

# Staff Subcommittee on Consumer Affairs

# NARUC: Net Metering

History and Context



Evolving Trends and the Future of Net Metering



# Net Metering: History and Context



**VOTE SOLAR**

# Vote Solar Info



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## Outline

- **Intro**
- History
- BCA
- Context



Regulatory Participation



Direct Policymaker Education



Local & Diverse Advocacy Partnership



Technical Analysis, Tools & Resources



Public Communications  
& Grassroots Engagement

Founded in 2002, Vote Solar is a non-profit organization working to make solar a mainstream energy resource across the U.S.



# History of Net Metering

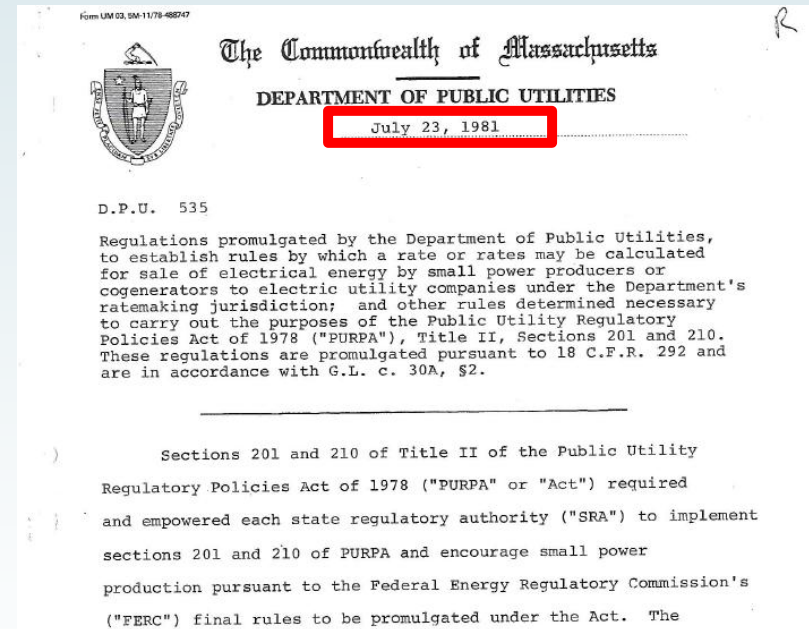


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## Outline

- Intro
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- » “...avoided cost...are not significantly lower than the average electricity rates...”
- » “When administrative costs are considered, the Department concluded that a *net energy billing method* (reverse metering) for smaller facilities does not overstate the avoided costs of the utility.”
- » **NEM started with PURPA**





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U.S. DEPARTMENT OF  
**ENERGY**

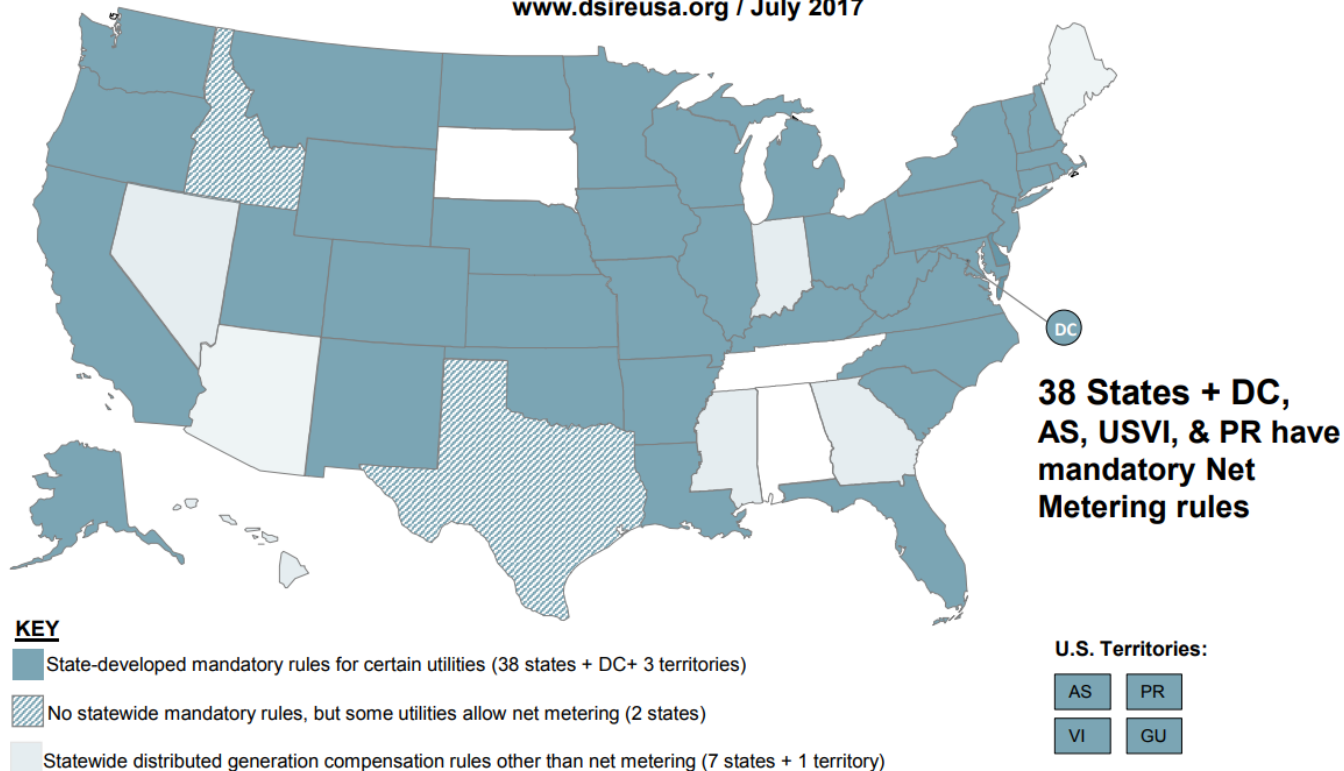
Energy Efficiency &  
Renewable Energy

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# Net Metering

[www.dsireusa.org](http://www.dsireusa.org) / July 2017





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# What are the Costs and Benefits Now?

What does the data tell us?



