

LYNX ELECTRIC CURRENTS

December 2015

Editor's Notes:

Written by Bert Spaeth

The energy sector has been anything but static as we approach the end of 2015. We would like to take this time to thank our many customers for their continued support and trust in LYNX as we strive to provide the services to support your business. We also wish all our customers and friends Happy Holidays and a great 2016. Watch our newsletter in the coming year as we roll out new programs for your business needs and value added offerings for your customers.

Looking back over 2015 we have natural gas prices drop and stay under \$3.00 per MMBTU. With the discovery of Utica gas, which promises to supplant Marcellus Shale, the prices will either stabilize or drop to new lows. Since natural gas has replaced much of the coal fueled generators electric cost have dropped or remained relatively low. Great for consumers but squeezing electric supply provides and hurting development of future renewable energy sources unless specifically mandated by state governments.

Speaking of state governments, many states have revised supply marketing rules, added new renewable energy standards, established reliability standards and pushed for more transmission line and pipeline construction. NY is taking a giant step with their new REV program. It remains to be seen if the benefits claimed by proponents of REV will materialize.

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US Energy

Congress has made it clear that grid security, both cyber and mechanical must be addressed by FERC and NERC. NERC (North American Reliability Corporation) led the latest GRIDEX III security drill. With over 350 organizations from ISO/RTO's, governments agencies, representatives from Mexico and Canada, and corporations participating. The objective of the drill included:

- Enhancement of the coordination for cyber and physical resources, data and practices
- Simulation included attacks on transmission, automated control systems and generation systems

Participating federal agencies included: Department of Energy, Homeland Security, Department of Defense, and the FBI. The governments of Mexico and Canada also participate. The result of this security drill is currently being analyzed and reviewed so changes and protocols can continue to be refined. PJM activated their emergency response team and monitored the events in order to be prepared should an actual event occur.

DOE (Department of Energy) has released a report entitled "2015 Revolution Now", highlighting the impact of renewable energy. As it becomes more competitive, US Energy Secretary Moniz stated: "We are experiencing a clean energy revolution". Wind Power is producing 4.4% of all electric power in the US. Cost per kWh for wind generated supply has dropped from \$70 per MWh in 2009 to a current low of \$24 MWh. Government incentives and an increase in transmission lines which allow wind generated supply to be moved to the grid are credited with the spectacular growth. As energy storage technology becomes more reliable and cost effective the rate of wind and solar generation will continue. Large scale utility solar installations produce 27,000 MW of power. Wind generators are forecasting additional growth by using taller towers and larger wind turbines. Such a move would allow windmill farms to be located at more sites and allow turbines to be exposed to higher wind velocities. Proponents of wind power are claiming wind can supply 15% of the US energy Supply. Meanwhile solar power is also making inroads. Solar capacity has grown showing a 68% increase in 2014, accounting for 9.7 GW of new capacity. Solar equipment and installations cost have gone from \$3.57 per watt in 2008 to \$.71 per watt in 2014. Solar generation capacity was priced and sold at \$5.70/watt in 2008 and is currently priced at \$2.34 per watt. With continued growth solar power installation cost is expected to drop an additional 33% by 2020. Wind and solar power are showing potential for achieving the carbon reduction goals of the EPA, making the US a leader in clean energy generation.



Tip of the Month!

The question of metering has come up several times in reference to participation in NYISO DR (Demand Response) programs. In order to document actual load shed, NYISO requires a baseline of peak demand at the customer sites. During an actual DR event, meters show the actual demand for that period. The meters are interval meters that show actual demand used each hour. Interval meters are supplied by utilities for customers over 500 kW in most NY utilities. The meters show actual hourly usage but need to get that information to the NYISO and ESCO or aggregator to verify the kW load the customer shed. Prior to September 2015, funding was available from NYSERDA, up to \$1,500 for installation and purchasing a revenue grade interval meter. Con Edison has a program for installing interval meters but does not provide rebates or subsidies for such meter. Several ESCO's will provide funds for meter installations and use the incentives from DR participation to pay for the meter and installation. The meters are revenue interval grade meters. An approved list of meters is available on the NY-PSC website. Con Ed has a dedicated staff person Rob Fanelli (781-361-5420) who handles meter installation and upgrades. There is an online application and deposit required to initiate the process. Once the deposit is received Con Ed performs an onsite visit which is followed up by installation. We will provide other customer contacts once the utilities provide that information. The customer is required to install a dedicated phone line to allow the ESCO and NYISO to read the data during NYISO DR events. Lynx staff (716-774-1341) can assist you with interval meter issues. Consider the meter as an investment that can help you earn money through the various DR programs.

