Update on DER, Grid & Electricity Sector Developments

Hello,

Happy Bastille Day!

In honor of a day that celebrates the overthrow of something, I am rolling out an Op Ed titled "Is Demand Response Still A Thing?". You will have to read it to see if I am trying to be a revolutionary in one of my favorite areas.

Changing topics....in a big way.....I want to remind all of you out there that this newsletter needs sponsors to keep it going. If any companies or organizations out there would to like to have a chat about what **sponsorship** means and why in terms of reaching quality audiences it is an incredible deal compared to some of your other options, please let me know.

Also, remember that past op eds and blogs are available at www.wedgemere.com

I hope you are all staying cool during this hot weather - without staying too cool during the peak period. (:

Best

Dan

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Is Demand Response Still A Thing?

I don't normally give the answer to a question-type of headline until the end of my column, but I am going to digress and give it here: yes and no.

First, here is my very short and terse version of the history of Demand Response (DR), which for the moment I am going to define as "time-based reduction in energy consumption", even if that is not the definition I am headed towards).

For decades, utilities have had demand charges for their C/I Customers, meaning that in addition to a kWh charge, customers would be charged for how much kW they drew. Some of these charges are based on a "ratchet" system, where the highest level of kW reached creates the level charged for the next 12 months. The existence of these rates led to the creation of a line of work where consultants helped customers take actions to reduce/shift their level of kW.

Utilities began to provide energy

conservation services to their customer to help them save on their bills. Many utilities added load management services, which helped them reduce the demand they drew from the system. These programs were not considered to be dynamic resources to the utility's or the regional system.

Next came curtailment programs, which were related to system operation. They became known as emergency load curtailment and could be called upon by a utility or a wholesale system to avoid reliability (or even blackout) threats. Consultants again played a role in helping customers, this time negotiating curtailment contracts with their utilities.

Then came the ISO/RTOs and the rise of FERC and wholesale DR, not just emergency type DR but economic DR as well. New companies were started based on the DR opportunity that arose.

While conventional supply resources in those days did not look at DR as a

threat (that changed later), DR at the same time did not have a lot of support. The traditional efficiency community and the environmental community did not really like it in the beginning and took a while to warm up to it.

DR began to thrive. More companies got into the business of delivering it. Wholesale DR grew from programs to markets. DR got big enough to be a threat to supply-side resources, and DR beat back challenges in a variety of venues including the Supreme Court.

DR also got big enough to send a message to the traditional efficiency community that energy efficiency had to get into the new wholesale markets being created by DR. It also sent a message to places like DOE, which is now engaged in efforts aimed at Buildings-to-Grid (B2G) support.

But what of DR today? What is next for it? Is it still a thing?

Relative to semantics, and contrary to what some have said, I did not invent the term. I think I know who did, but

since I could be totally wrong, I am going to refrain from naming anyone. But since its inception, it has been a very challenging term. It has always been thought of as reducing consumption and therefore the word "demand" inferred that it was something that took place on the demand side of things. "Response" seems to have come from the idea that it was called for by the "system" at a particular time and that it was expected to "respond".

But the two words together can also mean that the system is "demanding a response" - of any kind. But of course such a definition would mean it is not limited to things on the demand side. It could be applied to peaking plants as well, in that they are called upon during specific times of system need.

If the system context is taken further, and the idea of "response" is emphasized, then storage becomes a response, including the storage option provided by EVs. Many energy storage resources, including EVs, will be owned by customers and will represent

another way for customers to help themselves by helping the grid. They may be storing electricity generated by wind at night, and have nothing to do with reduced energy consumption. They also represent another type of efficiency that we are still not talking about enough - efficiency in how the grid system is operated.

So is DR still a thing? As it has been thought of, the answer is of course yes. But maybe at the same time it needs to be thought of as more than that. Maybe it is time to focus on the time-based dynamic nature of how customers will interact with the grid and overall electricity system - and not just from a reduced consumption standpoint. In recent years, I have often tried to talk about DR as being Dynamic Efficiency, but my aim in doing so admittedly leaned toward the demand side, and was part of my effort to try to merge traditional, end-use embedded type of efficiency with DR.

But perhaps we should migrate beyond that, and focus on the idea of dynamic resources. There will always be a need

for on-demand electricity system management - whether it be a supply side one from a clean electricity source, or whether it be dynamic energy management on the demand side. The key will be having a market that adequately attracts and compensates resources from both sides. Resources like storage, DR etc. all are different in some ways and need to be treated differently to address those differences. But at their core they are dynamic resources. Yes, some might say that any power plant is a dynamic resource in they are turned on and off and ramped up and down. But they are not dynamic like DR like DR and storage. They can't be turned on and off that easily. DR and storage resources also have another important attribute - cleanliness from an emissions standpoint, which is not a bad screening mechanism for market entry in that it could give cleanliness the positive externality value that it deserves.

