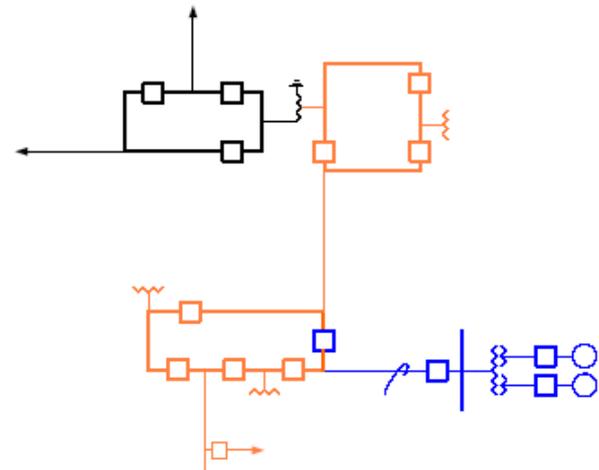


You Say You Want a REVolution

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Whoa!

- ◆ REV will "... help meet threats posed by aging infrastructure, more frequent extreme weather events, greenhouse-gas-driven climate change, and growing dangers to our physical and digital security."
- ◆ "REV promises to make energy a win-win – for the first time in history."
- ◆ Fire, steam power, the internal combustion engine, electricity itself? Were these mere single "wins" in energy?

Value Proposition Sanity Check

- ◆ BAU (business as usual) utility revenue plus REV value added should exceed total customer payments under REV to utilities and new entrants.
- ◆ In other words, REV-world total benefits need to exceed REV-world total customer costs.
- ◆ NY assumes this will occur – *there is no showing that this is a reasonable assumption.*

What the People Want

- ◆ Electric utility customers want safe, reliable, reasonably priced electricity.
- ◆ There is little indication that customers want the complexity of a REV world.
- ◆ REV analogy to information-based networks like the internet is fundamentally flawed.
- ◆ Value proposition of those networks is diversity of choices and participants, whereas retail electricity is incredibly and inherently *homogenous*.

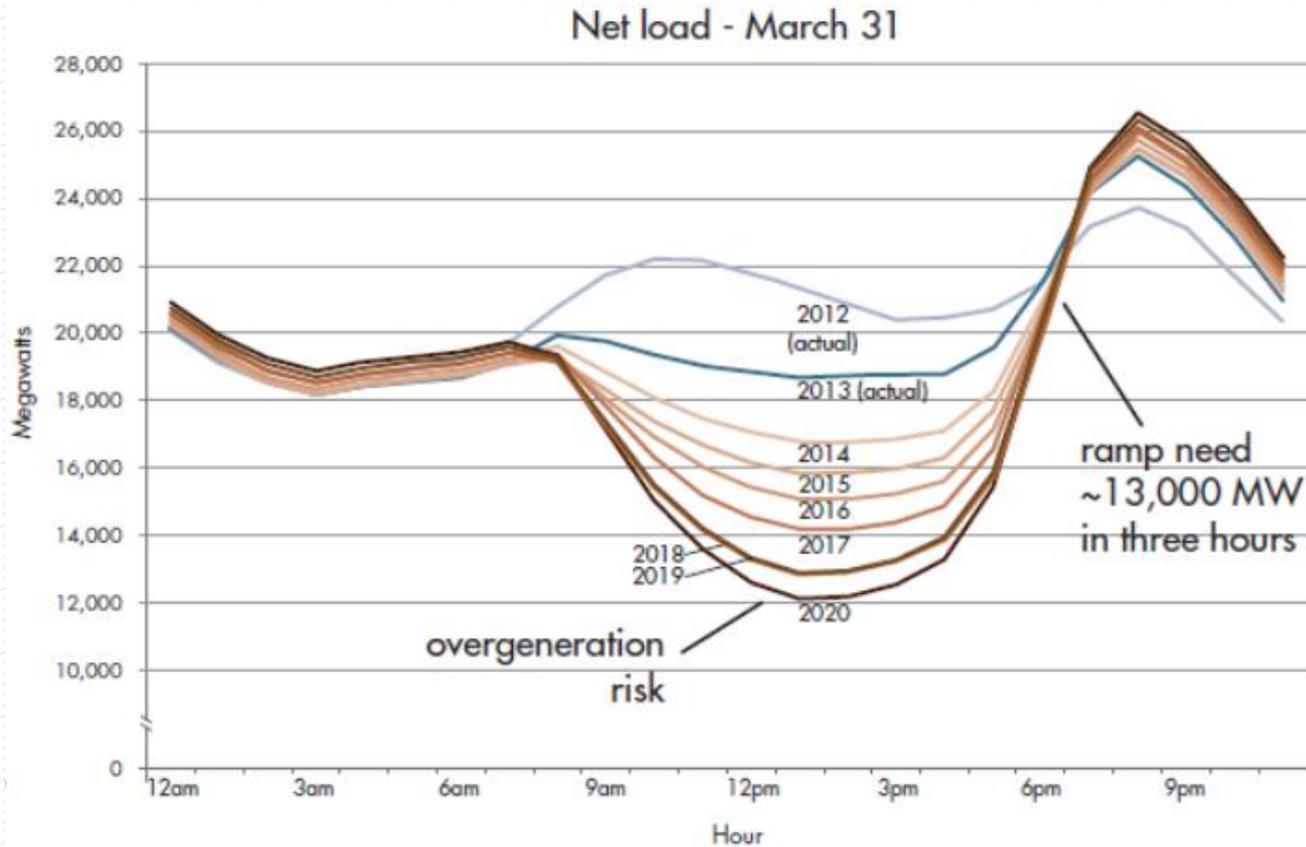
REV Claimed Drivers

- ◆ Some REV elements, like energy efficiency, demand response, and dynamic pricing, do not require a “distribution system operator” or equivalent.
- ◆ REV assumes need to accommodate a proliferation of two retail products:
 - Home solar.
 - Home batteries.
- ◆ Wrong on both counts.

