

## **Florio Speech to CA Energy Efficiency Industry Council**

**October 7, 2015**

### Title: Integration of Demand-Side Resources in California

1. Let me begin with the big picture-- Recent reports for the UN's Intergovernmental Panel on Climate Change remind us:
  - a. "There is a strong scientific consensus that the global climate is changing and that human activity contributes significantly to this trend...
  - b. "warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased..."
  - c. "The effects of climate change are already occurring on all continents and across the oceans." And as we conclude yet another summer of drought and wildfires, these effects are abundantly evident right here in California.
  - d. "But it is still possible, using a wide array of technological measures and changes in behavior, to limit the increase in global mean temperature..."
2. We here in California recognize the threat of climate change and we have accepted the call to action to do something about it.

- a. Governor Brown's leadership has furthered California's momentum.
  - i. Most recently, the Governor's executive order to reduce carbon emissions to 40% below 1990 levels and his leadership in the passage of SB 350 (50% renewables and a doubling of energy efficiency savings by 2030), demonstrate the Administrations' unwavering commitment to take action in mitigating climate change.
  - ii. At the California Public Utilities Commission we share Governor Brown's commitment; our zeal has also been intensified to a maximum degree.
- 3. And we have progress to share and celebrate.
  - a. In 2014 25% of retail electricity sales were met by renewable energy. That's up from 12% in 2003. And we're well on our way to exceeding 33% by 2020, and I believe 50% by 2030 as well.
  - b. Meanwhile electricity consumption continues to remain in check. Load growth between 2014 and 2024 is forecasted to be lower than it was between 1990 and 2000. Despite the recent economic rebound in at least parts of the state, the increase in usage that some expected has not occurred.
  - c. Taken together these factors, as well as many others, show California on track to achieve what was previously argued impossible: economic growth *and* emissions reductions.

i. According to Next 10, “California’s current GDP is nearly 30% higher than it was in 2006 (\$2.2 trillion vs. \$1.6 trillion), and our economy is now 28% less carbon intensive (per dollar of economic activity) than it was in 1990. Our GDP is growing while our emissions are falling.”

d. These are significant and noteworthy accomplishments.

4. Looking ahead climate change will continue to be a prime mover at the Commission and the challenge we will be wrestling with is how to achieve our 2030 and 2050 climate objectives, while maintaining safety and reliability and containing costs.

a. The balance of my remarks will outline an initial vision for how we may manage those challenges, with an emphasis on where demand side resources fit in. But a commissioner can only point the way – it will, as always, be up to the parties and staff to do the hard work of making it happen!

5. It may be controversial among this group, but I see large-scale renewable generation as the core of our emission reduction strategies. They are the engines. Here is why I believe that:

a. First, the price of large-scale solar power has dropped from an average of 20 cents a kWh to 5 cents since I been on the Commission. Wind prices have also dropped dramatically. Both of these technologies appear to have reached grid parity. The declining cost curves of these technologies is an absolute game changer.

- b. The Second reason I think renewables will be the core is their relative simplicity to measure and verify. Emissions reductions from the demand side may still be cheaper, but the counterfactual conundrum seriously complicates demand side resources: confidence in their delivery is undermined by that old question, “would it have happened anyway?” For now, resources that can be metered have an enormous advantage over those that can’t.
6. So where does that leave behind the meter resources? My view is that whereas large-scale renewables are the engine, demand side resources are the transmission. And before this group starts feeling too nervous about my remarks, let remind you that without a transmission your car won’t go very far.
- a. While wind and solar generators enjoy the advantages of declining cost curves and easy EM&V, they fall down when it comes to operating a power system: their production is largely insensitive to demand.
  - b. Misalignment of solar and wind power supplies with demand is a big problem. And not just for the future, but already. This year ISO real time energy markets experienced a two-fold increase in negative prices between Q4 2014 and Q1 2015, occurring in about 6% of intervals. These are early but noteworthy indications that supply and demand is misaligned.
  - c. Left unchecked, the ISO forecasts that over-generation could reach over 10,000 MW by 2024. This forecast may be a

worst case scenario, and we have many tools we can use to make that number smaller, but even if they're forecast is partially correct, it's a forecast worthy of serious attention and mitigation.

7. My vision is that demand side resources will be a big part of that mitigation. Through load shifting, including both increased and decreased consumption, when and where needed, demand side resources are ready to provide substantial value and receive commensurate compensation. I believe if demand side resources can be sensitive to when, where, and how dependably they deliver, they can meet the need, solve the problem, and profit.
8. So how might we organize ourselves so that demand side resources achieve that objective? This is a central question facing the Commission now. Here are the main challenges I foresee:
  - a. First, we must finish persuading the utilities and grid operators to treat demand side resources as an opportunity, not a threat. We've made progress in this regard, but work remains. Conversely, we must persuade ourselves and the demand side resource providers – including CEEIC members -- that services which are insensitive to time, location, and dependability of their delivery are worth less than those that are... and may even have a negative value, especially on mild spring afternoons when solar and wind production is high, hydro runoff is at its maximum, and demands are seasonably low.