NYISO Updates

NYISO has scheduled a Forum to address transmission congestion on Dec 17 in Albany. The Forum will assess the CARIS (Congestion Assessment and Resource Integration Study) report of 2015. The report covers bulk power transmission data analysis, and performs economic cost benefits derived from reducing congestion problems in areas with insufficient carrying capacity. The problem areas in NY include:

- High voltage lines in Oneida
- The Capital Region
- Lower Hudson Valley
- WNY 230 kV line

Once the information is presented, developers will be encouraged to propose projects to the NYISO for review. As part of the analysis CARIS has looked at multiple solutions for consideration. The solutions suggestions include: Demand Response programs which help reduce peak demand, private or merchant transmission lines, additional or new generation facilities. That can also include repowering idle power plants. NYISO will perform economic analysis on proposed projects to determine cost recovery and project viability allowed by state tariffs. The ultimate goal is to reduce or eliminate congestion, thereby saving consumers having to pay for high transmission charges. Power will be transmitted efficiently from areas of high capacity to areas of high demand.

New York State Updates

Transmission upgrades have been proposed by the NY-PSC for years with backing from the six investor owned utilities. The most recent proposal developed in 2013 consists of a 345 KV transmission line from Utica NY to Dutchess County outside of NYC, delivering 1,000 MW. Developer PPL has submitted a proposal to build a line bringing Western PA power to NYISO by building a 95 mile transmission line through PA, New York utilities are challenging the PSC recommendations, claiming they undermine the original proposal agreed to in 2013. The original proposal called for the construction of a 475 mile transmission line. After getting 22 proposals, a two segments plan, consisting of a west Hudson River line and an east Hudson River line was selected. While the PSC and utilities continue to debate, transmission congestion resulting in higher costs continues to impact downstate NY. The PSC cited construction costs as the reason for modifying the original 2013 proposal. State utilities feel that bringing power from Pennsylvania power plants will discourage development of infrastructure in New York and therefore oppose the PA proposal.

The debates and clarification of REV (Reforming Energy Vision) programs continue as IOU (Investor Owned Utilities) NY-PSC regulators and various interveners and interested parties struggle to define the roles utilities play under REV. Suppliers and renewable energy organizations like SEIA (Solar Energy Industries Association) expressed opposition over utility roles with potential concern over utility monopolization and unfair competition from utilities. NY-PSC staff issued a "White Paper Track 2" in which staff wants utilities to create DER (Distributed Generation Resources) and be allowed to offer their services. That would allow utilities to compete with ESCO's and Suppliers. Their justification is the staff wants to make sure new generation resources are available. The scope of those services remains to be clarified. The Federal Trade Commission voiced their concern over allowing utilities to operate and participate in DER platforms. Failure to keep utilities and their subsidiaries or affiliates neutral in the DER markets would undermine the REV program and result in higher costs for NY consumers. SEIA would prefer utilities to earn incentives through EIM (Earnings Impact Mechanisms) rather than earnings through competitive services markets.

The NY-PSC is allowing municipalities to purchase street lighting infrastructure from utilities as a cost saving measure. By purchasing the street lighting assets, municipalities can upgrade the lighting efficiency such as changing mercury vapor or high pressure sodium lights to the new LED fixtures. Not only will LED lights use less energy, maintenance costs are lower because of longer bulb life. A second benefit of municipal ownership is having the ability to purchase electric supply either retail or wholesale. Large municipalities should consider purchasing wholesale power, something Lynx EMS can assist customers with. The PSC estimates that NY has over 1.4 million municipal lights. Chairman Audrey Zibelman is encouraging municipalities to take advantage of this program and upgrade street lighting to lower their street lighting cost. Switching the 1.4 million street lights to LED technology could reduce electric usage by 60% saving NY municipalities \$28 million per year. At the present time three municipalities have been approved by the PSC to purchase street lighting assets from utilities. The municipalities are: West Seneca located in Erie County, Horseheads located in Chemung Count, and Clarkstown located in Rockland County. Once approved the municipalities would purchase the street light assets package from the local utility, purchase either retail or wholesale power or remain on a bundled utility rate. Utilities have tariffs that charge monthly fees for each light depending on the light wattage and light technology such as such as mercury vapor, high pressure sodium, style of fixture such as cobra head, floodlight and style of poles.

