



NARUC

Winter Committee Meetings

Staff Subcommittee On Consumer Affairs



EMPLOYEE COMMITMENT



CUSTOMER SERVICE



OPERATIONAL EXCELLENCE

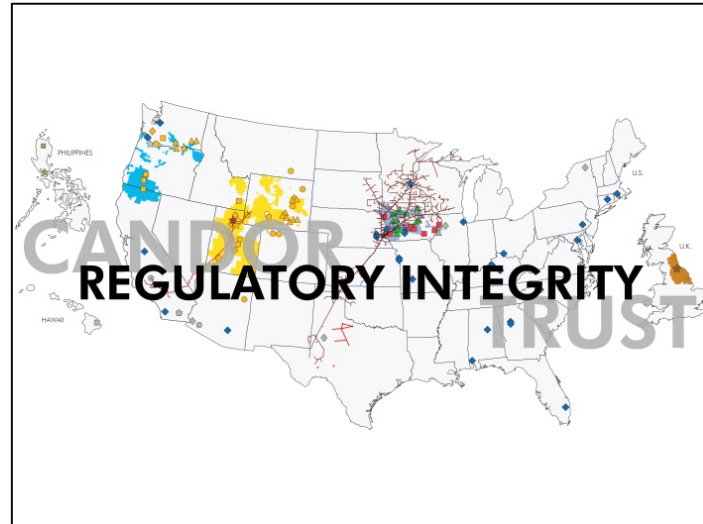


ENVIRONMENTAL RESPECT



**BERKSHIRE
FINANCIAL STRENGTH
OWNERSHIP**

REGULATORY INTEGRITY



New Solar Opportunities in Nevada
Tony F. Sanchez III, NV Energy
February 12, 2017

NV GreenEnergy Rider (NGR)

- Option for eligible commercial and industrial customers (1 MW or higher load) to have all or some portion of their load supported by new or existing renewable energy generation without adverse pricing impacts to others.
- To date, approximately 260 MWs of solar have been developed for three customers in the State of Nevada, namely Apple, the City of Las Vegas and Switch Ltd, a large data center company.
- NV Energy and the customer may enter into a special contract (i.e. Renewable Energy Agreement, “REA”) under which the customer agrees to assume all of the costs of the renewable energy resource up to a specified energy amount not to exceed the customer’s total energy consumption.
- The PUCN approves such a special contract upon, among other things, a satisfactory showing that NV Energy’s other customers are not subsidizing the NGR transaction for the NGR customer.
 - Renewable resource supply also must be approved in resource plan

NV GreenEnergy Rider (NGR)

- The REA sets forth a price (i.e., renewable resource rate) that the customer pays for renewable energy attributes supplied by NV Energy.
- Historically, this rate has been set by calculating the levelized difference between NV Energy's costs in acquiring the renewable energy resource and NV Energy's current Long Term Avoided Costs.
- In January, 2017, NV Energy announced the development of 200 MWs of additional solar capacity and a REA with Apple to feed their growing data center operations in Nevada. Currently under regulatory review.
- NV Energy continues to identify ways to improve this program by aligning with World Resource Institute's Buyers' Principles.

NV Energy Solar Subscription Program

- NV Energy's REA with Apple set aside 5 MWs of the 200 MW project for inclusion in a NV Energy solar subscription program (subject to regulatory approval) for residential and small/medium commercial customers.
- This is in addition to solar capacity from other NGR projects.
- Takes advantage of Nevada's abundant solar resources and available federal land to provide solar to these customers that might not normally be eligible for traditional solar leasing or ownership arrangements.
 - No 20-year lease; no capital investment from customer
 - Combined with energy efficiency, creates potential bill savings
 - Provides option for customers who may not have optimal roof for private solar installation
 - Multi-family residents can participate
 - Poor credit score no longer an impediment
 - Going green, while taking advantage of cost-effective universal scale solar projects, gives access to solar to non-traditional customers without cost subsidizing non-participating customers



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Solar Energy Future Campaign and Incentive Report

Pro-Solar. Pro-Grid. Pro-Consumer.

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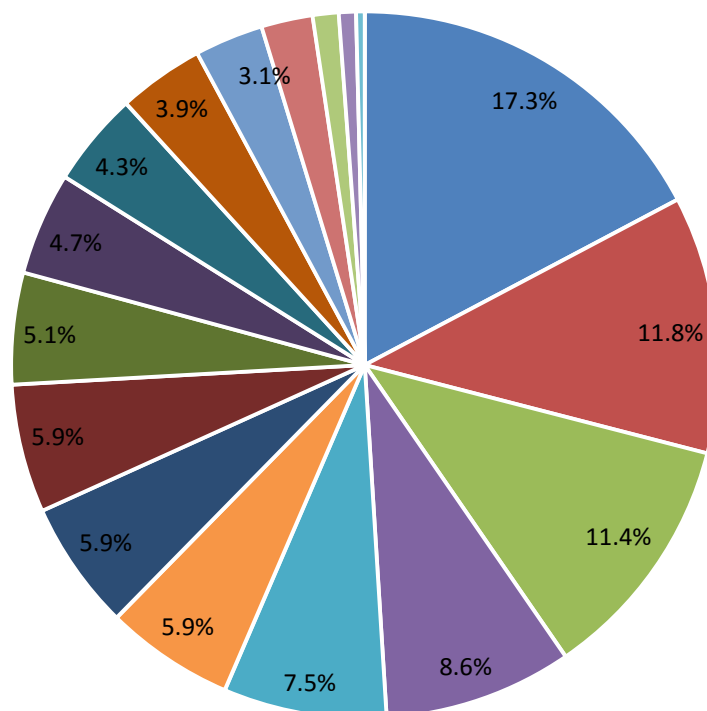
February 12, 2016



Mission

The mission of CEA is to improve consumer understanding of our nation's energy security, including the need to reduce reliance on imported oil and natural gas, maintain reasonable energy prices for consumers, and continue efforts to diversify our energy resources.

Membership Makeup by Industry



- Oil, Gas & Nuclear Association
- Chamber of Commerce
- Consumer Discretionary Services
- Trucking/Transportation/Logistics
- Manufacturing/Chemicals
- Independent Oil & Gas/Support & Services
- Engineering/Machinery/Construction
- Other
- Agriculture/Food & Beverage
- Power Generation/Utility
- Oil & Gas/Fossil Fuel Producer
- Energy-focused Consumer Associations
- Renewable Producer/Association
- Education
- Insurance/Healthcare
- Technology
- Nuclear Producer

