Net Metering and Fixed Utility Costs Panel

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Electricity Markets and Policy Group

Western Conference of Public Service Commissioners
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Panel Format

- Moderator remarks and introductions (10 min)
- Moderated discussion among panelists (45 min)
- Q&A with conference participants (20 min)

Future Electric Utility Regulation Series

- A new series of reports from Lawrence Berkeley National Laboratory taps leading thinkers to grapple with complex regulatory issues for electricity
- Unique point-counterpoint approach highlights different views on the future of electric utility regulation and business models and achieving a reliable, affordable and flexible power system
- Primary funder: DOE Office of Electricity Delivery and Energy Reliability, National Electricity Delivery Division
- Reports published or underway:
  1. *Distributed Energy Resources (DERs), Industry Structure and Regulatory Responses*
  2. *Distribution Systems in a High DER Future: Planning, Market Design, Operation and Oversight*
  3. *Performance-Based Regulation in a High DER Future*
  4. *Distribution System Pricing for DERs* (webinar on May 31)
  5. ***Recovery of Utility Fixed Costs: Utility, Consumer, Environmental and Economist Perspectives* – a topic of today's panel**
  6. *Future of Resource Planning*
- Additional reports forthcoming: **feur.lbl.gov**
- Expert advisory group ("Additional Slides")

FUTURE ELECTRIC
Utility Regulation

Report #5 - Recovery of Utility Fixed Costs

- Mechanisms featured
  - Higher fixed charges
  - Minimum bills
  - Demand charges
  - Time-varying rates
  - Tiered rates
  - Revenue decoupling
  - Lost revenue adjustment mechanisms
  - Frequent rate cases
  - Formula rate plans
- Four perspectives
  - **Utility** - Lisa Wood, Institute for Electric Innovation, and Ross Hemphill, RCHemphill Solutions (former ComEd VP)
  - **Consumer** - John Howat, National Consumer Law Center
  - **Environmental** - Ralph Cavanagh, Natural Resources Defense Council
  - **Economist** - Severin Borenstein, University of California, Berkeley
- Literature review by Jeff Deason and Lisa Schwartz, LBNL
- Expected release in June: feur.lbl.gov (webinar to follow)

Four Perspectives on Fixed Cost Recovery

	Wood/Hemphill (utility)	Howat (consumer)	Cavanagh (environmental)	Borenstein (economist)
Higher fixed charges	◓	○	○	◓[1]
Minimum bills	○	●	●	○
Demand charges	◓	○	◓[2]	○
Time-varying rates	○	●	●	●[3]
Tiered rates	○	●	●	○
Revenue decoupling	○	●[4]	●[5]	○
Frequent rate cases	◓[6]	◒	○	○
Formula rate plans	●	◓[7]	◓	○
Lost revenue adjustment mechanisms	○	○	○	○