So is DR still a thing? Yes, but let's start adjusting our thinking on whether that term is the best to use for time-

based consumption reductions, and maybe think about whether dynamic efficiency could do the terminology job better. And by all means let's start thinking bigger and broader about the idea of dynamic resources - both supply-side and demand-side - and how we can make those resources clean energy ones - as we design markets, inject new technology, and seek to optimize the way our electricity system is planned and operated.

Framing how we think about grid modernization and the electricity system right now is really important. There are a lot of moving parts, and we have to have a way for it all to make sense and to happen in a logical way that meets several metrics. Being able to get out of silos in our thinking means that the fruits of our labor in the individual fields in which we toil will produce the sustainable feast that we all want and need. And having said that, I think maybe I need to get out of the city this weekend, eh?

Best,

Dan

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Carbon Pricing: Deal Near on Cap-and-Trade in California

California Gov. Jerry Brown and state legislative leaders have issued statements saying that they have reached a deal to extend the state's landmark cap-and-trade program aimed at dramatically reducing its greenhouse gas emissions. The new deal will reportedly extend the program, initially authorized in 2006, by 10 years and is said to be essential to helping the state meet its goal of cutting greenhouse gas emissions to 40 percent below 1990 levels by 2030.

More here

Clean Energy: Resource List Assembled By NGO

The Clean Energy Program of the Environmental Defense Fund recently called attention to the fact that it has assembled a large number of studies, reports, and other reference sources on one of its web pages.

List is here

Clean Energy: Morgan Stanley Says Renewables To Be Cheapest Resource by 2020

A new report by Morgan Stanley says that on a world-wide basis, renewable energy resources will be the cheapest form of energy within 3 years. The report characterizes the situation for renewables as being an inflection point.

More here

Clean Energy: Natural Gas vs. Renewables: How to make a resource choice

A new LBNL study offers a new way to compare renewables and natural gas in terms of generation choices, showing that renewable resources have added value as hedges against natural gas price volatility.

More here

Clean Energy: Investment in Electricity Greater Than That In Oil & Gas

Investments in electricity surpassed those in oil and gas for the first time ever in 2016 the International Energy Agency (IEA) said recently. Total energy investment fell for the second straight year by 12 percent to $1.7 trillion compared with 2015, the IEA said. Oil and gas investments plunged 26 percent to $650 billion, down by over a quarter in 2016, and electricity generation slipped 5 percent.

More here

Clean Energy: France To Close 17 Reactors

France may consider closing up to 17 nuclear reactors by 2025 to achieve its target of a reduction of the share of nuclear in the power mix to 50%, according to new energy minister Nicolas Hulot.

More here

Climate Change: Major Corporations Respond to Bank of England

Eleven major banks including Barclays Plc, Citigroup Inc. and UBS AG said they'll seek ways to address the financial risks of global warming, after Bank of England Governor Mark Carney urged investors to act on the threat.

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Climate Change: NOAA GHG Index Up 40% Since 1990

NOAA's Annual Greenhouse Gas Index, which tracks the warming influence of long-lived greenhouse gases, has increased by 40 percent from 1990 to 2016 - with most of that attributable to rising carbon dioxide levels. The five primary gases tracked by the AGGI are carbon dioxide, methane, nitrous oxide, and two chlorofluorocarbons that were banned by the Montreal Protocol because they damage Earth's protective ozone layer. These five primary greenhouse gases account for about 96 percent of the increased climate warming influence since 1750. The index is proportional to the change in the direct warming influence exerted by long-lived greenhouse gases since 1750.

More here

Colorado: Commission Approves Utility Application on Grid and Decoupling

The Colorado PSC recently issued a ruling approving Xcel Energy's application for approval to move ahead with the installation of Advanced Metering Infrastructure (AMI) and other grid modernization initiatives. A separate ruling also allows Xcel to begin a 5 year trial of rate decoupling.

More here

Congress: Energy Bill From Last Session Resurrected And Set For Action

In a surprise move, and partly due to the problems with the Senate Calendar resulting from issues related to Health Care, Senate leaders have indicated they may take up a Senate Energy Bill soon. The bill in question is expected to be, or be close to, the Energy Bill taken up by the body in the last session.

The Bill is here

Cybersecurity: Russians Are Said To Have Been Hackers of U.S. Energy Companies

U.S. officials recently told the Washington Post that the Russian government hacked nuclear power and other energy companies. According to reports, the hackers broke into systems housing business and administrative details, and did not threaten facility operations. Officials said it was the first time the Russian government hackers have gotten into American nuclear-power company networks.

More here

DER/GridMod: DOE Releases Latest GridMod Decision Guide (Volume III)

The Modern Distribution Grid Report is a three-volume set that DOE commissioned to develop a consistent understanding of requirements to inform investments in grid modernization. The requirements include those needed to support grid planning, operations and markets. Volume I, "Customer and State Driven Functionality" provided a taxonomy of functional requirements derived from state policy objectives, and includes a discussion of grid architecture. Volume II, "Advanced Technology Maturity Assessment," examined the maturity of technology needed to enable the functions presented in Volume I. Volume III is a "Decision Guide" that presents considerations for the rational implementation of advanced distribution system functionality

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DER: Future Utility Business And Regulatory Models

Brattle Group recently released a Report that focused on what the "Utility of the Future" will or should be employing in the way of business and regulatory models with respect to Distributed Resources. The Report calls for changes to be made to the way utilities make resource decisions and recover their costs of providing utility services. It also states that the degree and rapidity of adjustment will depends upon the level of DER penetration.