Advocacy and Engagement

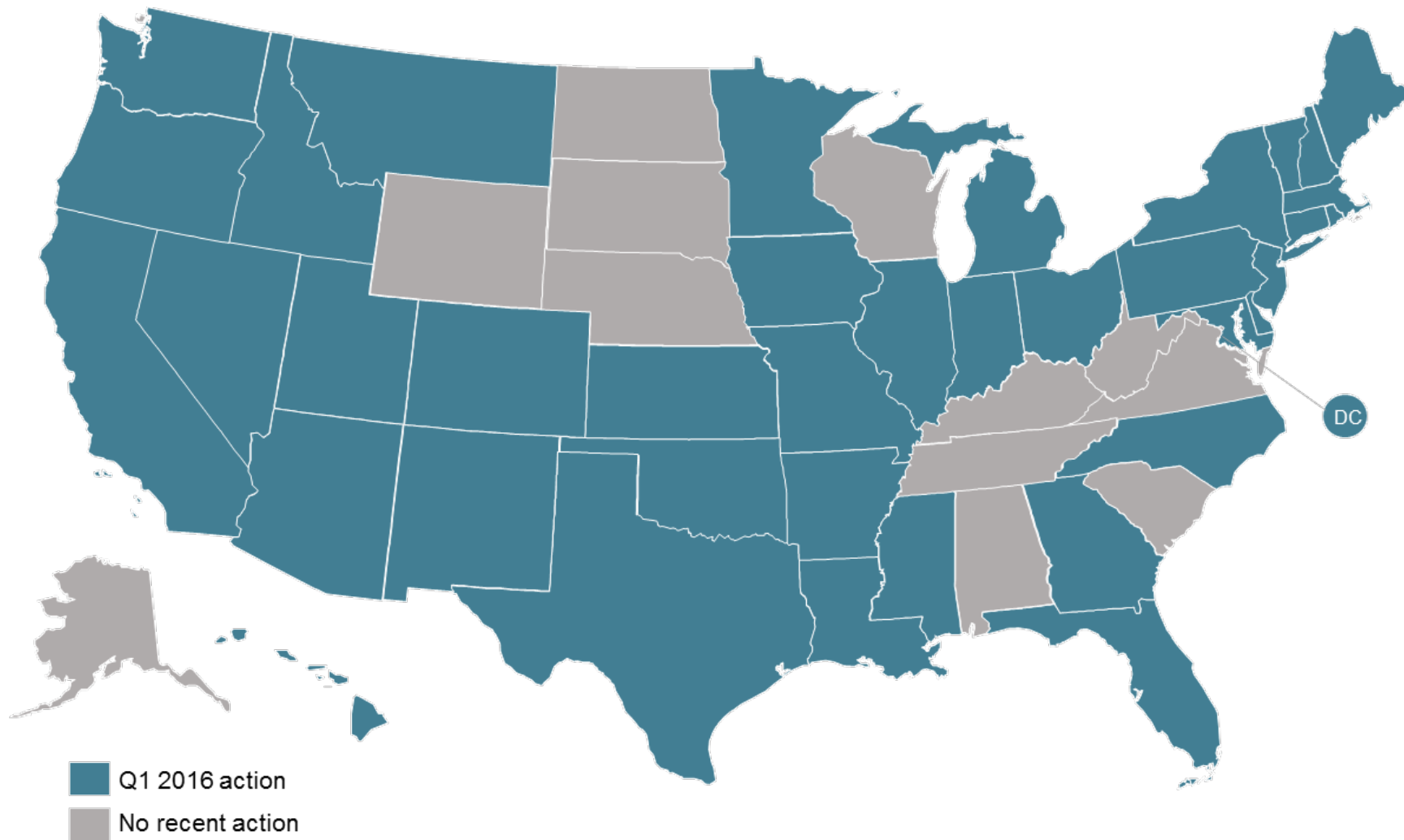
- Largest 3rd party consumer organization in energy –
 - ~300 member companies
 - 400K individual members
 - Landowners
 - Agriculture
 - Manufacturers
 - Transportation
 - Medicine/hospitals
 - Food services/hospitality
 - Plastics
 - Energy
 - 180K+ social media followers
 - Over 1.5M consumer comments delivered through CEA portals





Why Electricity/Solar?

Q1 2016 Policy Action on Net Metering, Rate Design, and Solar Ownership





Electricity and Emerging Issues

Solar Energy Future Campaign

- “Pro Solar. Pro Grid. Pro Consumer.”
- Launched in Nov. 2015
- Report Released Sep. 2016
- Goals:
 - Educate:
 - American consumers, legislators, policymakers and regulators about the value of solar energy.
 - Engage:
 - Stakeholders on the values of solar and the policies that will allow solar to grow responsibly.
 - Advocate:
 - For federal/state policies and regulation changes that promote solar growth, ensure a robust and updated grid, and enhance customer access to affordable, reliable, and clean energy resources.



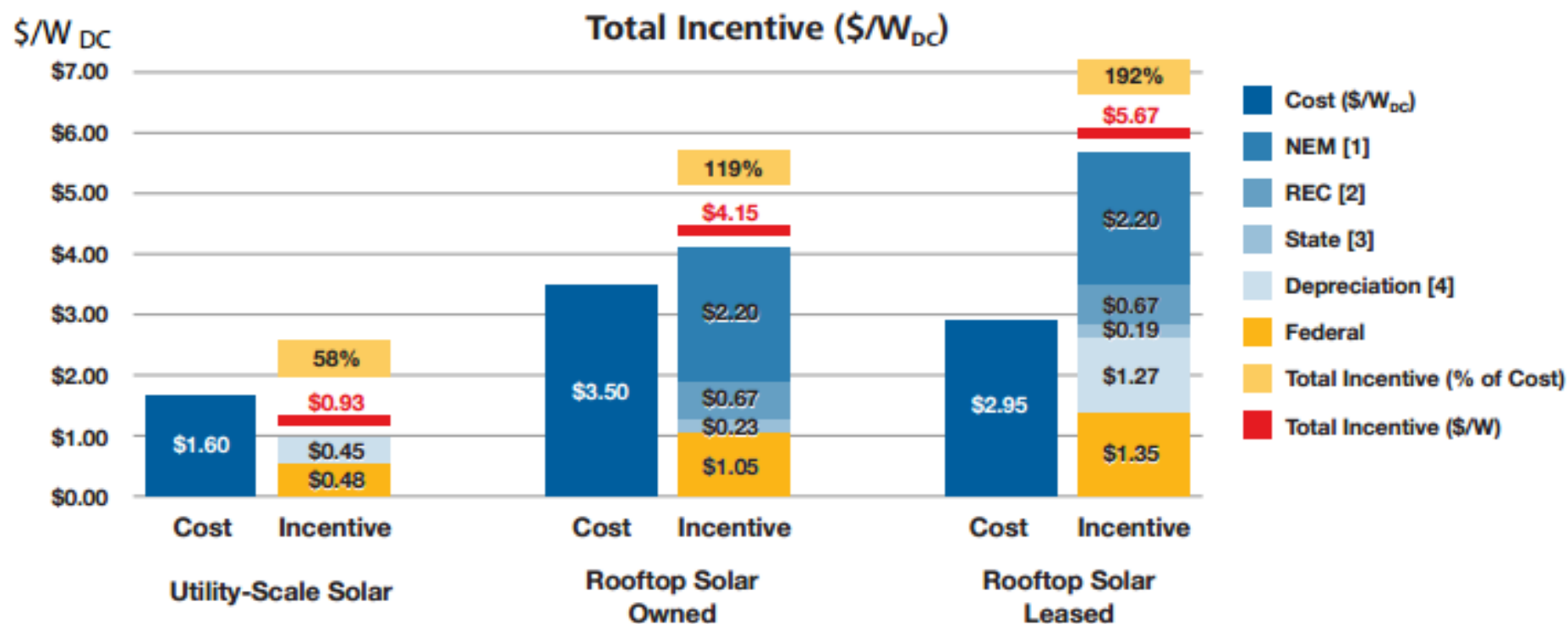


High-Level Study Conclusions

- **Existing Incentives For Residential Solar PV Are Significant**
- **Third Party-Owned (TPO) Solar PV Facilities Receive Significant Incentives**
- **Existing Incentives May Change the Economics of Future Investments in Solar**
- **The NEM Incentive Shifts Costs onto Less Affluent Customers.**
- **Incentives For Residential Solar PV Vary Widely Among The States.**