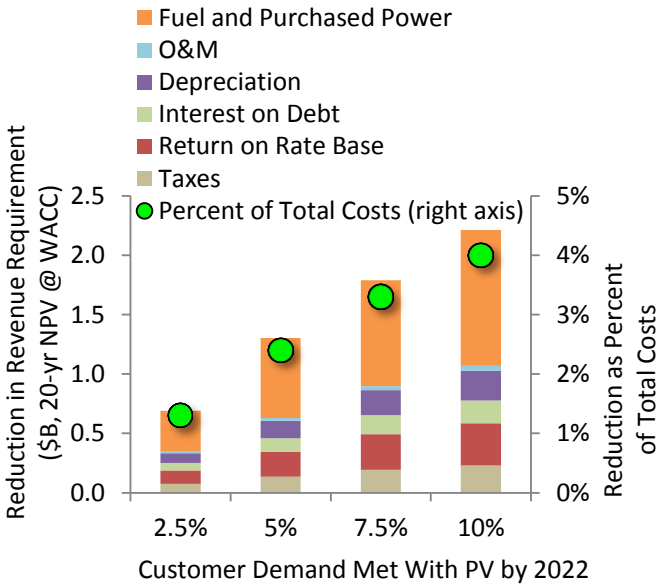
○ Poor ◒ Better ◓ Good ● Preferred

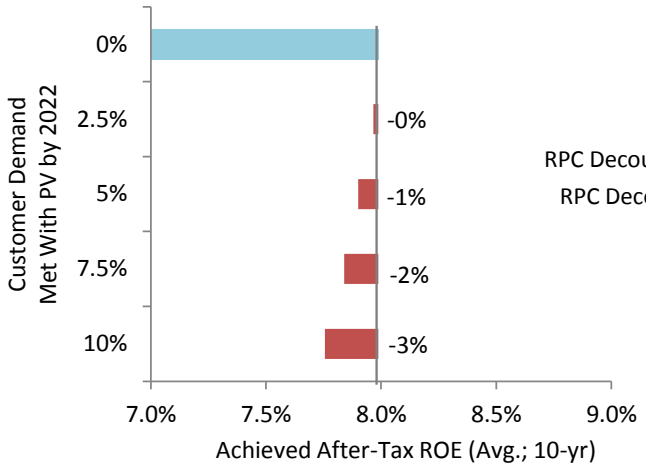
[1] First set volumetric price to reflect actual social marginal costs, including costs of externalities whether or not the utility has to pay those costs.
[2] Linked to periods of coincident peak and subject to negotiated resolution of important technical issues.
[3] Reflecting full social marginal cost, with the remaining revenue requirement balanced between higher volumetric rates and higher fixed charges.
[4] Assuming a number of safeguards are implemented (see report).
[5] Necessary but not sufficient.
[6] In combination with a formula rate plan and only for setting revenue requirement; rate design issues to be addressed less frequently (e.g., every three years).
[7] Implementation of formula rates should not deny utility customers and other stakeholders the ability to periodically review and litigate a utility's cost structure.

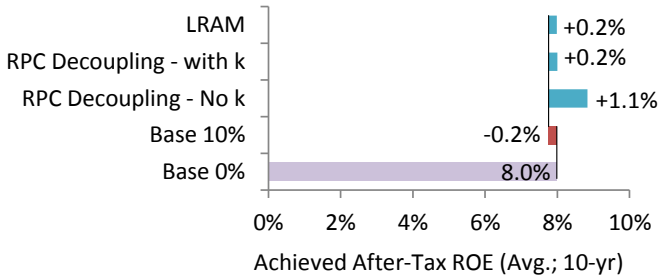
EMP

Other Berkeley Lab Reports on Net Metering and Fixed Cost Recovery

Financial Impacts of Net-Metered PV on Utilities and Ratepayers







Net-metered PV reduces fuel and non-fuel utility costs

Utilities' achieved earnings and ROE decrease as net-metered PV penetration increases

Existing ratemaking and regulatory approaches can mitigate some or all negative financial impacts to utilities

Prototypical southwest utility results shown. https://emp.lbl.gov/publications/financial-impacts-net-metered-pv

- Analysis of financial impacts of a combined energy efficiency and net-metered PV portfolio on prototypical northeast and southwest utilities – Coming fall 2016

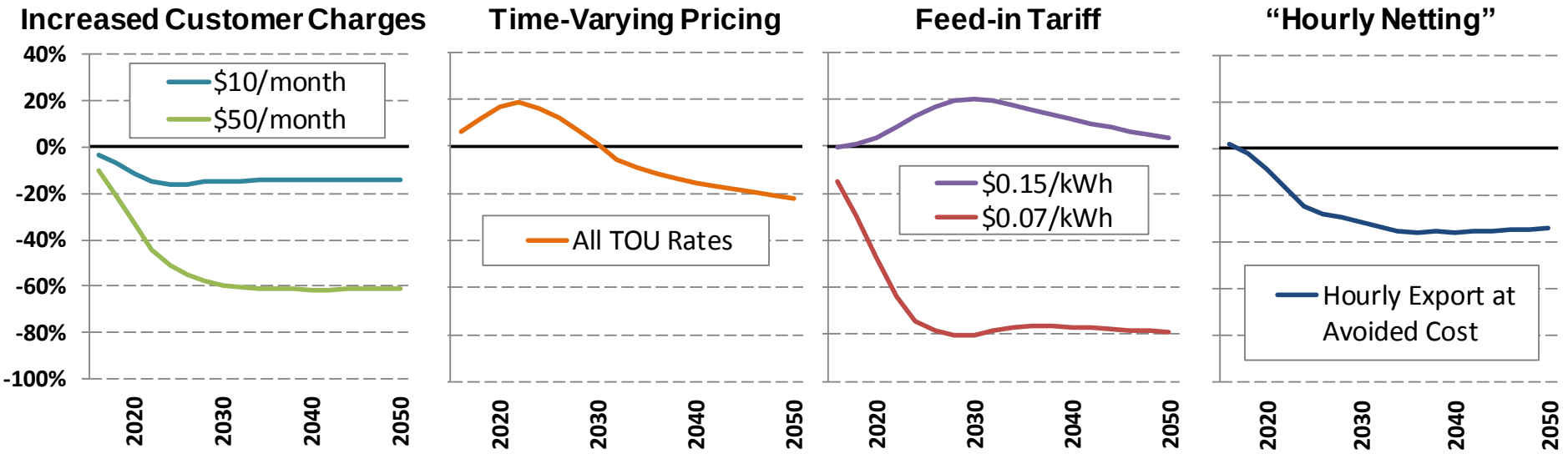
How Might Rate Reforms Affect DG-PV Growth?