More here

DOE: Grid Study Continues To Spur Proactive Action

The Center for American Progress has issued a Report in the form of recommendations to the nation's Governors on how to respond to the Report that is imminent from DOE addressing among other things, the impact of renewable energy on the reliability of the grid.

More here

EVs: Characterization of EVS of Being On The Brink Of A Revolution

A recent piece in Climate Central does a good job of pulling together some recent developments in the EV industry and saying they support the notion that EVs are on the brink of becoming the predominant transportation mode.

More here

EVs: France To End Sales Of Gas & Diesel Engines By 2040

France aims to end the sale of gasoline and diesel vehicles by 2040 and become carbon neutral 10 years later according to Government Officials. The announcement was included in a recent presentation of measures the nation intends to initiate to keep up momentum aimed towards reaching its goals in the Paris climate agreement.

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EVs: States Looking To Assess Fees On EVs To Cover Infrastructure Costs

A recent CNBC piece looked at the growing trend of States looking to charge EV owners fees that are designed to help with infrastructure, which has long been funded by gasoline tax revenue.

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EVs: Report Forecasts 7 Million Plug-Ins by 2025

The Edison Electric Institute has released a new report, "Plug-in Electric Vehicle Sales Forecast Through 2025 and the Charging Infrastructure Required," which projects more than 7 million plug-in electric vehicles will be on U.S. roads by 2025. The report finds that an estimated 2.2 million of the 5 million charging ports needed for this growth will be developed as away-from-home charging stations, and highlights the PEV infrastructure development efforts already underway in several states.

More here

Hawaii: Utility Puts Forth 6-Year Grid Modernization Plan

Hawaii Electric recently released its short and medium-range grid modernization plan. The document describes the scope, purpose and estimated cost of the work required to update the company's energy network in the next six years, and how it will help the five islands served

by the company achieve a renewable portfolio standard of 48 percent by 2020 and ultimately 100% by 2045.

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Illinois: Data Analytics Issue Being Taken Up By The Commission

A new ICC staff report recommends commissioners initiate a rulemaking on how costs for utility-scale data analytics software should be handled by the regulatory process. The staff says utilities should join their corporate peers in banking, healthcare other regulated industries by migrating their data to the cloud. More here http://www.utilitydive.com/news/in-illinois-cloud-computing-debate-could-open-next-chapter-of-utility-rate/446293/ Maine: Governor Vetoes Net Metering Bill Governor Paul LePage has vetoed a bill, L.D. 1504, that would have directed the Maine Public Utilities Commission to adopt new rules that would keep net metering for solar solar energy in place while reducing them over time.

More here

Minnesota: New Report on Economics of Storage

Following a workshop process, the University of Minnesota has issued a new Report that represents an economic analysis of storage opportunities.

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New York: New Customer Attitudinal Survey on Energy Issues

The NYS Smart Grid Consortium and the Smart Grid Consumer Collaborative recently team up to do an attitudinal survey of New Yorkers on various energy issues.

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Resiliency: Climate Economic Effects To Be Different Across U.S.

A new interactive map is available which shows how the potential effects of climate change will impact local and regional economies - some positively and some negatively across the country.

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Solar: Important Case Before ITC

Some Solar Panel Manufacturers have filed a petition with the International Trade Commission (ITC) asking for trade tariffs to be placed on Chinese Panel Manufacturers. The Petition claims the former is illegally pricing panels that are being sold in the U.S. and that the U.S. should take action. Much of the U.S. Solar Industry opposes the Petition, which is expected to be acted on in the coming months.

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Solar: Utilities Said To Be Ramping Up Efforts To Stop Net Metering And Other Support For Solar

A recent feature piece in the NY Times focused on the efforts of the U.S. Utility industry to undertake efforts at the State level around the U.S. aimed at reducing/eliminating net metering and other policy intended to support the growth of roof-top solar and other distributed resources.

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Storage: Report Says Storage Is The Next Disruptive Technology For Power Sector

McKinsey recently released a Report that finds that storage is already economical for many commercial customers to reduce their peak consumption levels and that at today's falling prices, storage could start to play a broader role in energy markets, moving from niche uses such as grid balancing to broader ones.

More here

Storage: China Said To Have Big Plans

According to reporting by Bloomberg, Chinese companies have plans for additional factories with the capacity to pump out more than 120 gigawatt-hours a year by 2021. The article contrasts these plans with those of U.S. companies and notes that roughly 55 percent of global lithium-ion battery production is already based in China, compared with 10 percent in the U.S. By 2021, China's share is forecast to grow to 65 percent.

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