PJM Updates

PJM reports the RTO has sufficient capacity to meet this winter's projected demand. The RTO serves 13 States and the District of Washington with transmission voltage. PJM has 177,628 MW of capacity for this winter and with the milder weather the projected winter demand 131,720 MW's. The previous high set in 2014 with the "Polar Vortex" was 143,295. Lessons learned from 2014 had PJM make changes. Key among the changes is better coordination between generator grid demand with natural gas pipeline operators. VP of operations Michael Kormas explained steps PJM has taken to prepare for winter.

Steps included the following:

- Analysis of high demand and high generator outages measuring the impact on the grid
- Analysis of natural gas availability and maintaining grid capacity
- Testing generators prior to Nov. 1, making sure the units are available and ready when needed
- Generators need to provide a fuel inventory and fuel supply contracts in place for the winter

The coordination between pipelines operators and generators with monthly meetings will allow exchanging of information and system status to avoid capacity shortages.

FERC Updates

Cost allocations for transmission lines have been a challenge for PJM. After developing a tariff filing, which was submitted to FERC for approval, objections from regulators in Delaware and Maryland have raised concerns. FERC has approved the filing but placed it on hold for further review. In the initial approval, FERC stated the PJM plan was just, and reasonable which is a key element for FERC. A technical conference is called for in 2016, to explore the protocol for establishing transmission charges and a new cost allocation system. The PJM tariff has been approved by FERC until the new transmission cost allocation protocol is developed. PJM's RTEP (Regional Transmission Expansion Plan) is looking at DFA (Distribution Factor Allocation) to address transmission cost allocation for the RTO. The cost allocations submitted by PJM will go into effect April 25, 2016 pending any changes resulting from the FERC technical conference outcome.

US Energy Markets

A review of REV by NEM (National Energy Marketers Association) resulted in their submission of comments on the NY-PSC staff proposed DSIP (Distributed System Implementation Plan). The PSC staff proposal has utilities playing a major role in the DSIP by providing information or system needs and allowing market participants to identify the opportunities. NEM is concerned that the PSC staff plan aligns with typical utility model along with utility biases for DG and DR programs which could undermine the objectives of REV. Rather than encouraging market forces to meet the goals of REV, the PSC staff proposal would support what NEM considers utility demand monopolies. Implementation of REV will require a market based model to meet consumer needs. Market forces primarily ESCO's, will be challenged to develop innovative programs to meet both customer needs as well as supporting grid capacity needs in a cost effective manner. To be effective ESCO's want unfettered access to customer data. Currently utilities make access to consumer data time consuming and procedurally cumbersome with confidentiality requirements and red tape.

The utilities should not be the information gate keeper according to NEM. Having more streamlined process for ESCO's to obtaining billing data with appropriate customer permission will be needed. Obtaining or access to EDI will be required. Interval metering is another obstacle. The PSC staff proposal would have utilities provide ESCO's with real-time metering data. Currently as NYSERDA funding for meters ends, customers or ESCO's have to purchase real-time interval meters. Details for AMI (Advanced Metering Infrastructure) will need to be resolved, as real-time data and interval metering is critical to realize the energy market potential as envisioned by REV.

ISO-NE Updates

ISO-NE has released their 2015 Regional System Plan. This report has been developed over the past year with input from industry representatives, and stakeholders with a focus on planning power issues through 2024. The report updates recent reliability and infrastructure upgrades, strategic issues facing the region along with ISO-NE regional initiatives. Issues that require attention or need further discussion include:

- Annual energy forecast and peak demand projections through 2024
- Identifying resources such as: DR, DG,
- Identifying Generation replacement, fuel switching, repowering and retired generators
- Listing transmission line upgrades with carrying capacity
- Coordinating ISO-NE with neighboring regions

ISO-NE Updates Continued...

- Reporting strategic issues including natural gas infrastructure constraints, and resource retirement
- Discussions on integration of variable resources with the grid
- Integration of renewable resources such as solar and wind with the grid

ISO-NE Chairman Gordon van Wellie stated the Regional System Plan 2015 looks at reliability, and progress of the regional high voltage power systems.

Green Energy REC's (Renewable Energy Credits)

As state mandates are phased in, suppliers or ESCO's will be required to purchase REC's (Renewable Energy Credits) and show documented proof of purchase. Some states require a percentage of Solar REC's or offshore wind depending on the host states social policies. Each category, whether it is called Tier or Class has different pricing and some states mandate a mix. Suffice it to say, Solar is the most expensive and Tier II or Class II is the least expensive. Failure to purchase green energy or AEPS (Alternative Energy Portfolio Standard) or REC's will result in a default REC. PJM customers would pay Alternative Energy Credits (AEP) at \$500 per credit. Connecticut has a default rate as well. Lynx will assist you in locating cost effective green REC's to meet your needs. In addition, Lynx can handle your reporting and assist you in purchasing REC's. The percentage of renewable energy is expected to increase up to 27% in certain states by 2025. New York is in the process of developing having some type of REC programs. Governor Cuomo wants the energy mix to contain 50% renewable energy by 2030.