Net Metering and Market Feedback Loops: Exploring the Impact of Retail Rate Design on Distributed PV Deployment

- Modeled distributed PV deployment under various rate and NEM reform scenarios
- Compared to a reference case that maintains current retail rate structures and NEM rules; results below are for U.S. as a whole through 2050

https://emp.lbl.gov/publications/net-metering-and-market-feedback-0

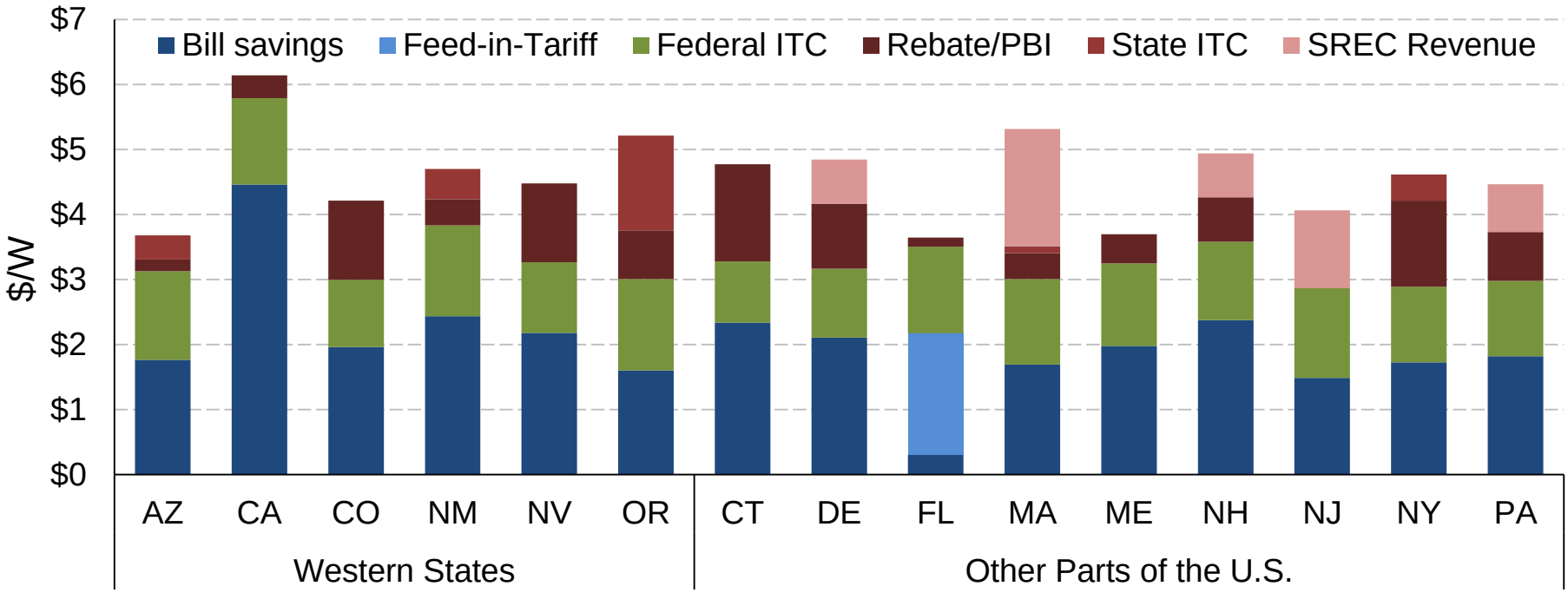
Percent Change in Residential DG-PV Deployment Relative to Reference Case