Figure 1

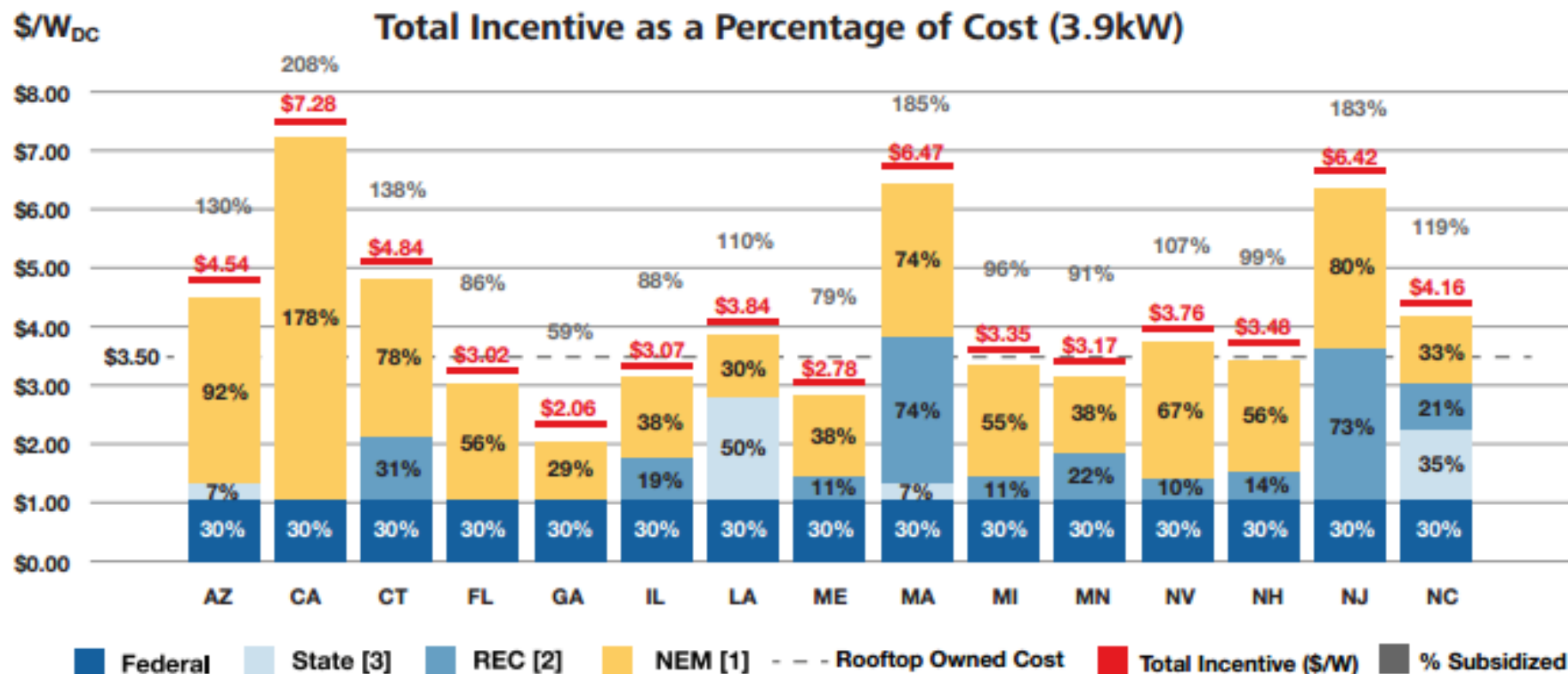
Figure 1. Total Incentives Available for a 3.9 kW-dc Customer-Owned and -Leased Solar PV Facilities and an Equivalent Amount of Utility-scale Solar PV Capacity (\$/W-dc)



1. NEM incentive is the difference between the present values of the customer's bill savings and the utility's avoided costs over the facility's life. For the Rooftop Leased, the incentive flows to the homeowner and is largely passed through to the Third-Party Owner as a lease or PPA payment.
2. Renewable Energy Certificates / Credits are incentives available through applicable programs.
3. Incentives mandated by state legislatures are upfront and/or performance-based compensation, often through the state tax code.
4. Depreciation is based on renewable-specific 5-year MACRS

Figure 2

Figure 2. Incentives Available for Customer-Owned Residential Solar PV in Selected States, as a Percentage of Installed Cost (3.9kW)



1. NEM incentive is the difference between the present values of the customer's bill savings and the utility's avoided costs over the facility's life. For the Typical Lease, the incentive flows to the homeowner and is largely passed through to the Third-Party Owner as a lease or PPA payment.
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Figure 2A

Figure 2A. Incentives Available by Customer-Owned Residential Solar PV in Selected States, as a Percentage of Installed Cost (6.0kW)

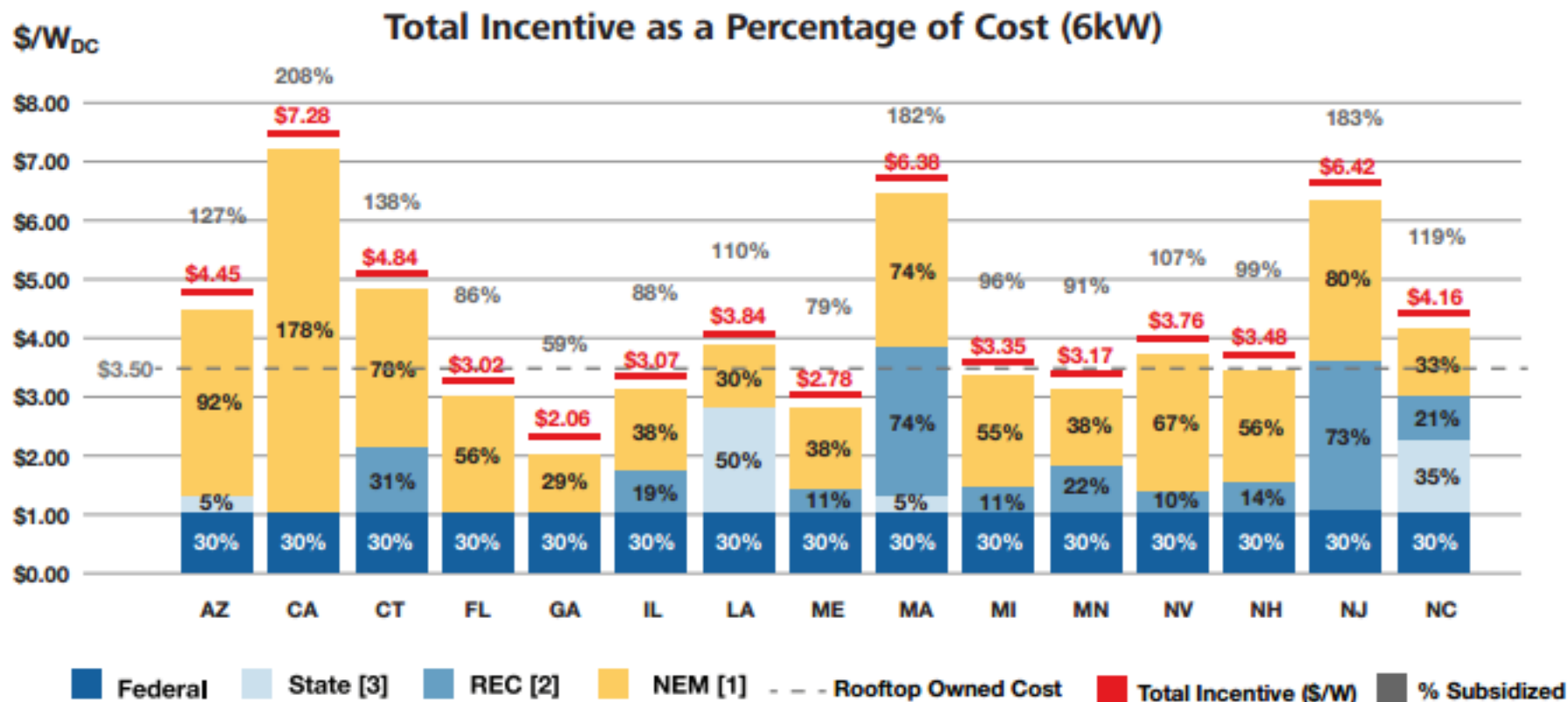


Figure 3

Figure 3. Total Incentive (\$) for Typical Rooftop Owned System (3.9kW)