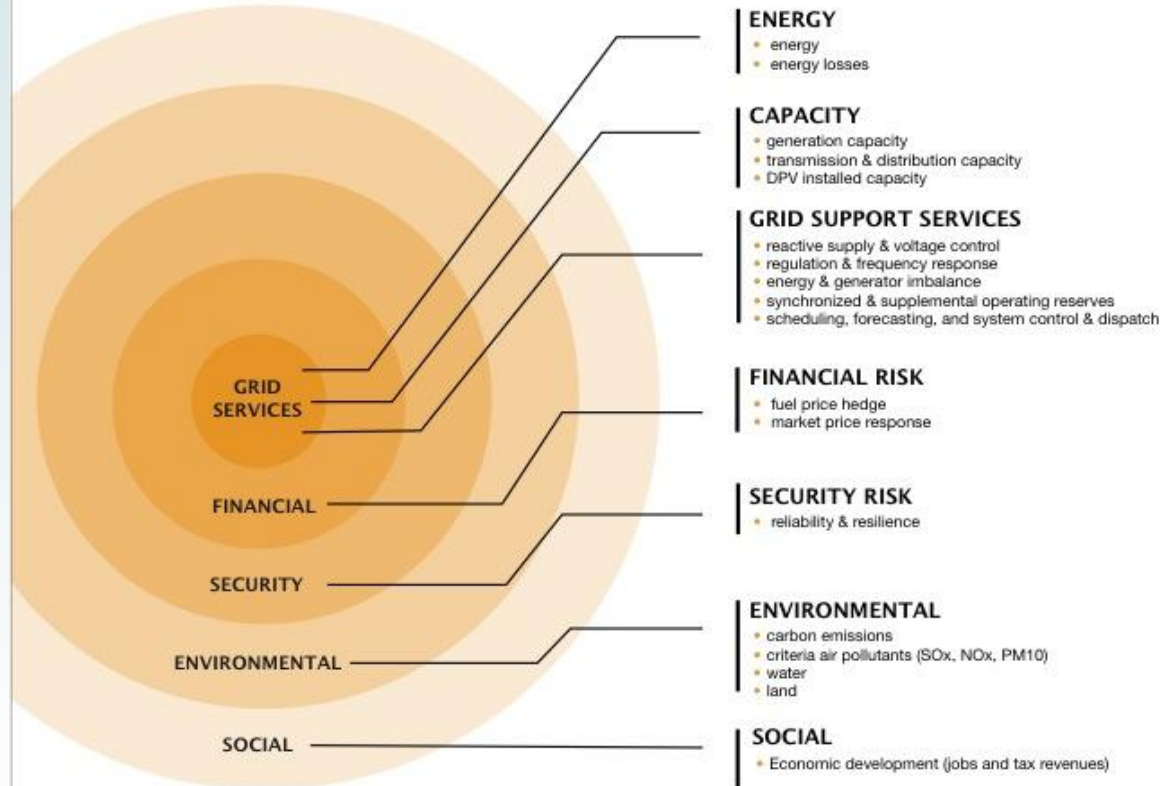


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## BENEFIT & COST CATEGORIES

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:



### Outline

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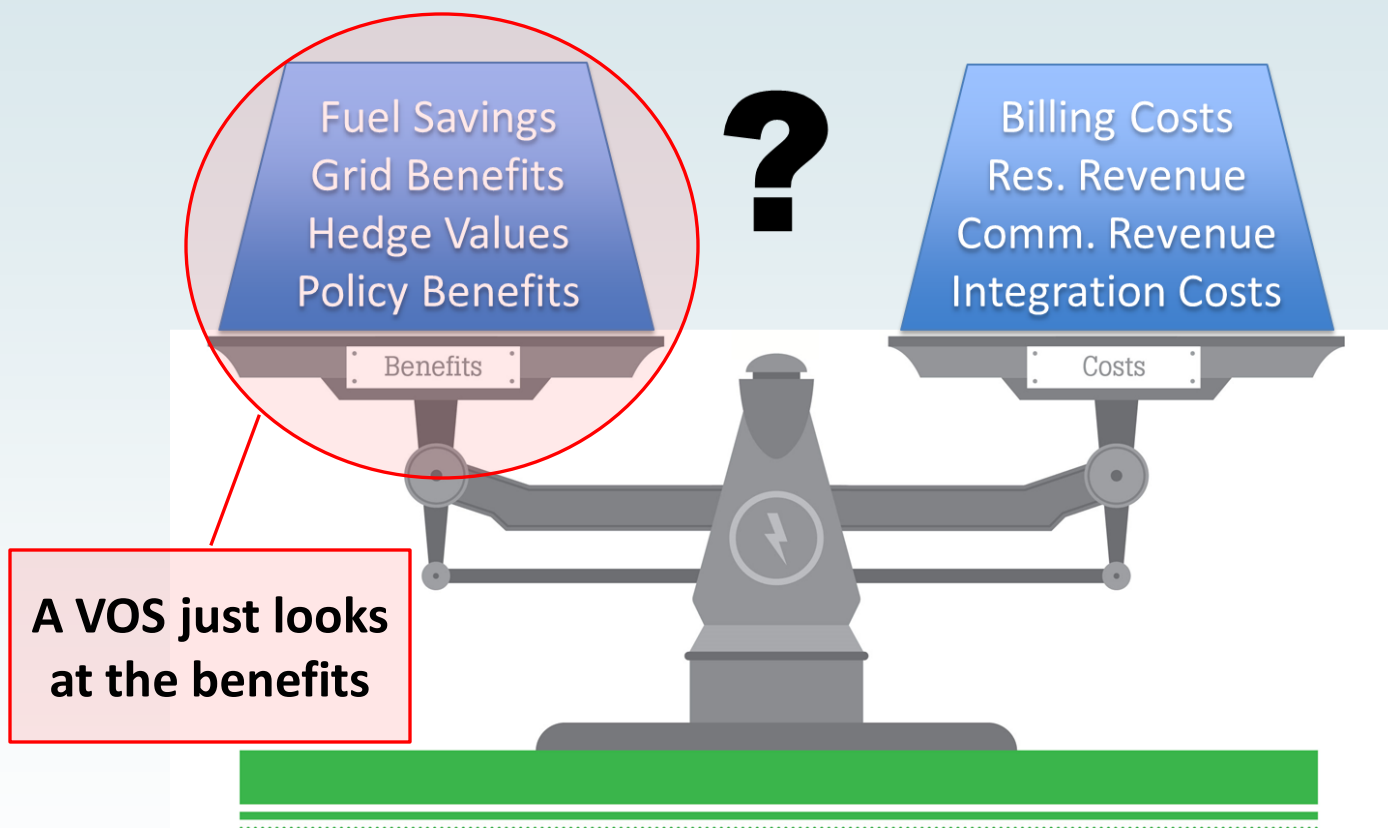
# C/B from the *Ratepayer's* Perspective



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## Outline

- Intro
- History
- **BCA**
- Context





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# Analyses from States

## Outline

- Intro
- History
- BCA**
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State	Date	Sponsor	Resulting Value of Solar (¢/kWh levelized)	Resulting BCA (¢/kWh levelized)
<a href="#"><u>MA</u></a>	30-Apr-15	Legislature		13.1
<a href="#"><u>ME</u></a>	14-Apr-2015 (rev'd)	Legislature	33.7	
<a href="#"><u>VT</u></a>	7-Nov-2014 (rev'd)	Legislature	23.7	2.6
<a href="#"><u>MS</u></a>	19-Sep-14	PSC	17	
<a href="#"><u>NV</u></a>	Jul-14	PUC	18.5	
<a href="#"><u>MN</u></a>	13-Feb-14	Dep't of Commerce	14.5	





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## Indicative ranges for potential effects on average retail electricity prices

**Net-Metered PV:** Impact at *current penetration levels*, across a range of VoS assumptions, with purely volumetric rates (U.S. average)

**Net-Metered PV:** Impact at *projected 2030 penetration levels*, across a range of VoS assumptions, with purely volumetric rates (U.S. average)

**Net-Metered PV:** Impact at *10% penetration*, across a range of VoS assumptions, with purely volumetric rates (high-pen. utility, U.S. avg. price)