- i. There are two sides to this. When it comes to this problem, we can't cram a square peg into a round hole. Both the peg (demand side resources) and the hole (traditional grid planning, investment, and operations) have to change shape and meet in the middle.
- b. Second challenge, fostering increased customer sensitivity to when they consume power or in the alternative, equipping them with technology that manages their time-of-use for them.
  - i. I'm not going to say much about this, but just to note that the Commission voted unanimously in July to allow default time of use rates for residential customers starting in 2019. Commercial and Industrial customers are already on default TOU. Increasing customer sensitivity to time of use is adopted policy in California and implementation is underway.
- c. Third challenge, Innovation in measurement and verification is critical -- the counterfactual conundrum needs attention.
  - i. Again I'm not going to delve too deeply into this one, but I noted with interest the passage of AB 802 and its requirement "to incorporate meter-based performance into determinations of goals, portfolio cost-effectiveness, and authorized budgets"

- ii. I hope this bill leads to a serious conversation about whether and how we can measure and verify efficiency savings more quickly and with more transparency.
  - d. Fourth challenge: Creating financeable commercial opportunities for demand side resources that are sensitive to when, where, and how dependably they deliver.
- 9. This is the challenge that I'm most focused on at present so let me elaborate.
- 10. First, the Commission is currently considering the Utilities' Distribution Resource Plans (or the DRPs). In that proceeding, which is CPUC rulemaking 14-08-013, the Utilities have presented methodologies through which they can identify where Distributed Energy Resources can be accommodated at little or no cost; what would be the cost to accommodate more at certain locations; where DER could actually reduce the cost; and what the expectations are for the dependability of delivery.
  - a. In short, if we can get these methodologies right, utilities can determine where to target DER and how much they are worth in those locations.
  - b. From my perspective, these methodologies and the resulting determinations should be the bedrock of creating financeable commercial opportunities for demand side resources that are sensitive to when, where, and how dependably they deliver.

11. Once we know where the DER are needed and how much they're worth in that location, we turn to the next question: what is the best way to take that demand and price signal to market? Addressing this question is the purpose of a new proceeding I'm leading, which we call the Integration of Distributed Energy Resources. This is Rulemaking 14-10-003.

a. This effort has been under discussion since January and was formally launched by the Commission last month through Decision 15-09-022.

b. Through this proceeding we will ask the following:

i. How to source the DER? Through tariffs? Competitive solicitations? Utility administered programs? Or something better? I suspect a combination of sourcing mechanisms may be called for, but what combination and why?

ii. I also suspect the approach to valuation currently under consideration in the distribution resource plans, which is essentially an avoided cost based snap shot, won't prove to be totally satisfying. The distribution grid is simply too granular, and at the same time too dynamic, to function effectively under a system of administratively determined avoided costs. Thus, I expect that we will, out of necessity, end up in a situation where the utility (or DSO), acting in the role of the "smart aggregator," will be required to determine the least cost solution to grid issues. And in



order for such a model to work, there will have to be changes to our current framework for determining utility shareholder compensation.

- iii. The Commission will also need to consider the question of whether market based prices can be used instead?
  - 1. We do not procure bulk power or traditional transmission or distribution infrastructure on an avoided cost basis. We identify need and use quasi-market functions – RFOs – to ensure we get the best price available. Why should DER be held to a different standard? If these resources are indeed preferred and competitive, why the extra burning hoop of cost-effectiveness protocols to jump through?
- iv. We will also ask whether the commercial opportunities we seek to create should be tied to a service, a technology, a customer segment, or something else? What should be bought and sold? For example, should we source voltage support at a circuit in need? Or rooftop solar coupled with batteries? Or efficiency from small C&I?
- v. We will also ask whether it's acceptable public policy to offer larger incentives to some customers than others based on their location?

- c. These are difficult questions, but ones that have the potential to lead us new and better directions. My perspective is that our current approach to sourcing Distributed Energy Resources, including demand side, is a historical hodge podge without overarching rhyme or reason. We believe it prudent to ask again if there is a better way to go about it. And we do so with the intent, as I said before, of creating financeable commercial opportunities for demand side resources that are sensitive to when, where, and how dependably they deliver.
  - d. Addressing this challenge is easier said than done and we will undertake the endeavor with humility.
12. To conclude, what I've attempted to communicate here ranges from the global to the local. Climate change motivates us, pushing our industry in new directions. We've had a good deal of success so far, yet we face new challenges, responsibilities and opportunities.
- a. I believe demand side resources have a critical role to play in achieving our climate objectives: serving as a complement to large scale renewables, supporting better alignment between supply and demand.
  - b. I believe this requires our regulations, the utilities, and your services to change. But change is a good thing, especially when there is opportunity to profit thereby.

13. I offer this vision of integrated demand side resources in California for your consideration. In sum, *Demand side resources need to be sensitive to when, where, and how dependably they deliver. Creating and rewarding that sensitivity is the central objective of the Commission's effort to integrate distributed energy resources.*
14. Thank you to the Industry Council for the opportunity share my thoughts. I look forward to hearing your feedback, criticism, and improvements. There are no magic wands here... we will only get there by working together.