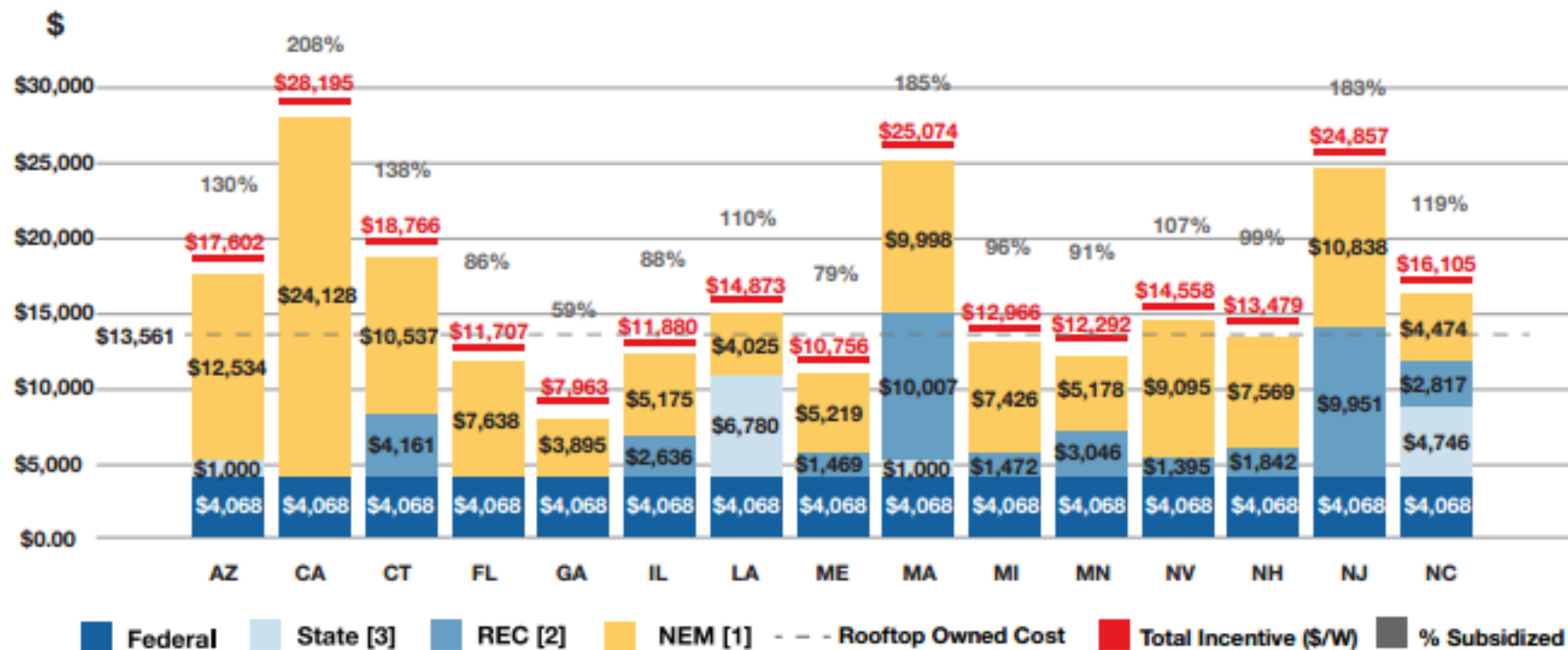
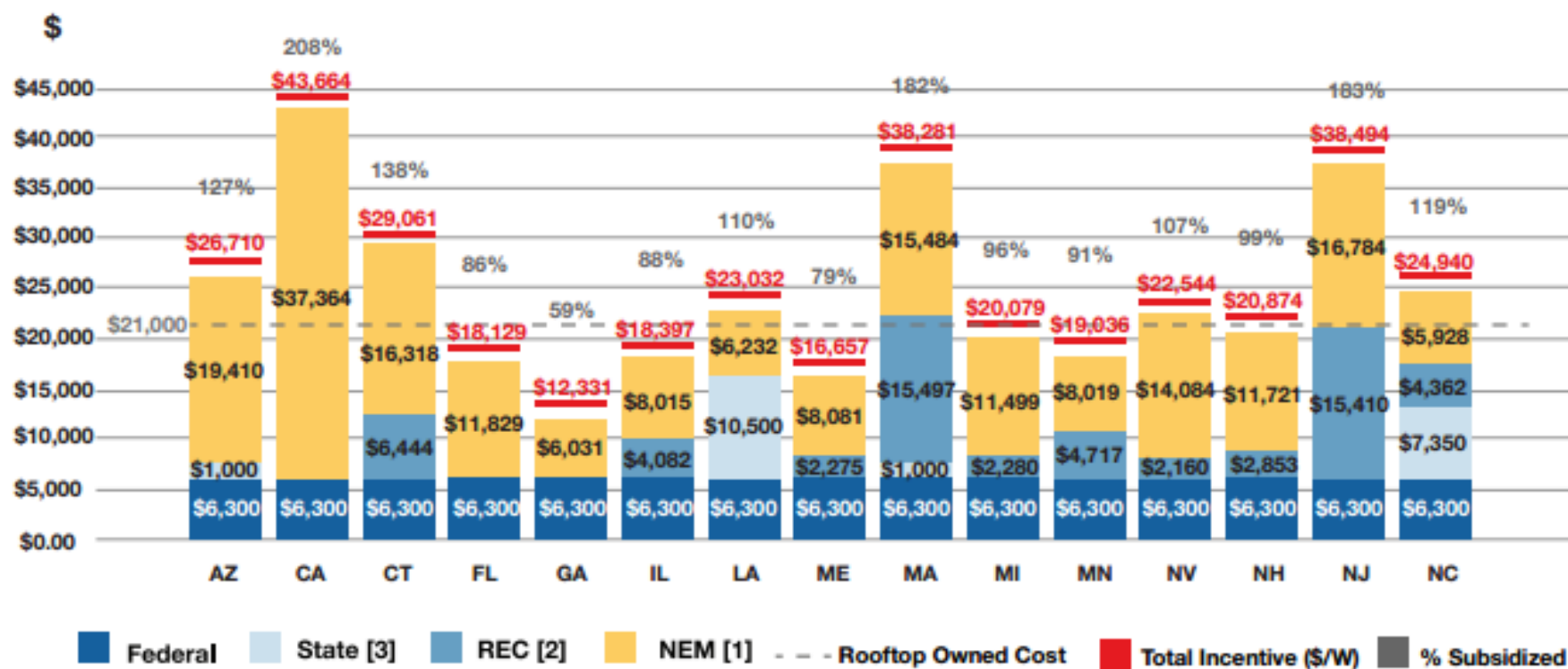


Figure 3A

Figure 3A. Total Incentive (\$) for Typical Rooftop Owned System (6.0kW)





Key Messages/Takeaways

- CEA **SUPPORTS** solar and that support is not a binary choice; customers want options as well as environmental & grid benefits.
- Incentives must be balanced to ensure fair rates.
- Those who can't afford rooftop solar could be paying more if sensible pro-solar, pro-consumer, pro-grid policies and regulations are not implemented.
- Several existing state programs were designed for a different era that took into account minimal participation.
- Consumers must be protected and financing/leasing arrangements must have clear, understandable terms.



Thank You USGO!

Questions?

For more information:

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"Consumer Energy Alliance excels in propelling grassroots movements across the country and casting a broader net on important energy issues. Instead of recreating the wheel, CEA is able to amplify collective outreach efforts, ensuring that consumers are informed and knowledgeable of all energy-related discussions."

- George Stark, Director, External Affairs, Cabot Oil & Gas Corporation

"Texas Trucking Association is a proud industry member of CEA, working together to expand visions and provide sound information to our members. This partnership has proved mutually beneficial and effective in positive advocacy and education."

- John D. Esparza, President and CEO Texas Trucking Association



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Energy Technologies Area

Lawrence Berkeley National Laboratory

Putting the Potential Rate Impacts of Distributed Solar into Context

Galen Barbose

NARUC Winter Committee Meetings
Staff Subcommittee on Consumer Affairs

Washington, DC.
February 12, 2017

Introduction

- Efforts to address potential cost-shifting from distributed solar
 - Are contentious and complicated
 - Often absorb substantial time and administrative resources
- Are they diverting attention from other issues that might have greater impact?

Let's compare the potential rate impacts from distributed solar to some other rate drivers...