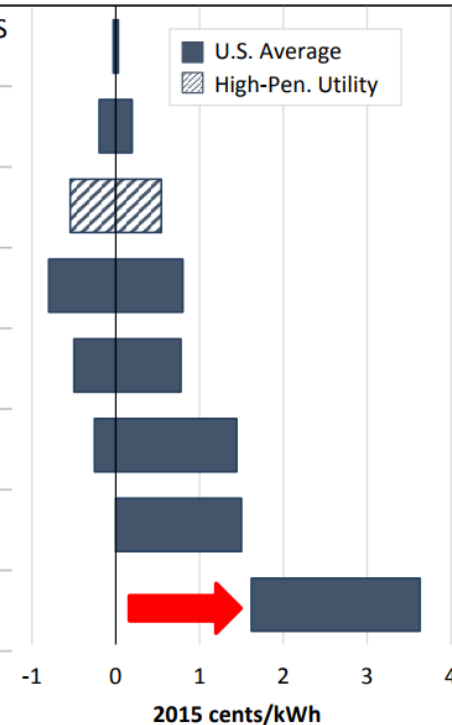
**Energy Efficiency:** Impact of projected 2015-2030 EE savings, if avoided costs are valued at the same rate as solar (U.S. average)

**Natural Gas:** Range in retail electricity price across 10<sup>th</sup>/90<sup>th</sup> percentile gas price confidence intervals for 2030 (U.S. average)

**RPS:** Impact in 2030 across low and high cost scenario assumptions (U.S. average, among RPS states)

**Carbon:** Impact of CPP in 2030 across multiple studies, each considering multiple implementation scenarios (U.S. average)

**CapEx:** Gross impact of electric-industry CapEx through 2030, across range of CapEx trajectories and WACC (U.S. average)



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# Thank you



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## VOTE SOLAR

# Staff Subcommittee on Consumer Affairs



# Evolving Trends and the Future of Net Metering

Sean Gallagher  
VP State Affairs, SEIA  
November 12, 2017

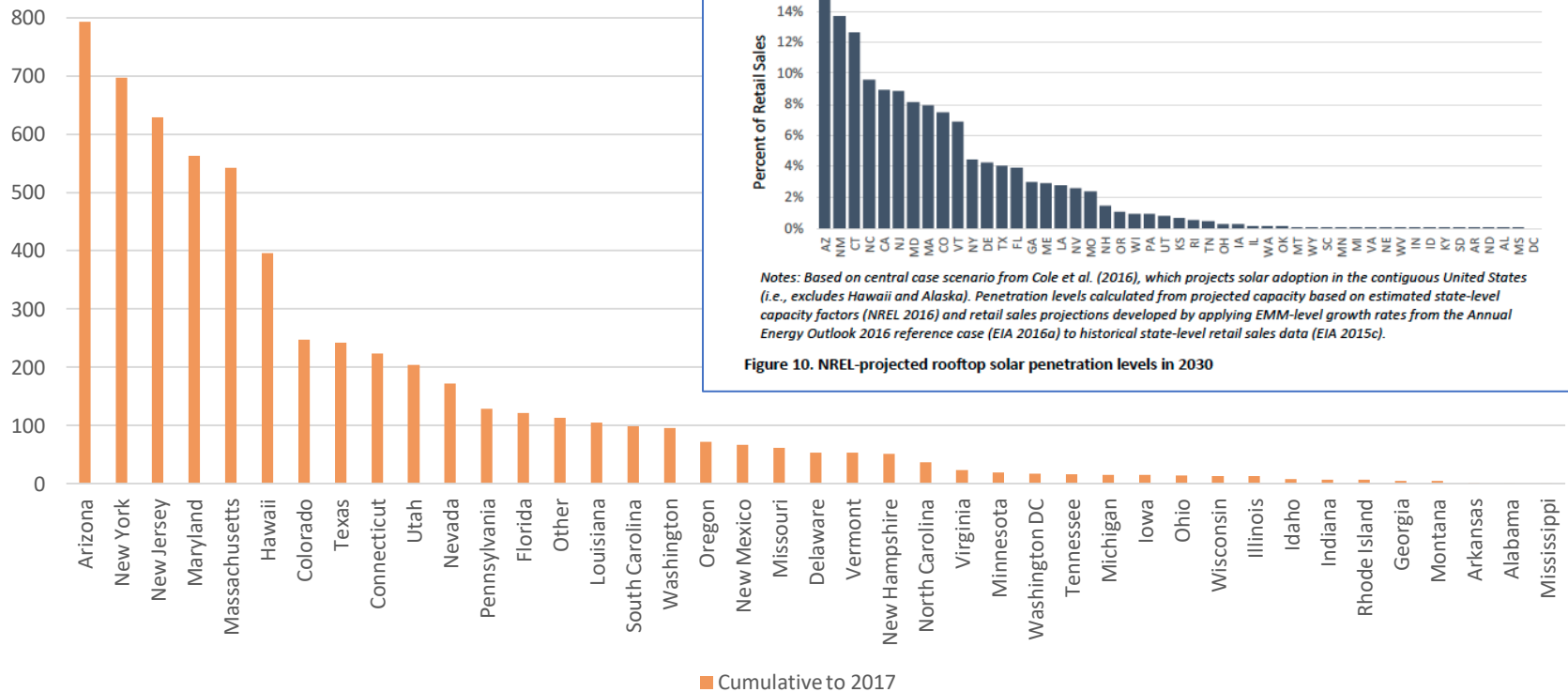
# About SEIA

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- U.S. National Trade Association for Solar Energy
  - Founded in 1974
  - 1,000 member companies from all 50 states in all market segments
- Our Mission: Build a strong solar industry to power America
- Our Goal: 100 gigawatts of solar capacity by 2020

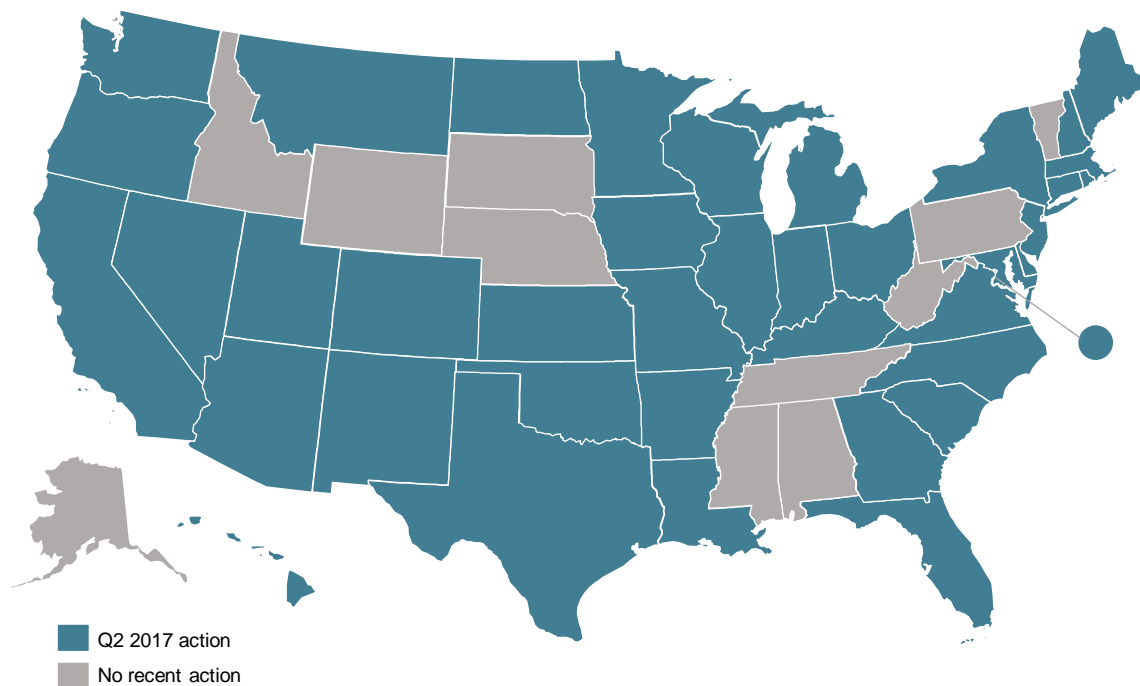


# Residential Solar Installations Through 2017 (MW-DC)





## Q2 2017 Action on Net Metering, Rate Design, & Solar Ownership Policies



**39 States + DC** took action on distributed solar policy and rate design during Q2 2017

# Principles for the Evolution of Net Energy Metering and Rate Design

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## Basic Principles:

- **Customers have a right to reduce their consumption** of grid-supplied electricity with energy efficiency, demand response, storage, or DSG.
- Most studies have shown that the benefits of DSG equal or exceed costs to the utility or other customers where penetration is low.
- Separate rate classes for distributed energy resources (DER) customers are presumed to be discriminatory
- **Opportunities for DSG and other DER customers and developers to provide grid services** (e.g. voltage & frequency regulation, VAR support) should be encouraged.