Benefit Streams for Residential PV

Tracking the Sun: Data for Systems Installed in 2013 (Select States)

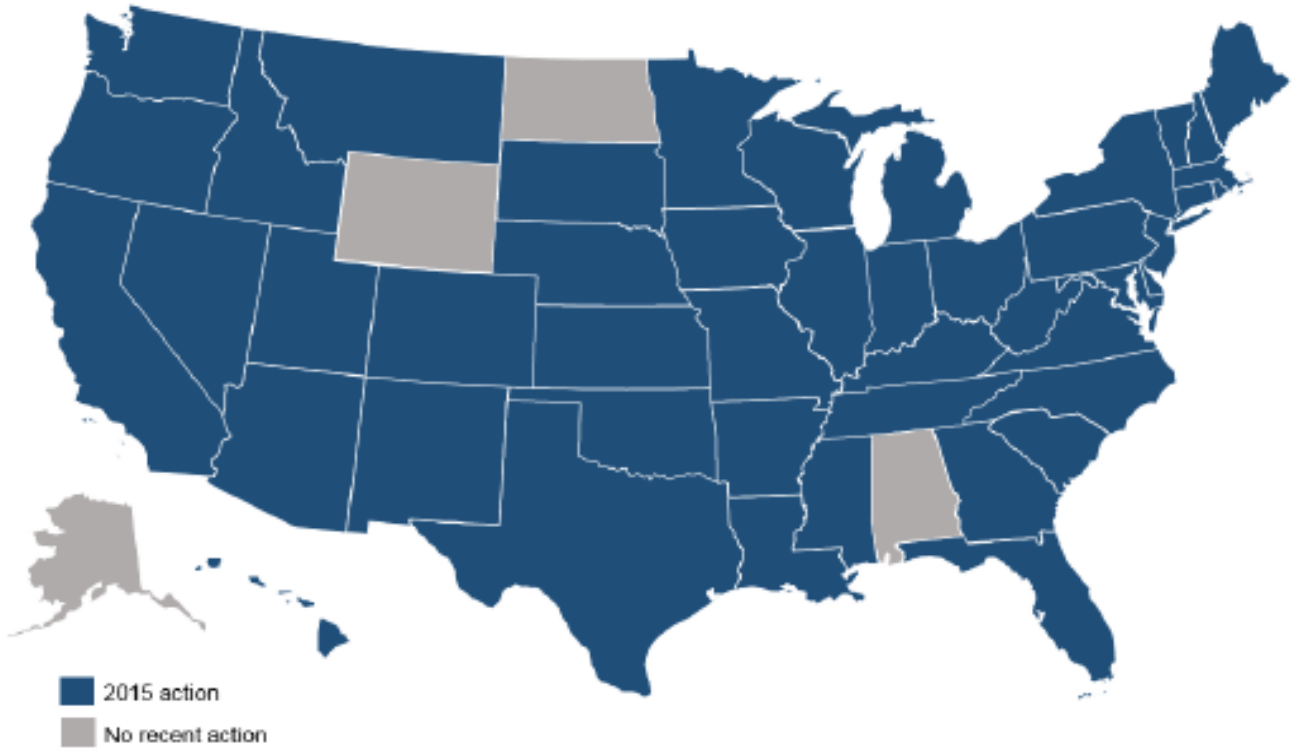
Net Present Value of Benefits for Host-Owned Residential PV



Based on project level data collected for Berkeley Lab's annual "Tracking the Sun" report. Bill savings are calculated from EIA data for average retail electricity prices by utility, with adjustments for usage tiers and other rate design details.
https://emp.lbl.gov/projects/solar

Net Metering and Rate Reforms Have Proliferated

2015 Policy Action on Net Metering, Rate Design, or Solar Ownership



Source: NC Clean Energy Technology Center and Meister Consultants, 2016. "The 50 States of Solar: 2015 Policy Review and Q4 Quarterly Report"

