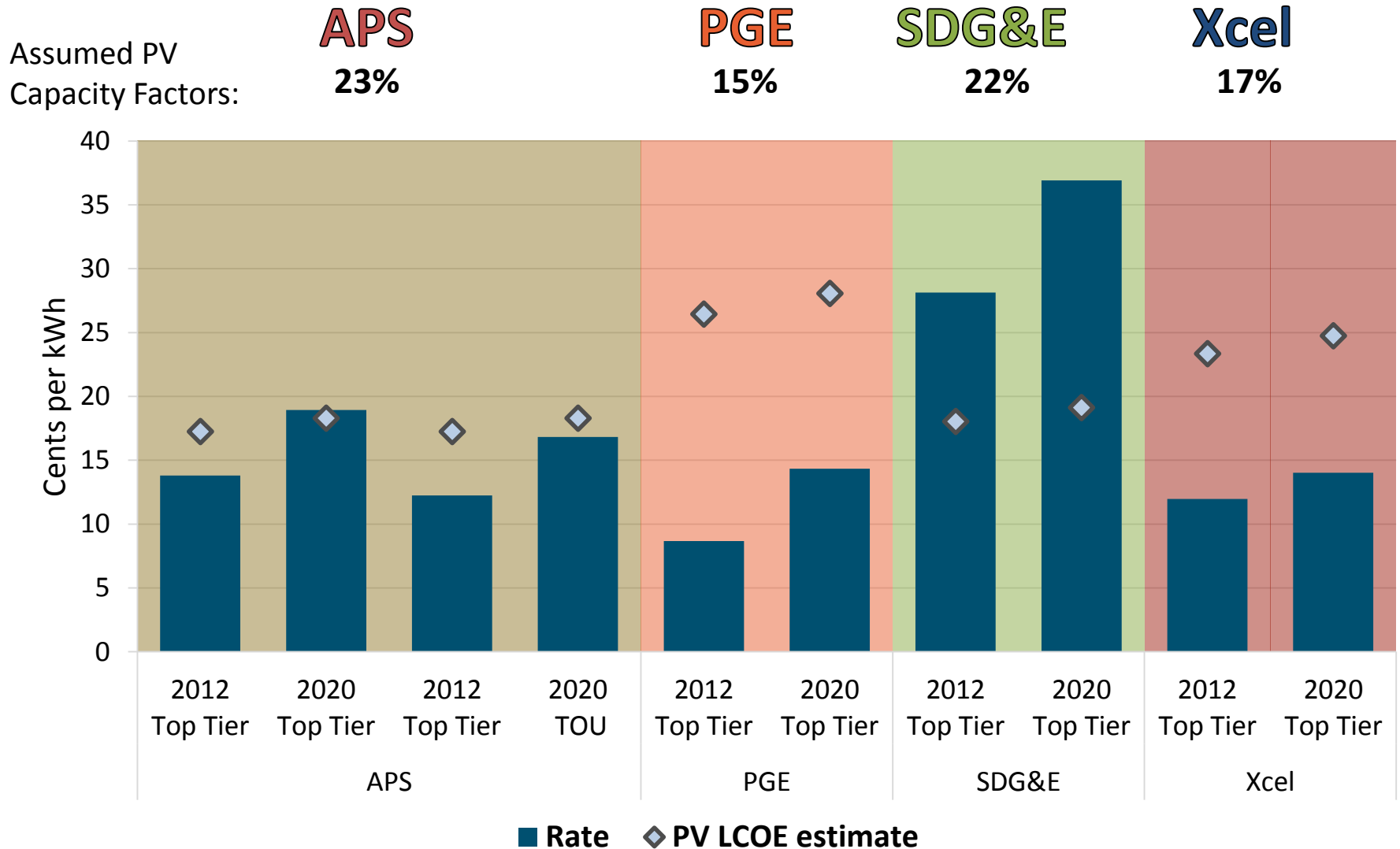
RMI Survey Of Multiple VOST Studies: Simple Average: **\$.1672/kWh**



Observations on DG ...

5. Extrapolating from extreme situations is misleading
6. Infant industry subsidy tradition
7. Rules matter (e.g. interconnection)
8. No more complicated than necessary

Tail blocks and value vary (E3, 2013)



Observations on DG ...

9. Support innovative power sector models
10. Keep incentive decision separate from rate design
11. Keep decoupling decision separate from rate design
12. Consider mechanisms for “have-nots”

Fair Compensation for Large Scale Solar (LSS)

- Sources of Value for LSS (PV & CSP)
 - System Benefits (capacity/energy/capabilities)
 - Capabilities? Active Controls & Storage
 - Portfolio Value
 - Cost/Risk Trade-offs among Technologies
- Relative Cost of LSS to PV DG?
 - LSS (PV) vs. Rooftop?
 - LSS (PV) vs. Community Solar DG?
 - CSP vs. PV DG?

The Impact of Solar on Utilities

- **Risks**

 - Lost revenues

 - Lost investment opportunities

 - Evolve late

- **Opportunities**

 - Infrastructure investment

 - Generation investment (LSS, DG)

 - New service provision

 - Evolve early

Utility DG Ownership/Management Options

Utility-owned DG Solar

- Utility owns and maintains DG solar systems
- Utility pays rent to building owners
- Utility earns rate of return on investments
- Utility earns revenue from sale of electricity from systems

Virtual Power Plant Operator

- The role of the utility shifts to the management of the distribution system.
- The utility aggregates generation from many distributed units on its system, using demand-side management and smart grid technologies to help balance load and relieve congestion.

Models Requiring Subsidiaries

Utility investment in 3rd Party Leasing

- Utility invests in 3rd party solar leasing companies
- Utility provides customer connections and name recognition
- Utility owns assets and recovers investment costs and rate of return
- 3rd party provider compensated for development and maintenance
- Utility includes the DG as a supply in resource planning

Value Added Consulting Services

- Utilities provide customers with comprehensive energy consulting and services, including:
 - ✧ Energy efficiency
 - ✧ Distributed generation
 - ✧ Demand-side management
 - ✧ Connection with vendors
 - ✧ Coordination/site-management
 - ✧ On-bill financing
 - ✧ Energy education

A Few Take Aways

- The transition is driven by external forces
- Fair value DG is an N-way proposition
- Fair value for LSS includes energy/capacity/capabilities
- Solar offers risks and opportunities
- Alternative utility DG models exist

Resources:

Designing DG Tariffs Well, RAP (Linvill, Shenot & Lazar)

<http://www.raonline.org/document/download/id/6898>

Regulatory Considerations Associated with the Expanded Adoption of Distributed Solar, NREL (Bird, McLaren & Heeter) & RAP (Linvill, Sedano & Migden-Ostrander)

<http://www.nrel.gov/docs/fy14osti/60613.pdf>

The Full Value of Energy Efficiency, RAP (Lazar & Colburn)

<http://www.raonline.org/document/download/id/6739>

Rocky Mountain Institute (RMI), *A Review of Solar PV Benefit & Cost Studies, 2nd Edition*

[http://www.rmi.org/Knowledge-Center/Library/2013-13_eLab - DER Benefit Cost Deck 2nd Edition 130903](http://www.rmi.org/Knowledge-Center/Library/2013-13_eLab-DER_Benefit_Cost_Deck_2nd_Edition_130903)

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.raonline.org

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