Solar America Initiative
Technology Acceptance Technical Exchange Meeting
San Francisco, CA
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Infrastructure Development Breakout Group C: Net Metering Regulations

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General Discussion, Comments, and Suggestions:

- A utility representative pointed out that fears of revenue loss were inappropriate because as long as the utilities investments are appropriate the standard rate recovery rules apply, and therefore any actual revenue loss would be made up from other sources.
- What do the utilities fear about net metering?
    - Small generation may be a disruptive technology. It's a revenue loss.
    - Builder would share profit if utilities made distributed generation capital investment.
- The utility is not suffering from lost revenues; costs are just shifted to other customers.
    - Cost shifting is an issue, or at least a perceived one.
- Some utilities don't have shareholders, but voters. It's encouraged and pays for excess production.
- A utility representative suggested that they could use help with the high billing costs for net metering—each utility's system is complicated. Their particular system can't account for negative numbers (it is designed to be a red flag for theft). A second meter is required, to read PV production and put it on to the bill at the utility's cost. This is used to monitor PV performance.
- Utilities face a great deal of skepticism on PV as reliable resource from their resource planning staff, in that it is treated as non dispatchable. They believe it is not predictable.
- The PV industry needs to document the counterevidence—utilities don't rely on anecdotes, but on meters. An electric system is a balancing act. It was pointed out how important the data gathering at Pioneer Gardens is in this issue, to overcome these "non dispatchable" legacy assumptions.
- A study done by Itron was recommended to the group. This study was on the system effects of net metering on the California system through measurement and evaluation of a net metering program. Apparently this study found that for 2004, 39% of installed net metered power was available at system peak. It was suggested that the peak in California is late and getting later. While there is uncertainty in when the peak will be with respect to the actual date and time, there is increasing accuracy about the parameters. This presents real costs to utilities and needs to be addressed. Inverter technology may help.

- Utilities are uncertain about what would happen if there was a lot of solar in one place in the grid. It was suggested that the Department of Energy learn from European experiences.
- Peak happens at different times, shapes, magnitudes. By playing in the game and creating a mechanism where 5 KW systems can contribute, you can offer guidance. Proper solar orientation can help. A building representative reported that North Carolina has been proactive in creating a house as a small utility. The house is generator and the builder gets paid. The Department of Energy should learn more about this apparent "feed tariff"-like provision.
- Who takes the green credit? In California it is the person who invests in PV.
- Utility concern: planners will say that regardless of PV output, they still have to plan to serve that load in a worst-case scenario. There's a "show me" stance by planners because they see their job as being able to deliver power under any circumstance.
- Consumer perspective: stability is a problem—whether it will be available or whether rates will shift.
- There is a disconnect between how rates are set and how decisions about solar are made. One utility had a time-of-use residential rate subsidized by non-time-of-use. The last general rate case ended the subsidy which hurt solar community, who had not weighed in on the more general case.
- The group expressed strong consensus that there is a need for certainty on pro-solar tariffs, rebates, and cost structure. Potential customers/investors get nervous if they thing the tariff rates upon which they intend to base their investment may change for the worst during the recovery period. More solar participation in rate cases would support these concerns.
- There are a lot of win-win situations when you combine energy efficiency and solar, from a customers perspective. Energy efficiency is more cost effective now and should always be combined with PV investments.
- The market is dynamic, and real time pricing will be volatile. Utilities support this because it shows real costs.
- The Hoff-Margolis work (http://www.clean-power.com/research/customerPV/TOU_Analysis_Present.pdf) suggests that time-of-use rates will generally be favorable for PV investments but that extreme variability among states and utilities requires confirmation and determination of unique issues for every investment.
- System planners are getting more familiar with solar, which will help.
- Every utility plans differently based on different territory and markets. Some serve wide territories, some are compact and dense, and distribution costs are lower. This lends itself to standardization. There are geographic differences in cost to serve. One participant suggested that Public Utility Commissions are reluctant to go to true cost of service (historical regulation averages costs).
- There is a huge variety of net metering statutes. Maybe there should be guidelines or best practices. The solar industry talks about benefits, utilities about costs, and they don't meet. Someone in the middle is needed.
- When customers size a system under non-time-of-use, then sign up for time-of-use rates, they tend to get less benefit of net metering (as they may then have more credits than they can use over the period). At least in California with major

time-of-use rate differences for peak and off peak, you need to remember that you earn a dollar credit for exporting, but time-of-use rates can increase the difference between off and peak (AC on peak up to 38 or 40 cents for some). This has implications for system sizing. Exports are in such cases (Note: but certainly not everywhere) valued at the RATE, not the kWh—so time-of-use rates matter.

- The grid is unstable, less than 1% knockout can lead to blackout. It was pointed out that caps on the use of net metered PV or other technologies can by definition prevent distributed technologies from providing badly needed grid support.
- Does a larger community reduce the grid risk? A participant suggested that it doesn't. There are still a bunch of systems. An actual central system would be needed. This issue was not consensus based.
- What would be most valuable for the Department of Energy:
    - Net metering is a complicated thing. Look at technologies for automating billing issues. Cost is in truing up the bill. Utilities pay ten times as much to bill a net metered customer than non-metered. Very long bills as well. Research metering technology in general. Start quantifying benefits of solar as a peak resource.
    - Small utilities barely know how to bill at all, so complex net metering is too much.
    - Different metering and billing systems leads to diversity in net metering.
    - The beauty of the German feed-in tariff is that there's no net metering. It is nationwide and political, not based on cost.
- A utility representative noted a preference for separate generation and use, not net metering. Produce as much as you can, save as much as you can, and keep them separate.
- There was concern about this from the solar industry representatives—net metering is retail rate, generating would be at generation rate.
- A consumer representative noted that the grid is a battery backup, so batteries buying batteries is not needed when the grid is available. Consumers would be willing to pay for backup services, but don't want to pay different rates for generation and retail.
- Look across states; see who owns green component, green tags, Renewable Energy Credits.
- There is interplay between standby rate and net metering. There are so many different initiatives going on, there is a need to address how different programs interact with each other. The real issue is what customers are paying for and what they are getting as a result.
- There is concern about a net-metering cap.
- The California Solar Initiative has a 3000 MW target, how does that interact with net metering cap, which is less?
- A Department of Energy Representative asked: What are the impacts of large-scale adoption on utilities, especially distribution, safety, reliability? Individual substation impacts, may impact at transformer level.
- Network grids—string transformers together to increase reliability. Some utilities have no net metering on networked grids, but others allow this.

- Create a cross-state uniform model so that big builders can participate. They are executing national purchasing to standardize and improve quality; they would want to do that with energy as well.
- Penetration into low-income community is inhibited by amount of regulation in that sector. Also, in California you can't build with master meters. How do you do net metering with multifamily buildings?
- Everyone wants energy costs to go down. This drives solar. As rates go down, solar doesn't make as much sense. We must bring down the cost of solar.
- Low income: build one system for a building and bill through common area meter.
- The availability of energy will be as much of an issue as cost if you look at a long enough time horizon. We need to look at a longer timeframe than a customer wanting to lower its costs.