

BRIDGING SOLAR'S VALUE GAP

RUCO's analysis and policy
recommendations for roof-top solar



Outline

- Introduction
- The issue
- RUCO's proposal
- The analytics
- The findings
- Implementation
- Conclusion



Introduction

- This issue is not directly about Net metering (NEM), it is about rate design and how to determine the costs and benefits of customer sited generation.
 - A rate case or generic docket would be the best forum to have the discussion.
 - The matter is not an impending emergency but it should start to be addressed.
 - APS should be required to file a rate case in 2016.
- Arizona should lead the way in creating smart policy that fairly compensates the solar customer and minimizes the fixed cost shifts to non-solar customers.



Guiding Principles for RUCO

RUCO is in a unique position on this issue because RUCO represents both sides - the residential customers with solar and the non-solar majority.

- Fair allocation of costs and benefits to solar and non-solar customers.
- Sustainable policy platform that prepares DG to flourish without negative impacts to ratepayers.
- Market-based encouragement of new technologies that does not pick winners or losers.
- Measured approach to DG deployment based on what the utility system needs.
- Incremental approach that is easy for customers to understand and facilitates financing.



RUCO's Proposal

- In addition to having a larger discussion, RUCO suggests a market based fixed charge on every new solar customer's bill to resolve the net metering issue.
- RUCO is proposing a model that maintains net metering but corrects any net cost shift to non-solar residential customers.
 - RUCO suggests a market based fixed charge on every solar customer's bill. The charge should start at \$1/kW or \$7 per month for the average system.
 - Current customers would be grandfathered and new customers would have their fixed charge locked in for 20 years to provide certainty around their investment.
 - The near term target should be to reach \$3/kW as soon as the market allows.



The Analytics

- RUCO used a capital cost calculator model employed by the Western Electricity Coordinating Council (WECC) to determine the generation savings of a PV system.
- The methodology employed followed that of SAIC in the APS commissioned study.
 - The difference comes in the fact RUCO took the traditional approach of obtaining a levelized figure rather than a snap shot approach.



The Findings

- There are two ways to look at the issue of customer sited generation:
- The impact today and the impact over time.
 - APS looks in the near-term and the rooftop solar industry looks over the long-term.
 - RUCO balances both perspectives.
- A manageable level of short run costs is acceptable as long as benefits overtake costs over the long-term.