## Consideration of Alternatives to NEM:

- **Penetration level should be the leading threshold criteria** for consideration of alternatives to NEM.
- Customers who installed solar under NEM should be grandfathered for a reasonable period of time. Customers have a reasonable expectation that rate structures (as opposed to rates themselves) will not change.
- **Simplicity, Gradualism, and Predictability:** Any future design should consider customer needs for simplicity and any changes should be applied gradually and predictably.
- Hold harmless policies should be in place for low-to-moderate income (LMI) customers.

# Principles for the Evolution of Net Energy Metering and Rate Design

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## Guiding Principles for Solar Rate Design

- Rate design should seek to send clear price signals to customers that encourage sustainable, cost-effective investments in solar and complementary technologies.
- Rate design should not create barriers to the deployment of DSG or other DER technologies that can add value to the grid. Some rate designs (e.g. more steeply inverted block rates, time-varying rates) can encourage early adoption of and provide greater incentives for DER technology deployment.
- Fixed charges should be limited to recovery of strictly customer-related costs like service drop, billing, and metering.
- **Rate designs that emphasize higher fixed or quasi-fixed (e.g. residential demand) charges than necessary do not reflect cost causation, disincentivize energy efficiency and conservation, and disproportionately impact low and moderate income (LMI) customers.**

## Guiding principles for Alternative Compensation

- **A fair value of solar (or “stacked benefit”) compensation rate can be considered for DSG exports, at higher penetration levels.** Such value should be determined taking into account both short term and long term (life of system) benefits of DSG.
- Buy all/Sell all (BA/SA or “VOST”) compensation approaches should be at the option of the retail customer and not the only customer option.
- Critical considerations impacting system economics and the ability to finance include the frequency and effect of future changes to the value proposition.
- Solar specific surcharges such as installed capacity fees are discriminatory, impede DSG system economics, and impede deployment of other DER technologies.

The complete set of principles is available at <https://www.seia.org/initiatives/principles-evolution-net-energy-metering-and-rate-design>.

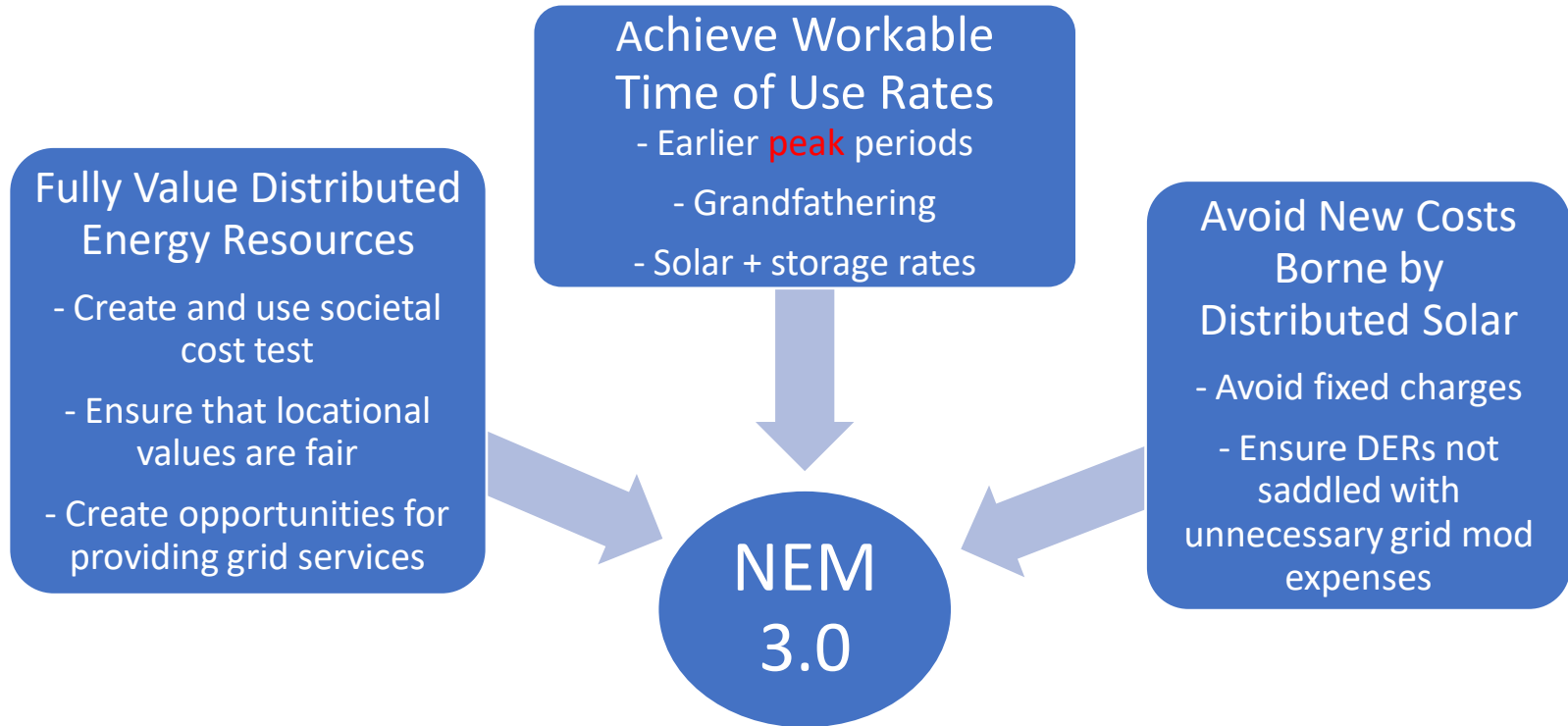
# Recent State NEM and Rate Design Highlights

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- **NEM Successor Tariffs** have been developed through legislation, litigation, and settlement in a number of states, including Arizona, Nevada, Utah, Texas with more to come. Some common themes include:
  - Strong grandfathering (~20 years) for existing NEM customers is becoming the norm
  - Treatment of self-consumed generation as load reduction
  - Most state commissions have mostly rejected large increased fixed charges and residential demand charges, but utility attempts continue
  - Time-of-use rates common but not universal for new solar customers
  - Wide range of methodologies to set compensation for solar exports to grid – all somewhat less than retail rate. Only NV ties directly to penetration
- **Duration of netting periods** – monthly, hourly, etc – has become major issue in NEM successor tariff cases. Shorter netting periods deliver lower value to customers where the export compensation rate is less than the retail rate
  - September 1 Nevada PUC decision implementing AB 405 maintains monthly netting.
  - NY REV Phase 1 decision moves to hourly netting for customers over ~200 kw
  - Utah settlement between local advocates and RMP moves to 15-minute netting, requires new meters
  - APS settlement includes buried language authorizing instantaneous "netting." Only self-generation actually consumed on-site gets valued at the retail rate