Home Solar: Lessons from the West

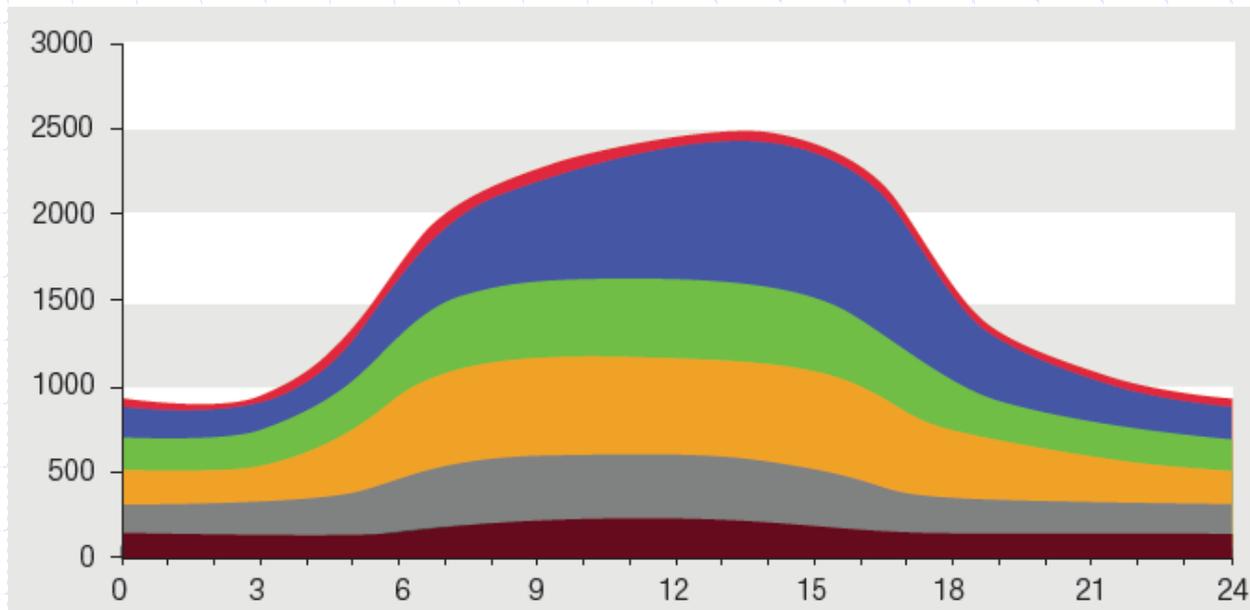
- ◆ Home solar dramatic growth in California due to its high rates, rate design and net metering.
- ◆ Net metering effectively provides distribution and storage services for free.
- ◆ Growth in home solar is creating the “Duck Curve” with low “net load” in the afternoon to be met by traditional generation, and high “net load” in the evening.

California's Duck Curve



California Responds with Storage

California to spend billions on storage, including behind-the-meter batteries that will shave afternoon peak demand (shown below) -- making the Duck Curve *worse*.



And Distribution System Expansion

- ◆ California to expand distribution system for new bi-directional flows due to home solar – but home solar was supposed to *reduce* distribution system costs.
- ◆ In NY parlance of “LMP+D,” “D” is *negative*.
- ◆ Estimated distribution expansion costs for Southern California Edison system to accommodate more home solar are two and a half times per kw what utility-scale solar itself would cost to provide same amount of solar.

Home Batteries: The Powerwall Follies

- ◆ Elon Musk announced the Powerwall home battery with great fanfare a year ago.
- ◆ The backup version was quietly abandoned earlier this year.
- ◆ The daily cycling version makes no sense with a payback period measured in decades in Australia, which has retail rates double those of the States.
- ◆ BTW, it's not green.

Other Hang-ups

- ◆ Making competition work requires competitors.
- ◆ But New York seems to be discouraging new entry into power markets:
 - Requiring retail marketers to guarantee lower prices than future default prices of the utility.
 - Seeking to close an economic nuclear plant (Indian Point) and keep an uneconomic nuclear plant open (FitzPatrick).

Demonstration Projects Not Promising

- ◆ New York PSC said that utilities wouldn't be able to maintain conflict of interest by ownership of distributed energy resources, but that's what has happened so far.
- ◆ Consolidated Edison getting \$14 million subsidy to install uneconomic home solar/storage units at \$7,900/kw.
- ◆ Niagara Mohawk getting \$4 million subsidy to install home solar units at \$7,600/kw.
- ◆ Private sector installs for \$3,500/kw.

Conclusions

- ◆ No demonstrated value added from REV, theoretical or empirical.
- ◆ REV elements with potential value don't require a REvolution.
- ◆ Home solar and home batteries lack economic justification (rely on subsidies from others).
- ◆ NY's demonstration projects run by utilities at uneconomic expense requiring large subsidies.
- ◆ REvolution. You can count me out.



Thank You!

Fortnightly article on New York's REvolution available here,
<http://www.energy-counsel.com/docs/You-Say-You-Want-a-REvolution-Fortnightly-February2016.pdf>.

Fortnightly article on California's Duck Curve and policies available here,
<http://www.energy-counsel.com/docs/just-ducky-fortnightly-april-2016.pdf>.

Fortnightly's Spark article on the Powerwall available here
(update forthcoming in *Fortnightly's* May 2016 issue),
<http://www.energy-counsel.com/docs/That-Old-Musk-Magic-Fortnightly-Spark-May2015.pdf>.