The effect of distributed solar on retail electricity prices is a function of 3 things

1. Distributed solar penetration

2. Solar compensation rate (relative to the utility's average cost of service, CoS)

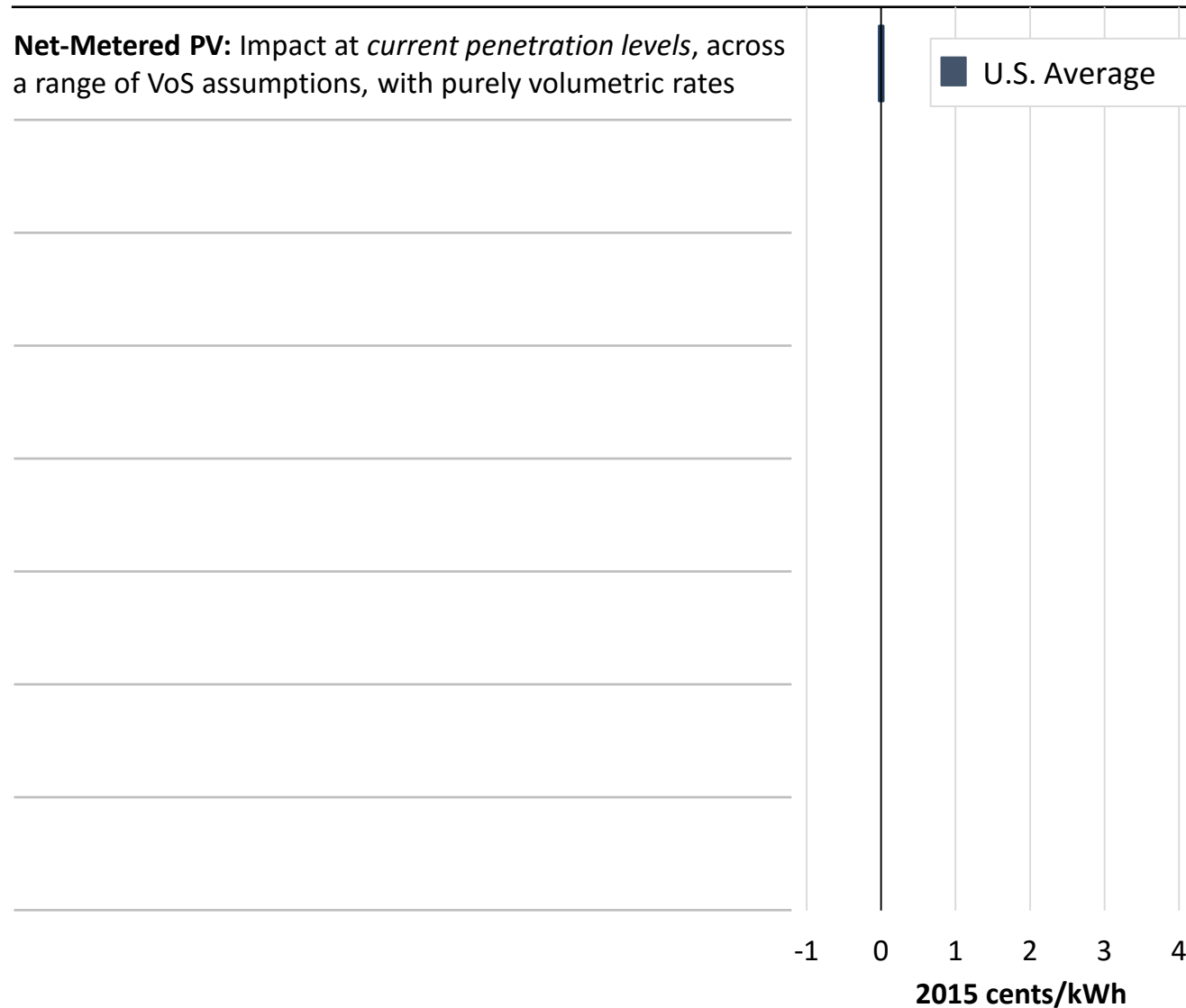
3. The value of solar (VoS) to the utility (relative to the CoS)

$$\% \text{ Change in Retail Electricity Price} = \overset{\textcircled{1}}{\text{Penetration}} \times \left[\overset{\textcircled{2}}{\frac{\text{Solar Comp. Rate}}{\text{CoS}}} - \overset{\textcircled{3}}{\frac{\text{VoS}}{\text{CoS}}} \right]$$

The potential rate impacts of distributed PV

At the *current U.S. average* penetration rate

Net-Metered PV: Impact at *current penetration levels*, across a range of VoS assumptions, with purely volumetric rates



- Current U.S. average net-metered PV penetration = 0.4% of retail sales
- VoS studies suggest a wide range, from 50-150% of utility CoS (even when considering only traditional utility cost categories)
- Corresponds to rate impact of **±0.03 cents/kWh** (assuming all PV is net metered with purely volumetric rates)

The potential rate impacts of distributed PV

At the *projected 2030 U.S. average* penetration rate

Net-Metered PV: Impact at *current penetration levels*, across a range of VoS assumptions, with purely volumetric rates

Net-Metered PV: Impact at *projected 2030 pen. level*, across a range of VoS assumptions, with purely volumetric rates



- Recent NREL projection forecasts U.S. distributed solar penetration to reach 3.2% of retail sales by 2030
- Using same VoS range as before, corresponds to average rate impact of **±0.2 cents/kWh**

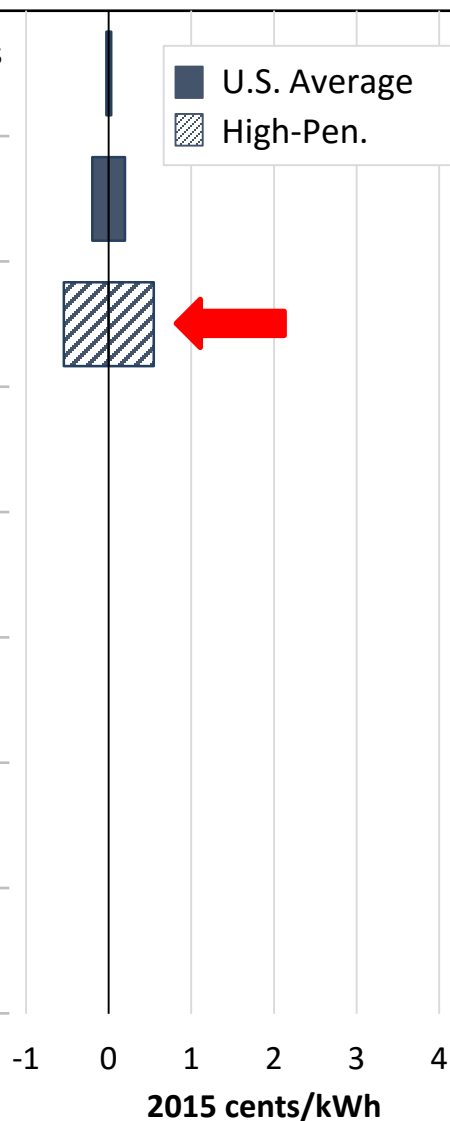
The potential rate impacts of distributed PV

At a *10% penetration rate*

Net-Metered PV: Impact at *current penetration levels*, across a range of VoS assumptions, with purely volumetric rates

Net-Metered PV: Impact at *projected 2030 pen. level*, across a range of VoS assumptions, with purely volumetric rates