# SEIA Strategy to Ensure Strong “NEM 3.0”

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# Staff Subcommittee on Consumer Affairs

# **A presentation to the NARUC Staff Subcommittee on Consumer Affairs: Is Net Metering Dead?**

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

**Baltimore, Maryland**

**November 12, 2017**



**Real Possibilities**

# 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](http://www.aarp.org).**



# Our utility positions

- **Fair and affordable rates**
- **Oppose mandatory demand charges, increased customer charges**
- **Question unneeded subsidies, surcharges, mechanisms to fast track rate increases**



# 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**

- **Have monitored regulatory review of this topic**
- **Arizona Corporation Commission value of solar order**
- **Recent UT order**
- **NV order**

# Net metering

- Distribution costs not avoided, metering and billing costs not avoided
- Solar should pay their fair share of costs and non bypassable fees
- Solar should be compensated for the value of their energy
- Support grandfathering and a fair and reasonable transition period

# Additional thoughts

- **IL: Opposed demand charges for all based on claim that solar was not paying their fair share**
- **KCC: Solar as its own class**
- **Survey needed: Does state law or PSC policy allow solar to be in its own rate class? Should solar be treated as stand by or partial requirements customers**



# For further information

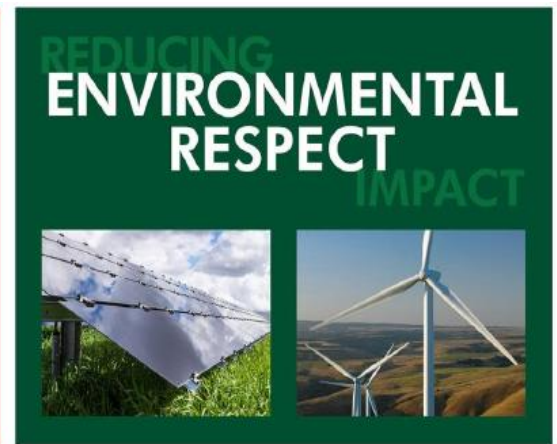
- **AARP.org/Policy Book (see Chapter 10)**
- **Contact me: [wmalcolm@aarp.org](mailto:wmalcolm@aarp.org), (202) 746-7590**
- **On LinkedIn**
- **On Twitter**
- **@billmalcolm6**

11/7/17



# Staff Subcommittee on Consumer Affairs





# Rocky Mountain Power Utah Settlement on Net Metering

NARUC - Baltimore

November 12, 2017

# Net Metering Reform Efforts – 3+ Years

## ➤ 2014

- January – RMP proposed \$4.25 facilities charge for net metering customers in general rate case
- March – Utah legislature passed law requiring commission to evaluate if the costs of net metering exceed the benefits
- August/September – Commission rejects facilities charge; opens new investigation on net metering, with phase 1 to develop methodology on costs and benefits

## ➤ 2015

- November – Commission adopts cost/benefit methodology that uses a with and without NEM comparison in the cost of service model

## ➤ 2016

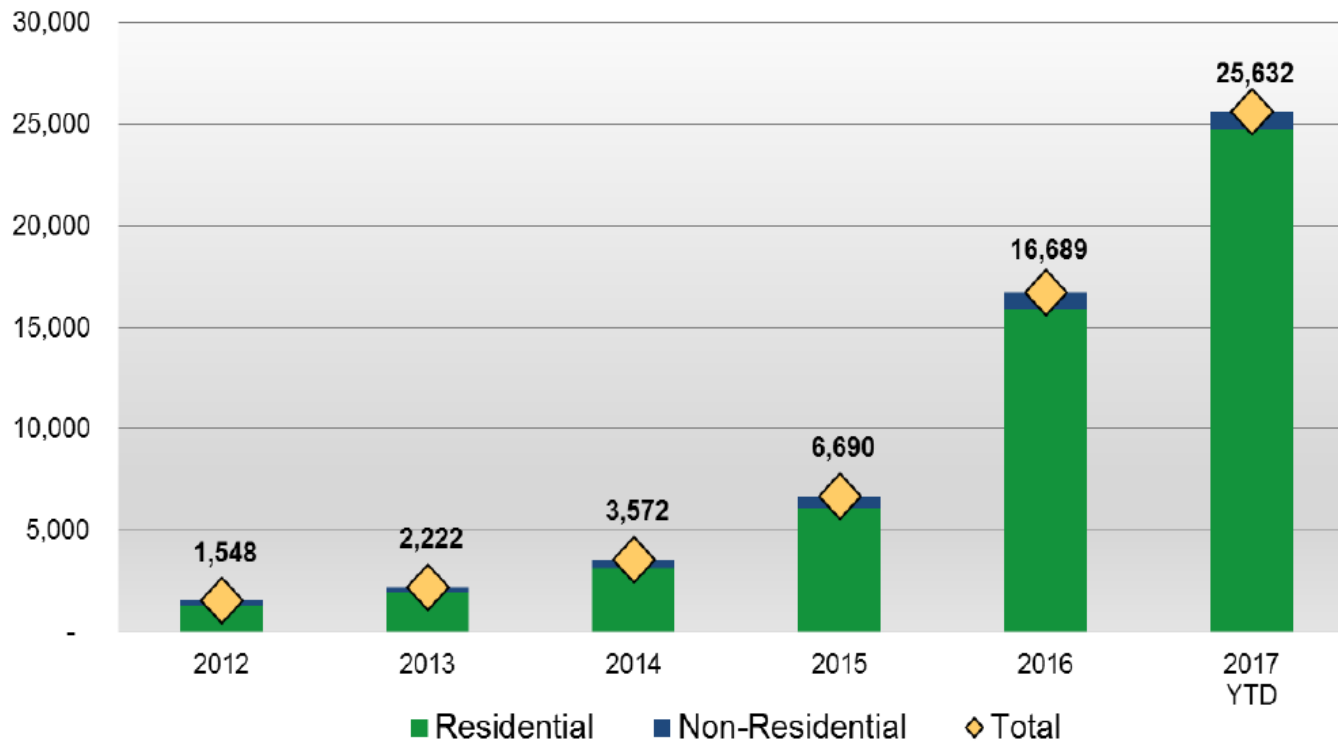
- November – RMP makes compliance filing with modelling results and proposes new rates for NEM customers

## ➤ 2017

- September– Settlement stipulation approved by Utah Public Service Commission
- November – Net metering program closes to new applicants, transition program begins