Note: To ease the burden of purchasing annually for our ISO-NE and PJM customers, to minimize the large cash expenditure, Lynx is recommending purchasing REC's on a quarterly basis and avoid higher prices at the end of the reporting period.

NYSERDA PON Updates

Many of these PON's have expiration dates in 2015 or when funds are exhausted. If you or your customers have any plans for energy projects we urge you to act now. LYNX is developing some partnerships to assist you with NYSERDA funding, feasibility studies and developing projects which could be eligible for funding. You can call our office for more information if you have or are thinking about an energy project. For our Con Ed customers we can provide Cummins Generators for DR programs with funding available from ConEd and NYSERDA. Current PON's (Program Opportunity Notices), which are available to qualified customers from NYSERDA, are listed below.

- PON 1219 Existing Buildings, Revised: Provides rebates and performance incentives for existing buildings including lighting, motors, generators, HVAC equipment etc. through 12-31-2015. Incentives for interval metering, some lighting technologies, and natural gas incentives have been dropped. More changes to be posted in the coming months.
- PON 1601 New Construction Financial Incentives: Provides incentives for new and remodeled buildings, paying for architectural and engineering services, rebates on electric equipment, appliances, HVAC equipment, and building envelope, through 2015.
- PON 1746 Flex Tech: Provides funding for a variety of feasibility and energy related studies through 12-31-2015.
- PON 2112 Solar PV Program Financial Incentive, Revised: This PON has funding through 2015
- PON 2439 Wind Turbines: This PON pays incentives to certified installers of DG windmills under 2 MW through 2015.
- 2456 Industrial and Process Efficiency Program Revised: This PON is can pay up to \$4.5 Million per project through Dec. 2015.
- 2568 CHP Acceleration Revised: Funding for onsite generation with heat recovery (DG/CHP) packaged units through 2015.
- PON 2689 Emerging Technologies and accelerated Commercialization, Revised: through Dec. 2016
- PON 2701 Combined Heat and Power CHP Performance Program through Dec. 2016
- PON 2828 Renewable Portfolio Standard Customer-Sited Tier Anaerobic Digester Gas to Electricity: through 2015
- PON 3010 NY Biomass Boilers, Revised: pays for Biomass fueled thermals through 2018
- PON 3082 NY SUN Commercial/Industrial Incentive Program: through 12/2023

NYISO SCR Curtailment Program

Proposed changes by the NYISO will impact SCR customers. A key component for participants of in DR programs is an interval meter. Utilities are required to install interval meters for customers having a monthly demand of 500 kW or greater. Customers with lower demands will now have to purchase interval meters which run around \$1,500 as NYISERDA no longer funds them. Lynx can assist you in purchasing a meter with proceeds from your DR participation. Lynx will work to keep you informed and updated as REV changes get approved. Prices for NYISO participation in DR programs are up as Governor Cuomo is getting behind peak load reduction programs and dramatic changes are coming from the REV program. Third party aggregators for DR and curtailment participation will change in 2016 as DR providers will no longer be selling their capacity into the NYISO markets. Only those entities that are purchasing capacity/supply from the NYISO will be able to receive credit from NYISO for their capacity reduction efforts. Lynx is providing assistance for our customers with event notification and supplying documentation to the NYISO verifying results. Many customers willing to participate in NYISO programs need help in determining what items can be curtailed and to determine the kW value of those items to be shut off. Lynx can help customers determining kW loads that can be curtailed. In addition Lynx can provide Cummins Generators, which can be used for curtailment purposes along with providing protection for property and life during emergencies. Lynx will work with you to get customers registered in a NYISO program. So help your customers get some cash for shedding electric loads during peak load emergency events. ESCO's or suppliers will also earn incentives. With Lynx guidance you can avoid costly pitfalls and potential fines. Call Lisa Klein or Bert Spaeth in our Lynx office at 716-774-1341.



Energy Engineer Corner

Our staff encounters numerous questions from both IT and energy customers. We have decided to publish several of the more common questions on a monthly basis. So if you have a technical question regarding IT or energy, send us an e-mail and our staff will respond. We will publish select questions each month that may be of interest to our readers. Send questions to: BASpaeth@LynxTechnologies.net.

Our question for the month:

Question: What are the incentives and rules for solar power in NY?