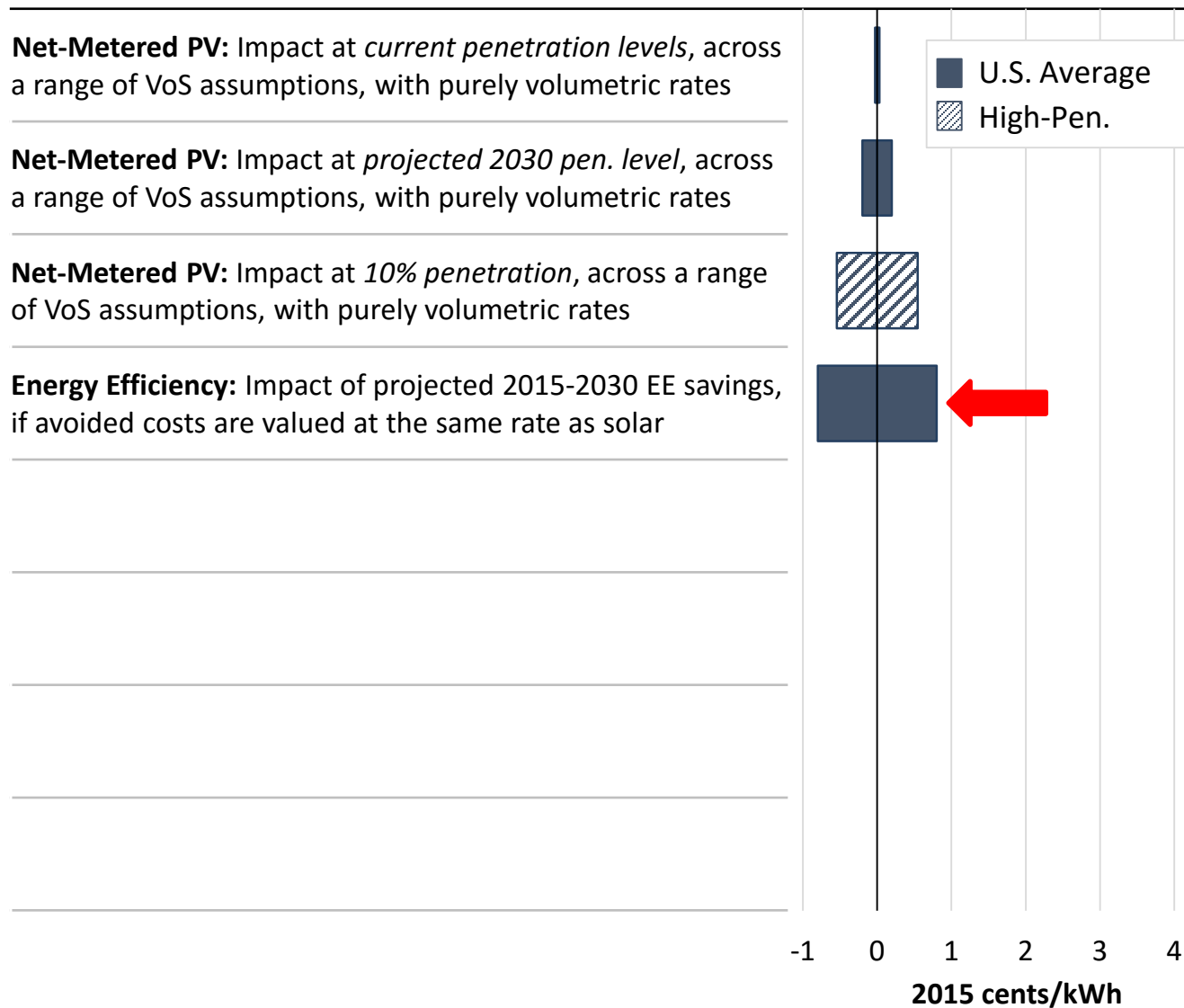
Net-Metered PV: Impact at *10% penetration*, across a range of VoS assumptions, with purely volumetric rates



- Several utilities in Hawaii have reached 10% penetration of net-metered PV, and recent NREL forecasts three other states to reach that level by 2030
- Again, assuming full NEM with volumetric rates, and assuming a VoS range of 50-150% of CoS, the corresponding impact on average rates would be **±0.5 cents/kWh**

Other things that could affect retail prices

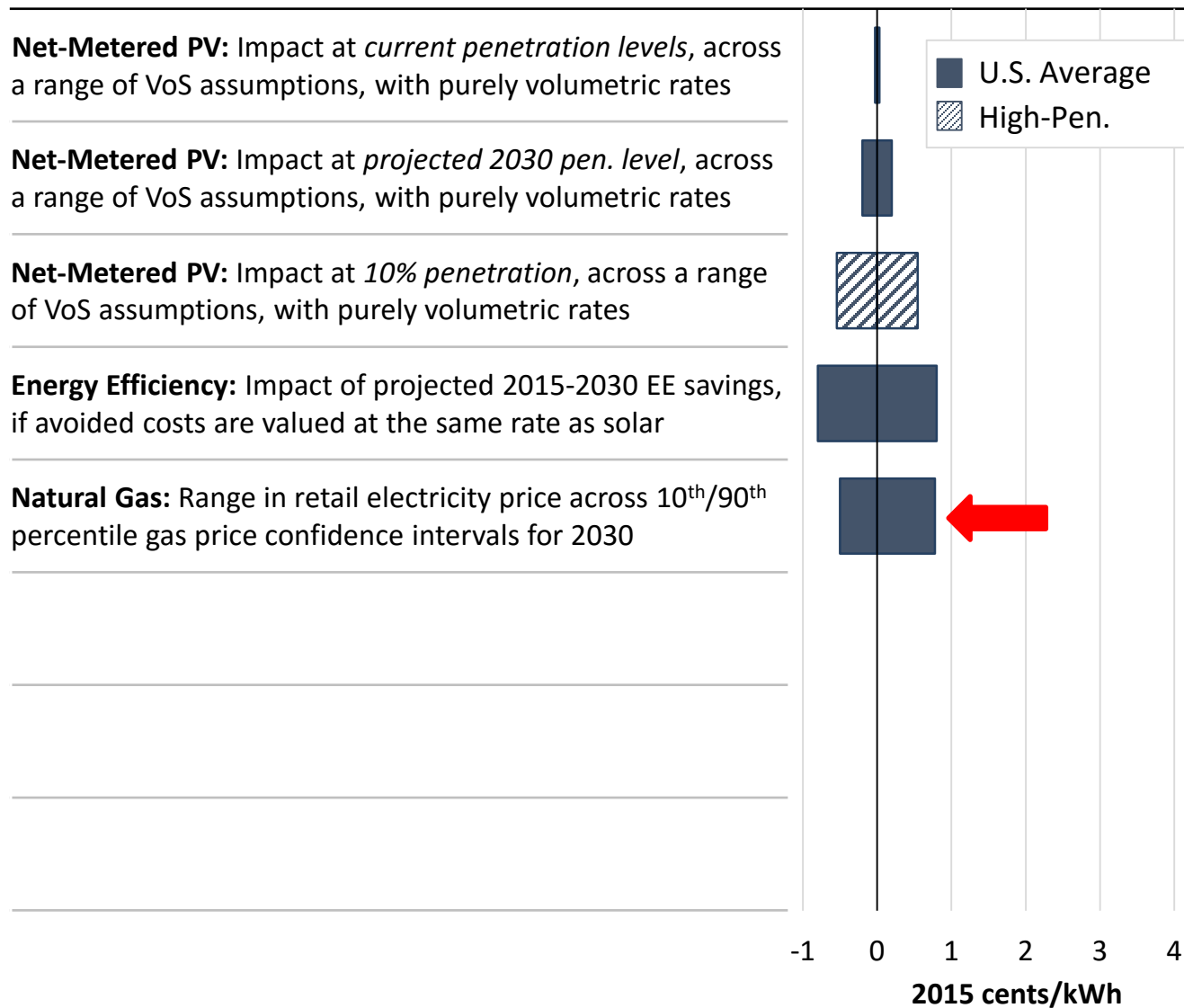
Energy efficiency



- Net-metered PV is like energy efficiency in terms of how it impacts rates, but EE is MUCH larger
- Projected growth in EE savings is 5x times greater than distributed PV
- Using same avoided cost range as PV, corresponding impact on U.S. average rates in 2030 would be **±0.8 cents/kWh**
- Lesson for PV: EE generally perceived to be cost-effective over long-run, and broadly accessible