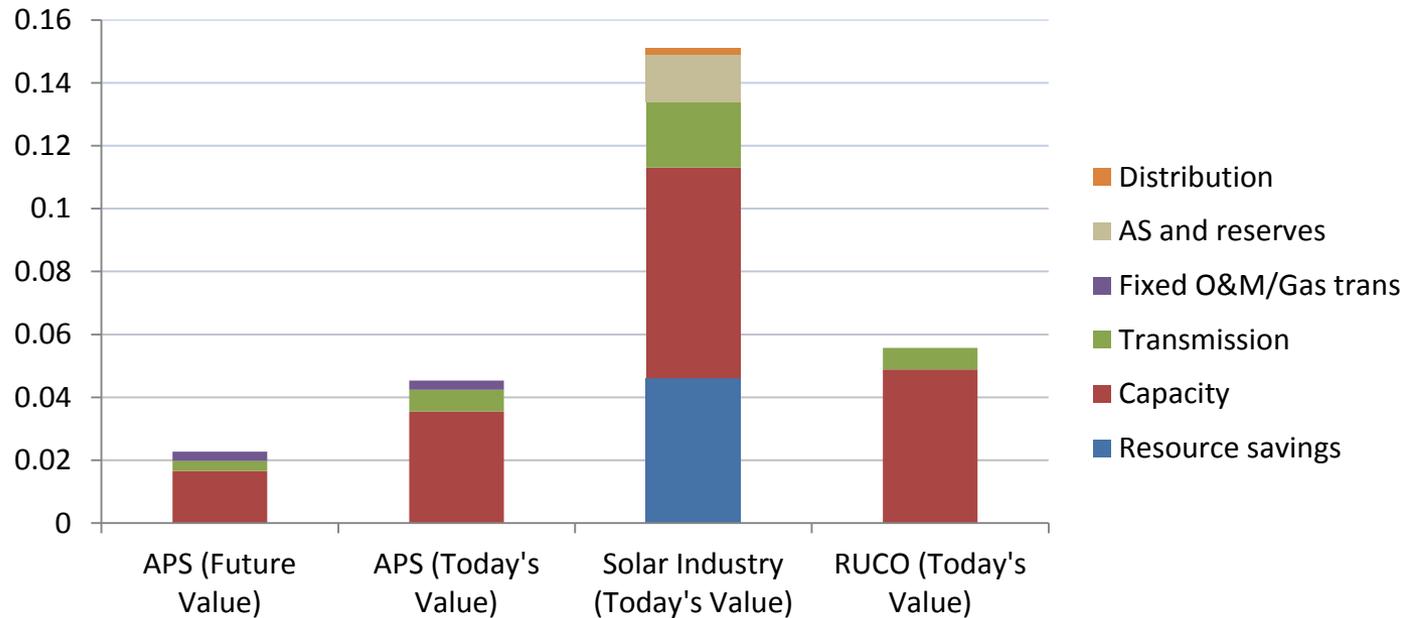


The Findings

- RUCO found a value gap with rooftop solar on APS's main residential rates. This means that the benefits of roof top solar do not fully cover the cost.
- A \$3/kW or ~\$20/month charge for the average system would ensure that the system is breakeven for non-solar ratepayers within 20 years.
- As solar penetration increases the charge increases for new customers because the value is less to the grid.



The Findings: Non-fuel based benefits



Note: The APS figures are not exact as they used a “snap-shot” approach as opposed to the traditional levelized approach.



The Findings: Large scale DG PPA vs. Rooftop Solar

- Rooftop solar has two modes: self supply and export.
- Self supply is very similar to a full retail product or energy efficiency – It is used instantaneously by the home and does not need transmission or distribution.
- Export uses part of the distribution system and is similar to a PPA.



Large scale DG PPA vs. Rooftop Solar

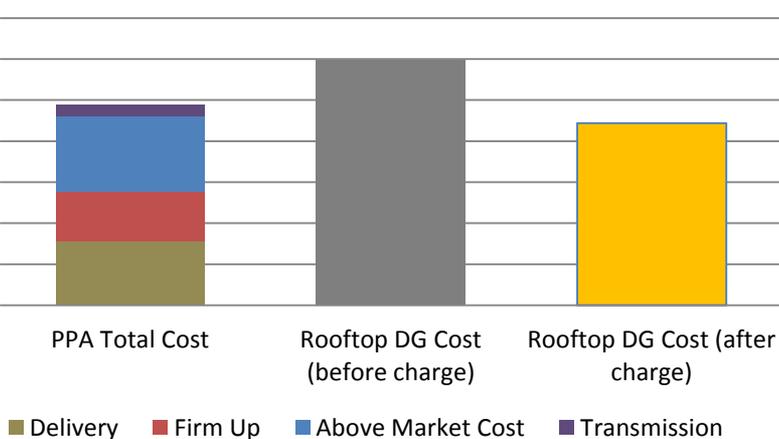
- Comparing the two is to some degree “apple and oranges”.
- RUCO attempted to place them on a level playing field.
- Findings: Given a 30 year 8.5 cent/kWh PPA with single axis tracking:
 - During self supply the PPA is ~20% cheaper than rooftop solar
 - During export the PPA is significantly cheaper



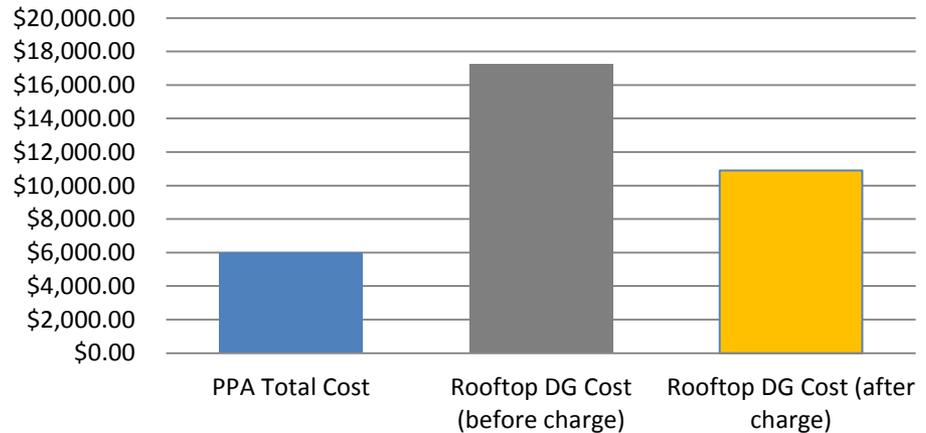
Large scale DG PPA vs. Rooftop Solar

- RUCO analysis showed a \$3/kW charge would bridge the gap given around a 65% to 70% self consumption rate.
 - APS suggest that the self consumption rate is 80%.