# Growth in Net Metering

## Utah Net Metering Cummulative Interconnections



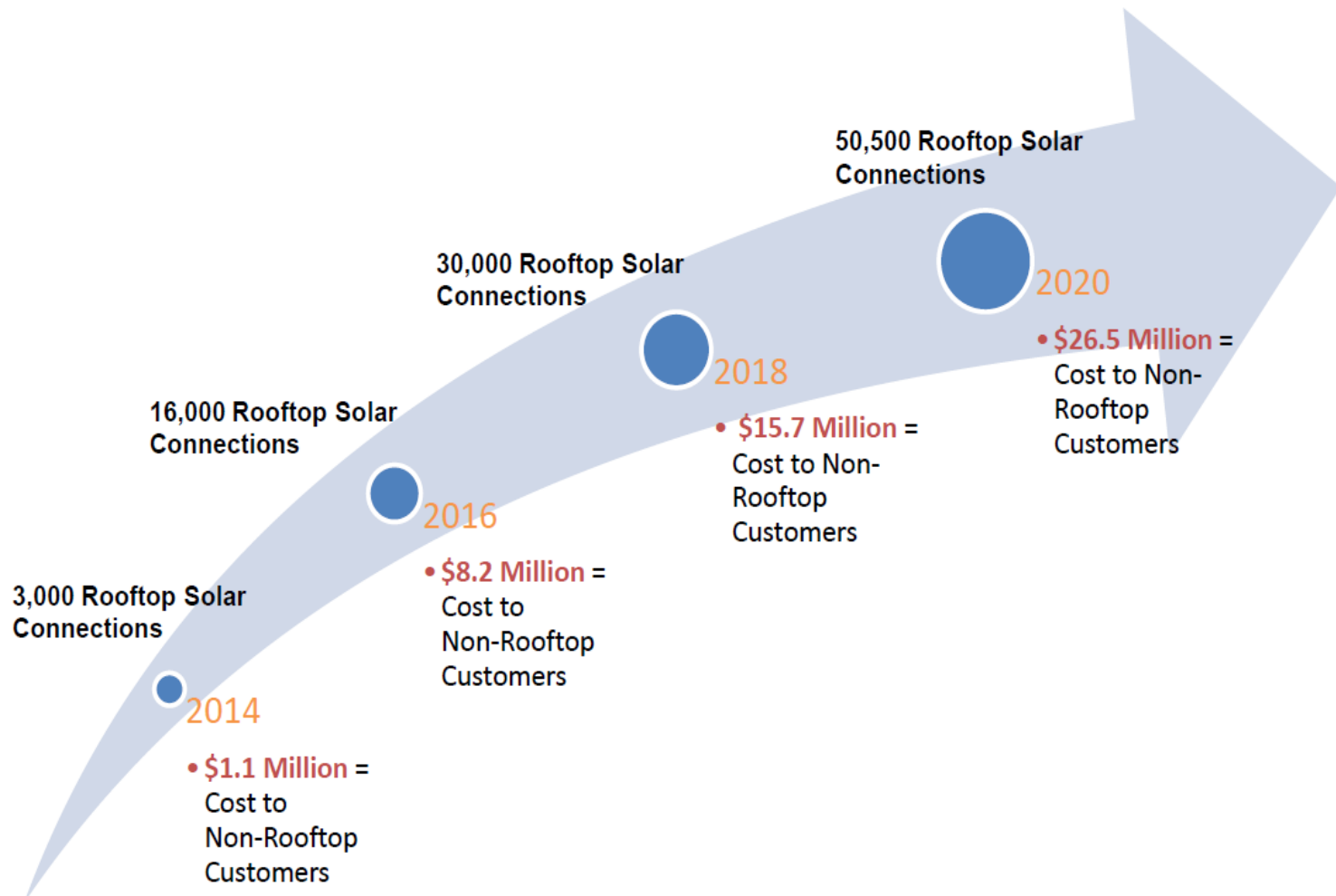
Current Installed Generation (Sept 2017): 197 MW

# Regulatory Filings – November 9, 2016

- Provided cost of service analyses that show costs exceed benefits
  - Showed estimated subsidy of about \$377 per year per residential NEM customer
- Proposed closing current net metering to new service, effective Dec 9, 2016
- Requested approval of new program tariff with modifications to net metering program
  - Required new residential net metering customers to take service on new rate schedule with cost-based rates for the NEM class
  - Required non-residential customers to compensation for excess energy at avoided costs
- Proposed deferral for incremental revenues of new rates until next general rate case
- Requested new application fees for net metering interconnections to provide for more concurrent recovery of administrative costs.

# Net Metering Cost Shifting

As rooftop solar adoption increases,  
the cost impact to non-rooftop solar customers grows exponentially.



# Settlement

- Settlement meetings held for eight months, facilitated by governor's office
- Stipulation filed August 29, 2017
  - Results in closing net metering and beginning new program that separates compensation for exported energy from the retail rate
- 14 signing parties, representing a diverse group of stakeholders:  
RMP, Division of Public Utilities, Office of Consumer Services, Vivint Solar, Auric Solar, Intermountain Wind and Solar, Legend Solar, Utah Solar Energy Association, HEAL Utah, Utah Clean Energy, Salt Lake City Corporation, Summit County, Park City, Utah Citizens Advocating Renewable Energy
- 3 parties filed in opposition:  
Utah Association of Energy Users, Vote Solar, Western Resource Advocates
- Other parties not taking a position:  
Sierra Club, Energy Freedom Coalition of America, SunRun



## Key Stipulation Terms

- Net metering program will stop accepting new applications after November 14, 2017
  - Grandfathering: Net metering program customers will stay on current program through December 31, 2035
  - Through term of net metering program, grandfathered customers will stay in current rate class, subject to same rates as other customers on class
- New Transition Program begins accepting applications December 1, 2017
  - Establishes separate credits for all exported energy
  - Exports netted against usage in 15-minute intervals
  - Export credits fixed through December 31, 2033
  - Participation cap of 170 MW for residential and small commercial customers and 70 MW for other non-residential customers
  - Transition customers to remain in current rate class through term of program
  - RMP will recover export credit costs through Energy Balancing Account mechanism

## Key Stipulation Terms Continued

- Parties agree to support legislation to extend Utah state renewable system tax credit of \$1600 in 2019 and 2020.
  - Legislation in 2017 set phase-out by reducing current \$2000 tax credit by \$400 each year
- New application fees (one-time)
- New proceeding to be initiated to develop a methodology and rate for exported energy
  - To be completed in 3 years
  - Reopens valuation methodology for costs and benefits
- Legislative and Regulatory stay-out continuing for 30 months following final order in new export value proceeding
- Agreement to work collectively on communications plan and the development of consumer protection regulations



# RMP Net Metering Reform Principles

- **Grandfathering**
  - Consideration should be given to current customers for program modifications
- **Gradualism**
  - Traditional ratemaking principles support concept of gradual ratemaking changes
  - A transition period to new rates would be reasonable
- **No Subsidies**
  - Ratemaking principles support concept of customers paying for costs they impose on the system without subsidies from other customers
- **Appropriate Price Signals**
  - Appropriate price signals should be sent to private generation customers for both the energy they consume from the utility and the energy they provide
  - Private generation customers should be compensated with a transition to market-based rate approach
- **Public Service Commission Process**
  - The regulatory commission is well suited to run an open, transparent, and evidentiary-based process
  - The Commission process should determine the rates for private generation customers
  - The evidentiary process should evaluate and determine the appropriate elements to be included in resource valuations

**VALUE**  
**CUSTOMER SERVICE**  
**PROPOSITION**



**PEOPLE**  
**EMPLOYEE COMMITMENT**  
**SAFETY**



**REDUCING**  
**ENVIRONMENTAL RESPECT**  
**IMPACT**



**CANDOR**  
**REGULATORY INTEGRITY**  
**TRUST**



**EFFECTIVE**  
**OPERATIONAL EXCELLENCE**  
**EFFICIENT**



**BERKSHIRE**  
**FINANCIAL STRENGTH**  
**OWNERSHIP**



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# Staff Subcommittee on Consumer Affairs