Other things that could affect retail prices

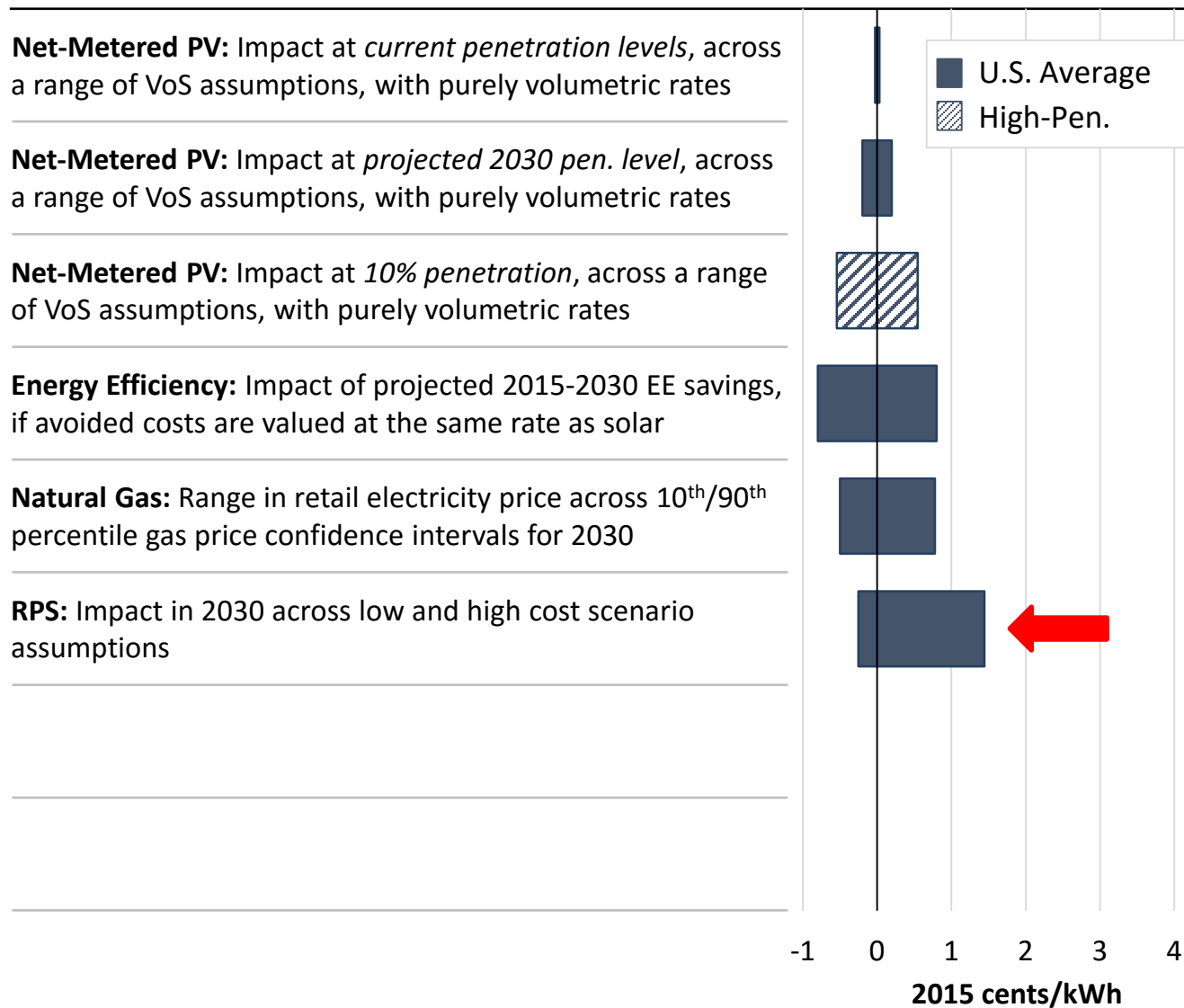
Natural gas prices



- Natural gas prices currently low but future prices remain highly uncertain
- 10th-90th percentile confidence interval range for natural gas prices in 2030: \$2.2-\$5.4/MMBtu
- Across that gas price range, U.S. average retail electricity prices would range from **-0.5 cents/kWh lower** to **+0.8 cents/kWh higher** than expected
- Can manage exposure to gas price risk through fuel diversification

Other things that could affect retail prices

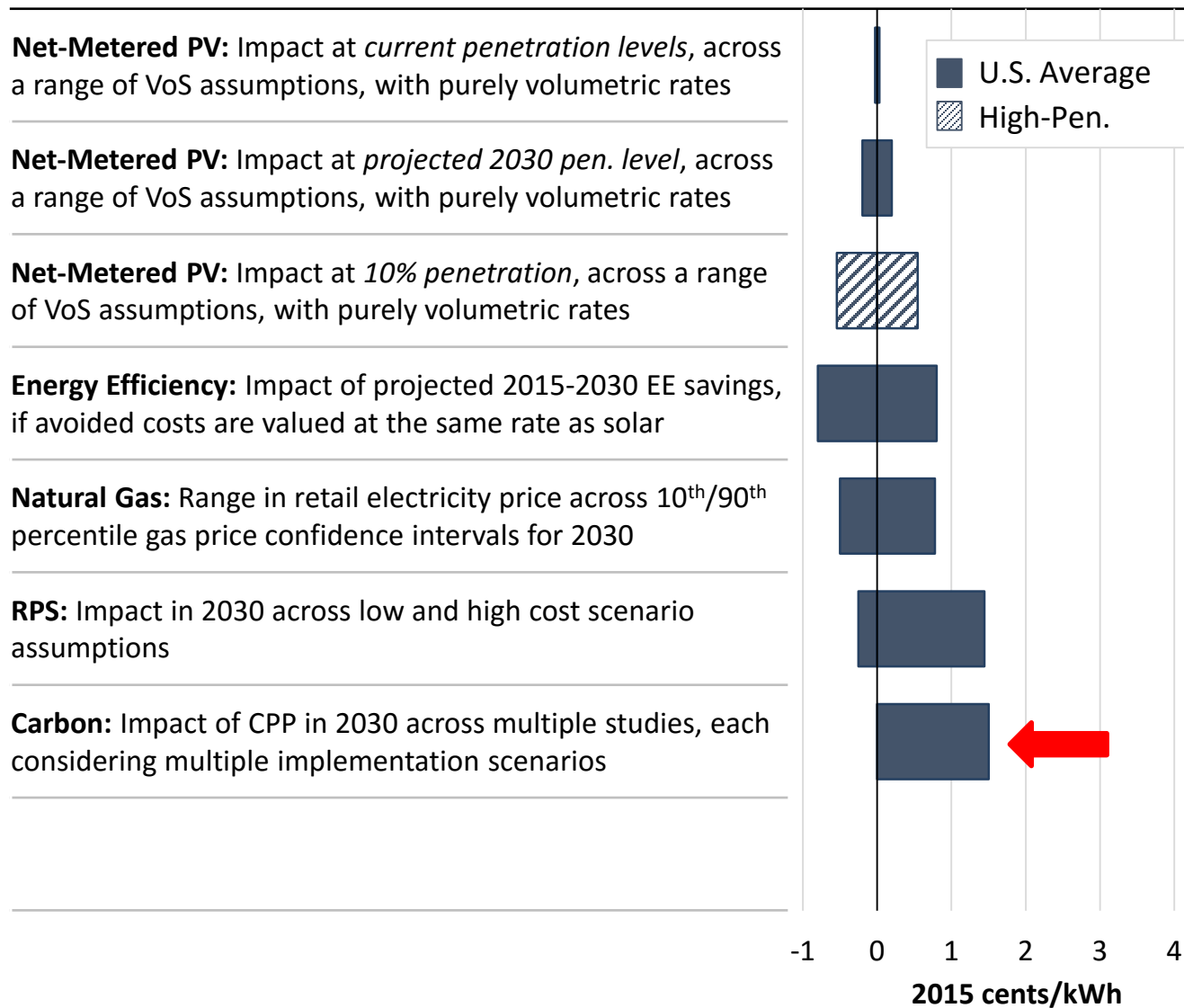
RPS policies and implementation details



- RPS impacts on rates general small so far, but could rise with increasing targets
- We estimate potential state-level RPS rate impacts in 2030 across broad set of assumptions
- Average retail rate impact in RPS states could range from **0.3 cent/kWh decrease** to **1.4 cents/kWh increase**
- Outcome depends in large part on REC prices, whether supply is sufficient