Wholesale DG PPA vs Rooftop DG During Self Supply (\$/kWh)



Wholesale DG PPA vs Rooftop DG During Export over 30 years (Total \$)



Large scale DG PPA vs. Rooftop Solar

- RUCO's policy closes the gap with the \$3/kW fixed charge and the allowance of a higher fixed charge after year 20.
- RUCO recommends against using comparisons between wholesale and customer side of the meter transactions to determine policy details.
 - It should be used to check reasonableness but not to identify specific numbers.
 - The comparison is messy and one assumption change can yield dramatically different outcomes.



Implementation:

Smooth implementation is critical to the transition. Easing into the new paradigm would allow the industry to plan and prepare to respond to market signals. An example of the phase-in could look like this for an average 7 kW system:

	MW Installed	Charge per kW	Charge for average sized system
Step 1	20 MW	\$1.00/kW	\$ 7.00
Step 2	20 MW	\$1.50/kW	\$ 10.50
Step 3	20 MW	\$2.00/kW	\$ 14.00
Step 4	20 MW	\$2.50/kW	\$ 17.50



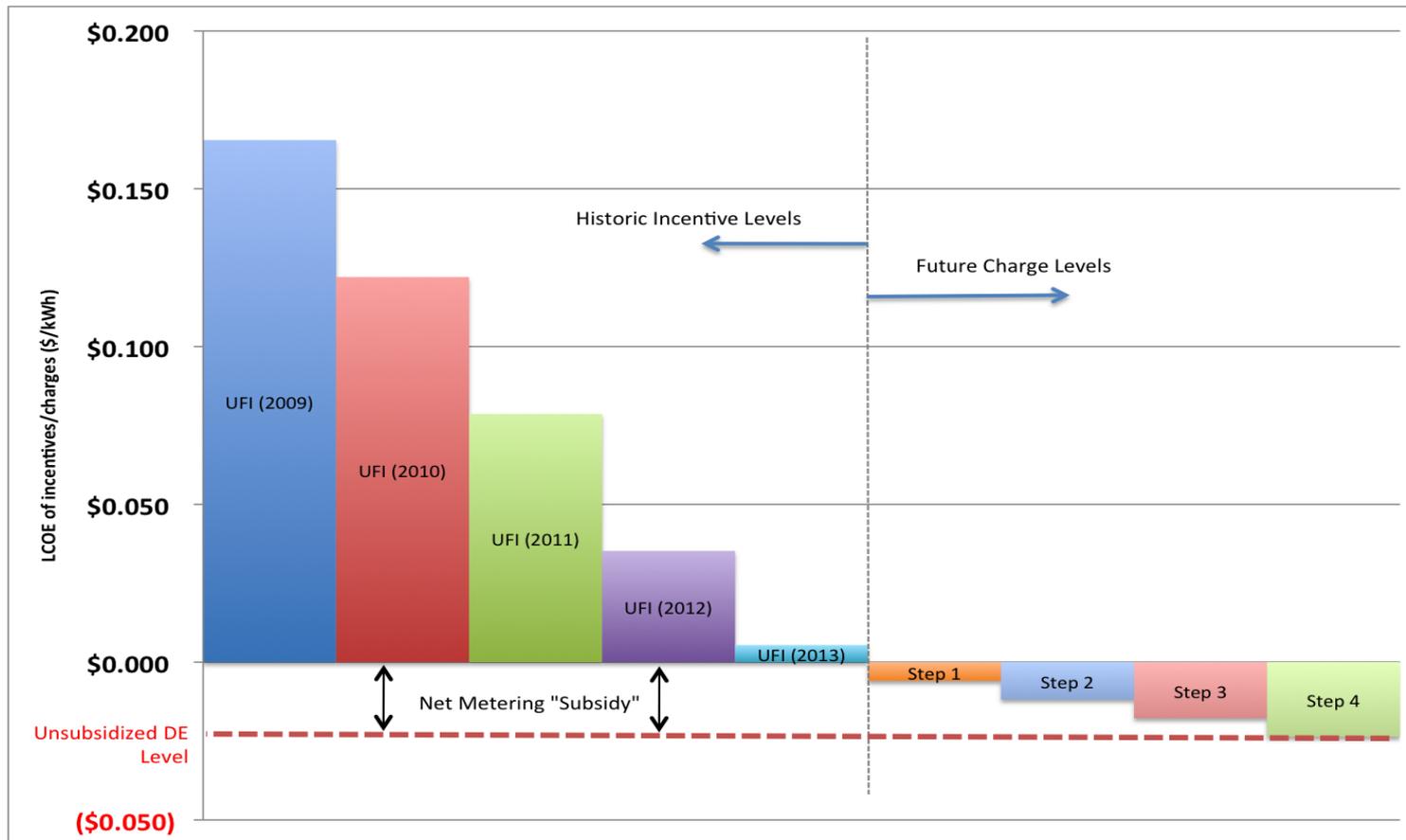
Implementation:

- Every 20 MW triggers a \$0.50/kW increase to the LFCR charge.
 - To avoid excess cost shifting any system 16 kW and above should be assessed the \$3/kW rate. That would translate to a \$48 per month charge.
- Periodically the utility should determine the capacity value of solar PV using the method they readily use today.
- Once the market can handle a \$3/kW charge, rooftop solar is cost neutral to ratepayers over the 20 years.
 - However, there is still a near term cost shift occurring. Therefore, if the market can handle further charges this short term cost shift can be mitigated and rooftop solar could actually provide a net benefit for non-solar ratepayers. This will also start to occur at year 20 of the system life under the proposed policy.



Implementation:

- This is similar to past incentive declines



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Implementation:

Example

2014

Neighbor 1 goes solar when the fixed charge is \$1/kW. They get a 7 kW system, their \$7 charge is locked in for 20 years.

2015

Neighbor 2 goes solar when the fixed charge is \$2/kW. They get a 7 kW system, their \$14 charge is locked in for 20 years.



Conclusion

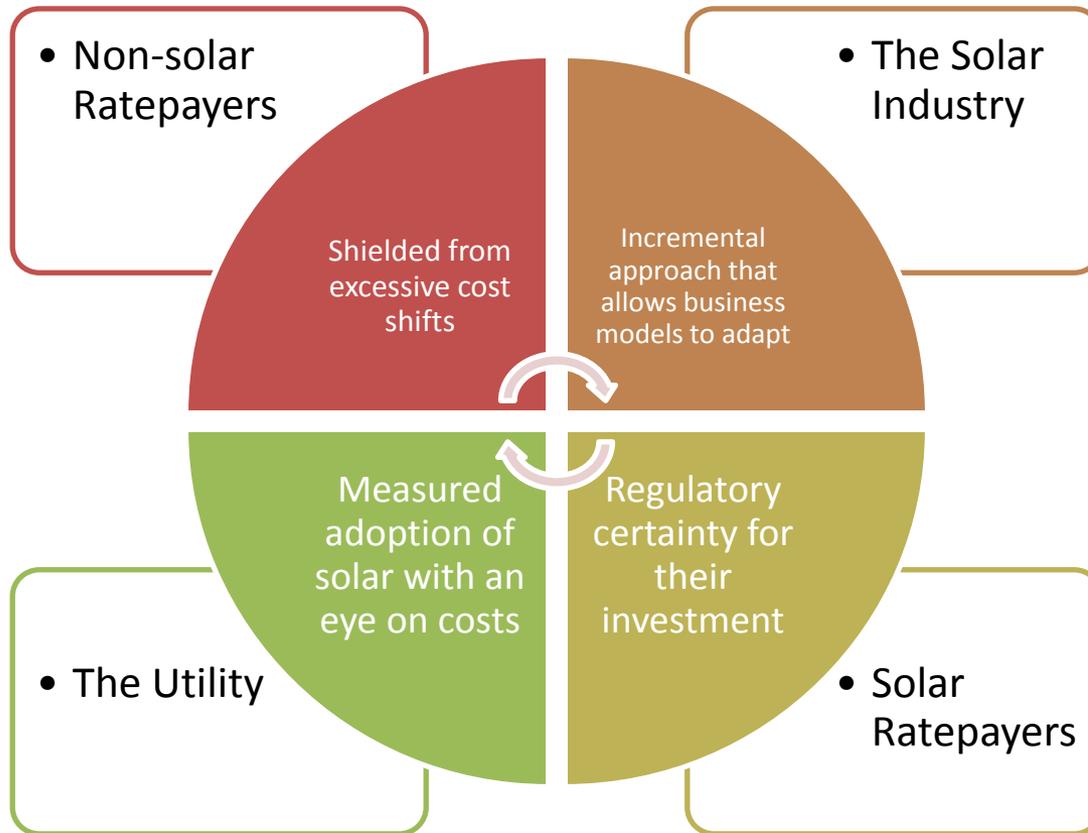
In sum, RUCO's policy accomplishes the following:

- It develops a uniform methodology for other Arizona utilities to follow while taking into account the uniqueness of their service territory
- It can apply to other technologies
- It recognizes solar's value (conservatively)
- It recognizes the cost shift and contains it, with money going to non-solar rate payers not the utility
- It takes into account changes in solar's value over time
- It levels the playing field between solar technologies
- It can be designed to capture RECs
- Net metering still exists in its current form
- Underlying rate structures do not need to change to guard against solar adoption
- It provides the Commission with much flexibility



Conclusion

Under RUCO's Policy Every Stakeholder gets a Piece of the Pie:



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