Department  
of Public Service

# New York's Value of Distributed Energy Resources

Ted Kelly

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New York State Department of Public Service

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# Background

- Net metering authorized by statute for residential solar generation in 1997
- Net metering of on-site generation subsequently expanded by statute to include non-residential customers and other clean generation technologies
- Remote net metering for non-residential customers authorized by statute in 2012
- Community Distributed Generation authorized by Commission in 2015
- Initial statutory ceiling of 1% of 2005 electric demand in each utility's territory
  - Increased to 3% by 2013 and 6% in 2014
  - In October 2015, based on pipeline of projects applying for interconnection in certain utility territories approaching 6%, Commission floated ceiling but also directed development of report and recommendations for transition to value-based compensation mechanisms by December 2016
- Projects receive per-Watt incentive from NYSERDA through NY-Sun Program

# Process

- Solicitation of comments and proposals from parties
  - Robust participation; collaboration included joint proposal by a “Solar Progress Partnership” composed of all distribution utilities and several large solar developers
- Informal, staff-led, collaborative process that included more than 10 open public meetings, exchanges of proposals and comments and formal and informal discussions between parties
- Publication of Staff Report and Recommendations in October 2016
  - Dozens of extensive comments and reply comments filed
- Commission issues Order on Net Energy Metering Transition, Phase One of Value of Distributed Energy Resources, and Related Matters (Phase One Order) on March 9, 2017
- Pursuant to Phase One Order, utilities file Implementation Proposals on May 1, 2017, followed by further collaboration and comment process
- Commission issues Order on Phase One Value of Distributed Energy Resources Implementation Proposals, Cost Mitigation Issues, and Related Matters (Implementation Order) on September 14, 2017

# Major Policy Decisions

- Grandfathering
  - All projects interconnected prior to Phase One Order grandfathered into NEM for life of system
- Transition Mechanisms
  - Mass market on-site projects continue to receive Phase One NEM until January 1, 2020
  - Limited availability of Phase One NEM for other projects far along in development
  - Market Transition Credit for mass market customers of CDG projects
- Managing Non-Participant Impacts
  - Capacity allocations for projects that result in potential cost shifts targeted at limiting incremental net revenue impact to 2% or less

# Major Policy Decisions, cont.

- Cost Allocation Principles
  - Costs of compensation allocated to same ratepayers that receive benefit of avoided utility costs
  - Where costs exceed identified benefits, costs allocated to ratepayers in same service class
- Monetary Crediting Based on Value of Generation
  - Value of generation determined at location and time of generation based on avoided utility costs resulting from generation
  - Credit applied against customer bill based on that value
- Applied to Net Hourly Injections Into Utility System
  - “What happens behind the meter stays behind the meter.”



# Phase One NEM

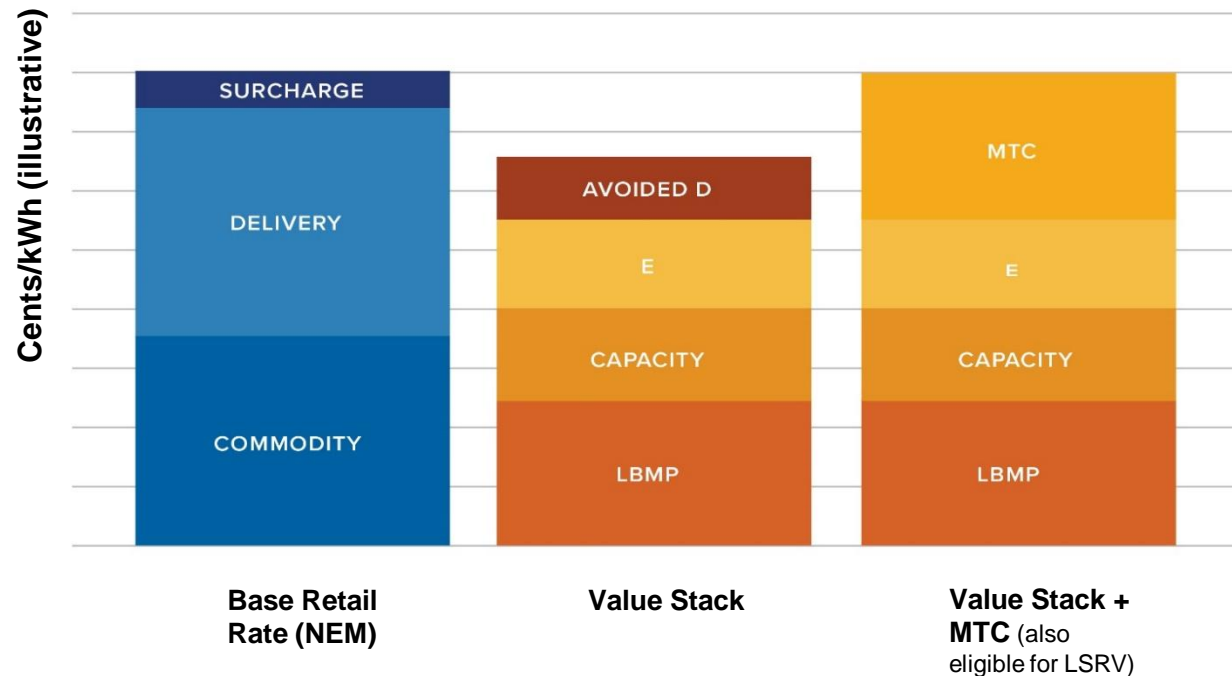
- Phase One NEM is similar to NEM compensation except:
  - Phase One NEM projects are subject to a 20-year term
  - Credits will carry over to next billing periods (no annual true-up)
  - After a 20-year period, projects will receive compensation structure in effect at that time
- Eligibility
  - Mass-market on-site projects (e.g., residential rooftop) interconnected before January 1, 2020
  - Large on-site and RNM projects that made payment of 25% of interconnection upgrade costs, or executed an interconnection contract by July 17, 2017
  - CDG projects that met the above requirement and fell within specific, by-utility capacity allocations



# The Value Stack

- The Value Stack consists of several elements representing the value of a kWh to the grid and the environment
- Some elements are time and location sensitive
- kWh produced in congested parts of the grid during peak demand time will be paid more
- CDG projects will receive an additional item (MTC) for mass market customers to better align compensation with NEM

# Value Stack Components



- **Avoided D** – Includes demand reduction value (DRV) & locational system relief value (LSRV)
- **E** – environmental benefit
- **Capacity** – ICAP
- **LBMP** – energy commodity
- **MTC** – market transition credit for mass market portion of CDG projects, non-mass market portion receives DRV

# LBMP – Wholesale Cost of Energy

- Day-ahead hourly locational-based marginal pricing (LBMP), inclusive of electrical losses
- Based on [NYISO zonal prices](#)
- Fluctuates based on demand for electricity and fuel prices



# ICAP - Capacity

## ➤ PV and other non-dispatchable technologies

- Compensation on a per kWh basis, based on the capacity portion of the utility's full service market supply charges (in effect, same value as NEM)
- Alternative 1 – spread over all hours of the year
- Alternative 2 – spread over 460 summer hours, resulting in a significantly higher per-kWh rate for those hours, but no compensation for other hours

## ➤ Dispatchable technologies (ADG, fuel cells, CHP)

- Alternative 3 – Per kW compensation for grid injections during single highest annual hour of peak grid demand in the previous year