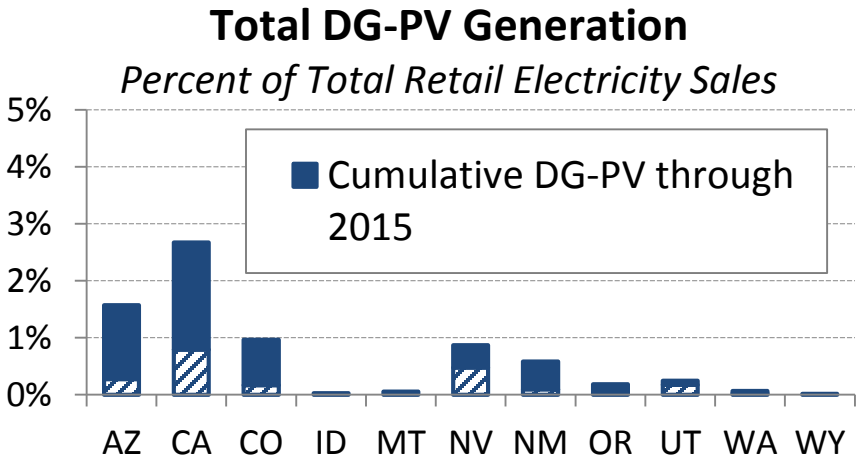
Particulars of Rate Reform Proposals Vary

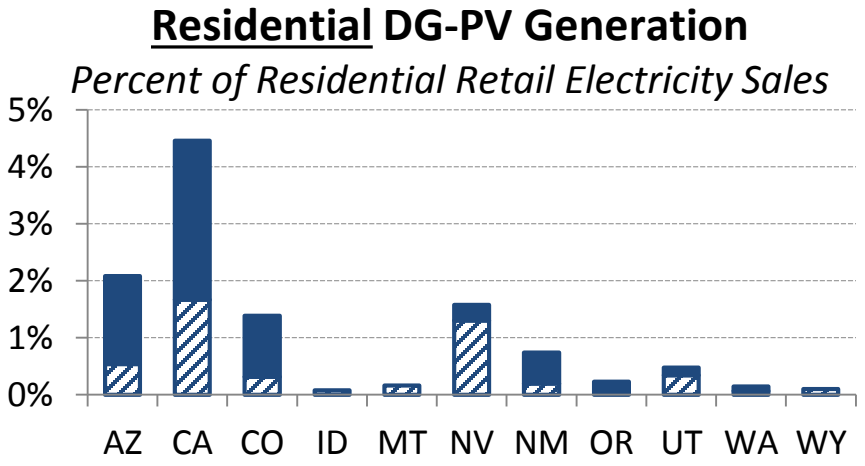
Some are specific to distributed solar PV, others are broader

	Applicable to DG customers only	Potentially applicable to all customers
1. **Increased customer charges**		✓
2. **Increased standby charges**, interconnection charges	✓	
3. Minimum bills		✓
4. **Mandatory demand charges**		✓
5. **Reduced compensation for grid exports**	✓	
6. Two-way rates (feed-in tariff, value-of-solar tariff)	✓	
7. REC ownership transferred via NEM	✓	
8. Unbundled attribute pricing		✓
9. **Time-varying pricing**		✓
10. Locational pricing		✓
11. Compression of inclining block rates		✓

Proposals Partly Due to Fixed-Cost Recovery Concerns

DG-PV growing fast, but in most states still ≤1% of retail sales





Calculated from PV installed capacity data from GTM Research and EIA

- With DG-PV growth, corresponding concerns about:
  - Fixed cost recovery: cost-shifting, erosion of utility shareholder profits, or both
  - Reduced utility earnings opportunities from deferred utility capital investments
- Similar concerns also with energy efficiency

Panelists

- **Shawn Elicegui,** Senior Vice President, Regulation & Strategic Planning, NV Energy
- **Commissioner Mike Florio**, California Public Utilities Commission
- **Wendy Gerlitz**, Policy Director, Northwest Energy Coalition
- **Bob Jenks**, Director, Citizen's Utility Board of Oregon

For More Information on the Series

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Additional Slides

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Sergej Mahnovski, Consolidated Edison
Kris Mayes, Arizona State University College of Law/Utility of the Future Center
Jay Morrison, National Rural Electric Cooperative Association
Allen Mosher, American Public Power Association
Sonny Popowsky, Former consumer advocate of Pennsylvania
Karl Rábago, Pace Energy & Climate Center, Pace University School of Law
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