Other things that could affect retail prices

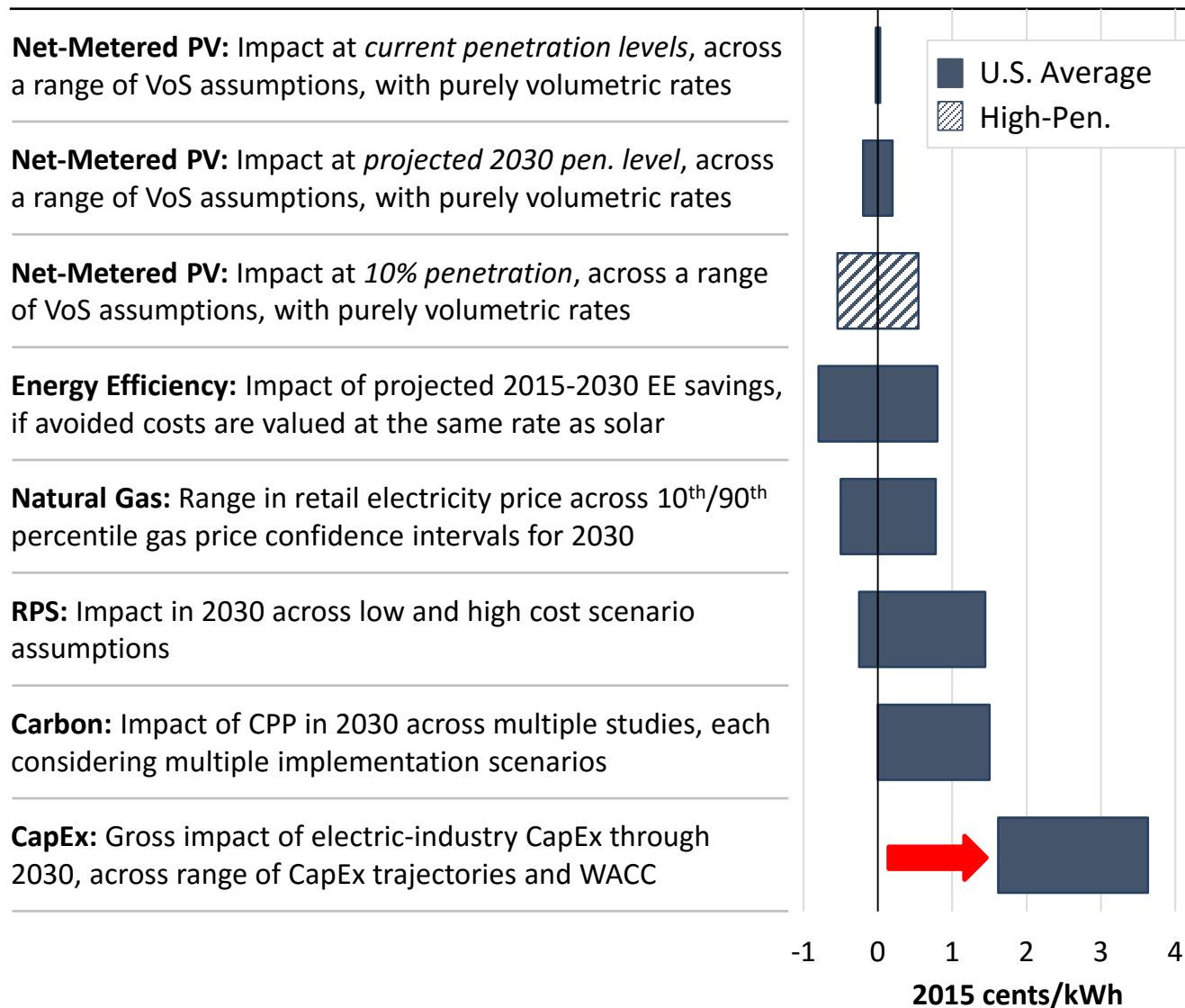
Carbon policies and implementation details



- Existing regional carbon cap-and-trade programs have had small rate impacts so far
- Tightening regional targets and the prospect of federal policy raises possibility of larger future impacts
- CPP modeling studies show avg. rate impact of **0.0 to 1.5 cents/kWh**, depending on state implementation decisions
- Can further manage risk exposure through fuel diversification

Other things that could affect retail prices

Utility capital expenditures



- Utility CapEx growing, and putting upward pressure on rates as sales growth slows
- Under two plausible scenarios, utility CapEx through 2030 would have **1.6 to 3.6 cent/kWh** impact on average rates
- Relatively large effects say nothing about potential benefits or prudence, but merely highlight that this is an area where oversight and management can play a crucial role in limiting price escalation

Conclusions

- 1. Effects of distributed solar on retail electricity prices are generally small compared to other issues**
 - Reforms of net metering rules or retail rate structures may still be warranted, but other objectives (e.g., economic efficiency) likely provide a more compelling rationale
- 2. Where concerns about minimizing retail electricity price remain a priority, other areas may prove more impactful**
 - E.g., CapEx oversight, utility resource planning, efforts to ensure sufficient RPS supply
- 3. For utilities with exceptionally high distributed solar penetration, effects on retail prices could approach the same scale as other important drivers**
 - Questions about VoS become more important to assessing possible cost-shifts, and to mitigating it by facilitating higher-value forms of deployment
- 4. Experiences with energy efficiency offer lessons for states witnessing especially high distributed solar penetration**
 - As solar costs continue to decline, grid-friendly PV technologies advance, and initiatives to broaden solar access continue, issues of cost-shifting from distributed solar will become more similar to those of energy efficiency

For Further Information

Download the full report

<https://emp.lbl.gov/publications/putting-potential-rate-impacts>

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<https://emp.lbl.gov/join-our-mailing-list>

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Staff Subcommittee On Consumer Affairs

**A presentation to the Staff Subcommittee on Consumer
Affairs -- “Socializing the Cost of Solar”**

**by Bill Malcolm, Senior Legislative Representative,
State Advocacy and Strategy Integration**

February 12, 2017



About AARP

AARP, with its nearly 38 million members, is a nonprofit, nonpartisan organization that helps people turn their goals and dreams into real possibilities, strengthens communities and fights for the issues that matter most to families such as healthcare, employment and income security, retirement planning, affordable utilities, and protection from financial abuse.

Learn more at www.aarp.org.

Utility Trends

- Flat or declining electric sales
- Low wholesale power prices, power surplus
- RTO rate impacts, mission creep
- Low natural gas prices
- Push to fast track rate increases
- Bail outs for aging baseload power plants
- Push for new rate design and cost allocation methods

Our utility positions

- Fair and affordable rates
- Oppose mandatory demand charges, increased customer charges
- All grid users should pay their fair share



Solar Policy

Policymakers should ensure:

- **optimal use of distributed generation systems at minimal cost to integrate these resources into the electric system**
- **everyone who uses and benefits from electric grid pays their fair share to maintain it**

Solar Policy (continued)

- **strong consumer protections for participants in distributed generation, including standards and licensing requirements for solar installers and marketers**
- **any cost-benefit study of distributed generation policies assesses whether the policies fairly allocate costs among ratepayers.**

All grid users should pay for their fair share of grid costs

- **Ballot measure 1 (FL)**
- **Net metering debate**
- **Arizona Corporation Commission value of solar order**
- **MN value of solar**

Is Solar an Issue?

- **AZ, CA, HI vs. rest of states – is there an issue in most states?**
- **Indiana: 866 solar customers**
- **Illinois legislation:**
 - **Would have changed rate design for 4.8 million residential customers (adding a mandatory demand charge) in order to deal with 600 solar customers**
 - **Chicago Tribune quote (11/24/16) on demand charges from Governor's energy aide: "insane"**
- **Reality check needed?**

Solar as a separate class?

- Standby or partial requirements customer?
- UNS rate case in AZ--demand charges for solar only
- KCC order: solar as a separate class
- Survey needed (does state law or PSC policy allow solar to be in its own rate class?)



For further information

- [AARP.org/Policy Book](http://AARP.org/PolicyBook) (see Chapter 10)
- Contact me: wmalcolm@aarp.org, (202) 746-7590; on LinkedIn
- On Twitter: [@billmalcolm6](https://twitter.com/billmalcolm6)

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