## E- Environmental Value

- Environmental compensation is the higher of:
  - The applicable Tier 1 REC price per kWh generated (e.g., per kWh price from auctions for procurement of large renewable generators) (currently \$0.02424 per kWh)
  - The social cost of carbon (SCC) per kWh value minus Regional Greenhouse Gas Initiative
- E value is locked in for 25 year project term when a project executes its SIR contract, or makes 25% payment on interconnection costs



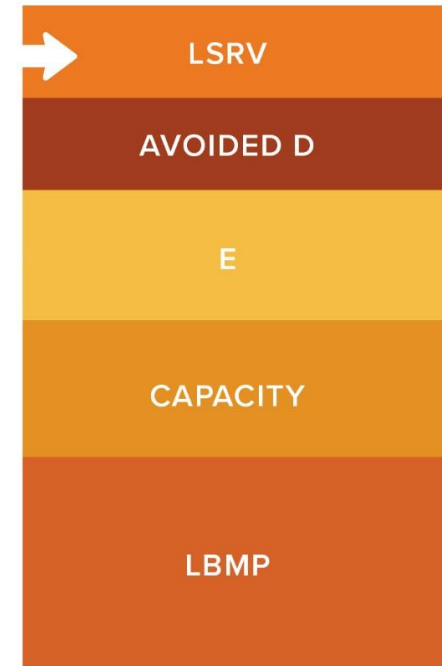
# DRV – Demand Reduction Value

- Only for projects that do not receive MTC
  - For any portion of a CDG project that does not receive the MTC (i.e. large customers), that portion will receive the DRV
- Utilities will calculate the \$ per kW-year value of demand reduction to the grid
- Compensation is tied to kW injected during the distribution system's 10 highest usage hours in the previous year
- Utilities will recalculate DRV regularly, but it is locked in for 3 years at a time for each project



# LSRV – Locational Adder

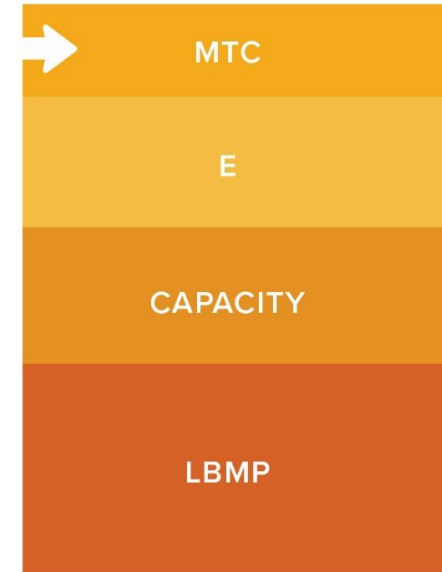
- LSRV is paid for projects located on sections of the grid where DG can relieve congestion or other needs. Each utility has provided maps and MW limits
- Like DRV, compensation is tied to kW injected during the distribution system's 10 highest usage hours in the previous year
- LSRV can be received in addition to DRV & MTC (CDG projects are eligible)
- Paid at a fixed per kW rate for first 10 years of project term
- LSRV rate is locked in when project pays 25% of interconnection upgrade costs or executes SIR



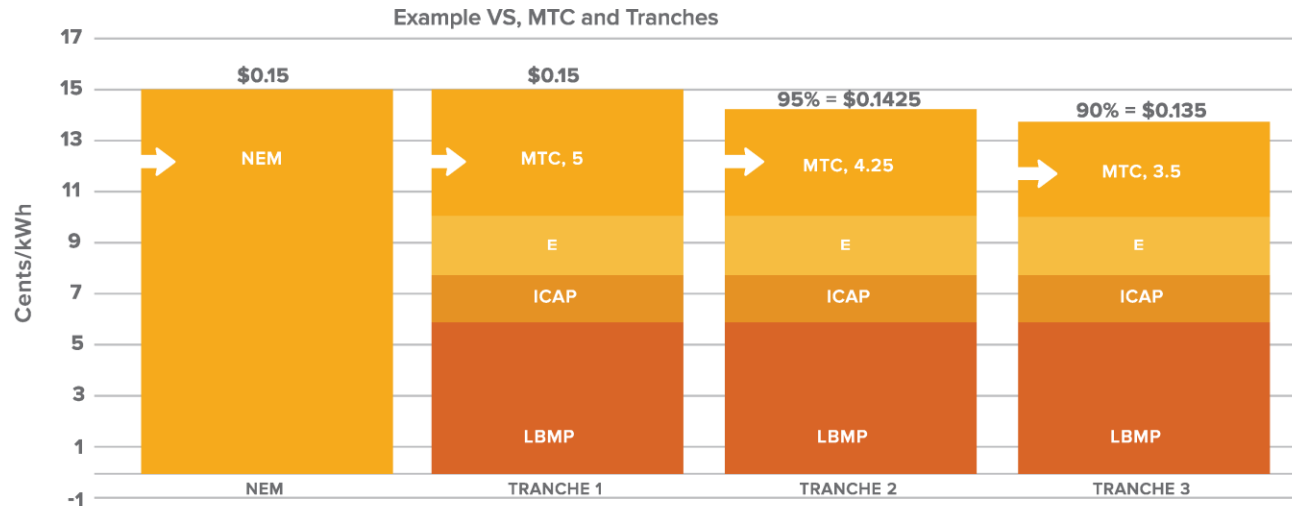


# MTC – Market Transition Credit

- For CDG only: MTC is applied to CDG mass market membership proportion
  - Ex., if a project has 70% mass market (non-demand) off-takers and 30% large commercial off-takers, the project will receive MTC on 70% of generation, and DRV on 30% of generation
- MTC is also available for Mass Market projects that opt-in to the Value Stack
- The MTC is fixed and applies to a project's 25-year VDER term
- Projects are locked into MTC tranche when they pay 25% interconnection upgrade costs, or execute SIR



# CDG Tranche Design



- MTC = Difference between *Base Retail Rate* and *Estimated Value Stack*
- Intended to make estimated CDG compensation...
  - equal to *Base Retail Rates* (NEM) in Tranche 1
  - 5% less than NEM in Tranche 2
  - 10% less than NEM in Tranche 3
- MTC rate locked in when project executes SIR or pays 25% of utility upgrade costs

# CDG Tranche MW Allocation and Subscription by Utility

Tranche	ConEd	NYSEG	Orange & Rockland	Central Hudson	National Grid	RG&E
0/1	5.5 of 136 MW	62 of 62MW CLOSED	24 of 23 MW CLOSED	40.6 of 39 MW CLOSED	84.4 of 119 MW	26.2 of 28 MW
2	0 of 206 MW	84 of 84 MW CLOSED	12 of 12 MW CLOSED	10.4 of 19 MW	0 of 178 MW	0 of 42 MW
3	0 of 205MW	17 of 77MW	14.3 of 11 MW	0 of 19 MW	0 of 177 MW	0 of 41 MW

# VDER Implementation Order Highlights

- Utilities are ordered to report on feasibility and timeline for implementing consolidated billing (on-bill payments) for CDG projects
- The Commission is considering increasing of maximum project size from 2MW AC to 5MW AC

# VDER Phase Two

- Value Stack Working Group
  - Expanded Eligibility
  - Enhancement of Value Stack Elements
  
- Rate Design Working Group
  - VDER for On-Site Residential and Small Commercial Projects
  - Rate design changes for better alignment with VDER and REV principles:
    - Increased time and locational variation
    - Improved Standby and Buyback rates
  
- Low-Income CDG Working Group

# Staff Subcommittee on Consumer Affairs