EE Answer: Solar photovoltaic power is part of NY Governor Cuomo's REV program and appears to be well funded moving forward. Residential customers are limited to 25 kW if they wish to participate in NYISERDA funding and the renewable energy net metering program. Funds for solar projects are depended on location and installation but typically pay over 50% of solar installation. Funds go to the developer who applies the incentive toward the project cost. Details on funding are available from NYISERDA for: PON 2112 Solar PV Program Financial Incentive, found under Current NYISERDA Funding programs. New programs are being developed for large scale Solar in the REV program under the DER. Only NYISERDA certified contractors are eligible to participate and receive NYISERDA funds. Large Commercial/Industrial solar projects can be funded with PON 3082 NY SUN Commercial/Industrial Incentive Program. This program has funding through December

December 2015

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4 NYISO ICAP Monthly Auction	5
6	7	8 NYISO ICAP Monthly Auction	9 NYISO ICAP Monthly Auction	10	11 NYISO ICAP Results	12 NYISO ICAP Monthly Auction
13	14	15	16	17	18	19
20	21 Certification	22	23 NYISO ICAP Spot Auction	24 NYISO ICAP Spot Auction	25 NYISO ICAP Spot Auction	26 NYISO ICAP Spot Auction
27 NYISO ICAP Spot Auction	28 NYISO ICAP Spot Auction	29 NYISO ICAP Spot Auction	30 NYISO ICAP Spot Results	31		

Future Dates

January:

7-8 NYISO ICAP Monthly Auction
 12 Monthly Auction Results
 21 Certification
 25-26 NYISO ICAP Spot Auction
 28 Spot Auction Results

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Commodity Pricing

Historical - Flat DAM

	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
NYISO-A	29.31	27.88	26.56	26.18	22.92	20.90
NYISO-F	26.05	28.00	26.78	26.27	23.37	23.59
NYISO-J	30.01	31.10	32.45	27.68	23.34	21.60
NYISO-K	41.92	36.18	35.58	35.20	28.83	25.07
PJM-PSEG	27.89	27.23	28.60	25.41	21.99	20.51
PJM-JCPL	27.46	26.88	26.75	25.14	21.57	19.71
PJM-APS	32.93	29.89	29.69	30.58	27.39	26.29
PJM-PECO	26.81	26.05	26.76	24.62	21.01	19.68
PJM-PPL	26.39	25.96	25.95	24.95	21.30	19.57
PJM-DLCO	31.35	28.65	28.80	29.51	26.26	24.86
PJM-PENELEC	31.21	29.25	29.13	28.53	24.23	23.12
PJM-METED	26.12	26.28	25.95	25.06	21.32	19.19
PJM-BGE	42.59	36.25	36.58	38.81	35.26	36.55
ISONE-CT	26.88	30.27	30.79	35.78	27.81	21.62

Current Projections

	Jan-16	Feb-16	Mar-16	Jan-16 to Dec-16		
	Flat	Flat	Flat	Flat	Peak	Off Peak
	28.35	33.22	28.51	30.80	41.67	21.31
	41.02	46.24	38.21	33.90	40.34	28.27
	39.47	42.26	35.82	35.09	42.94	28.23
	49.21	51.74	55.02	48.38	56.03	41.71
	34.08	39.65	32.32	30.47	36.84	24.91
	33.28	38.58	31.17	29.50	35.70	24.09
	33.21	37.41	34.37	33.26	39.45	27.85
	31.56	37.28	30.59	28.77	34.79	23.51
	31.40	37.00	30.47	28.58	34.63	23.29
	30.85	33.39	31.95	31.96	37.64	26.99
	32.25	37.11	33.64	32.37	38.78	26.78
	31.27	36.81	30.57	28.72	34.73	23.48
	44.82	49.44	43.20	42.89	51.18	35.64
	38.38	47.61	40.50	37.58	44.58	31.46

Glossary of Acronyms

<p>ABACCUS - Annual Baseline Assessment of Choice in Canada and the US</p> <p>AEC - Alternative Energy Credits</p> <p>AEPS - Alternative Energy Portfolio Standard</p>	<p>CRP - Comprehensive Reliability Plan</p> <p>DEFG - Distributed Energy Financial group</p> <p>DER - Distributed Energy Resources</p>	<p>DG - Distributed generation</p> <p>DR - Demand Response</p> <p>LNG - Liquid Natural Gas</p> <p>NEPOOL New England Power POOL</p>	<p>REC - Renewable Energy Credits</p> <p>REV - Reforming Energy Vision</p>
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