

LYNX ELECTRIC CURRENTS

October 2015

Editor's Notes:

NY State regulators and agencies have been active developing the REV (Reforming Energy Vision) program, writing policy, protocol and soliciting feedback and input from stakeholders. In past editorials we have stated that we would keep you updated. The volume of reports, white papers and Draft Reports has been incredible. So we are focusing on the highlights and providing web sites if you want more details. We would also encourage you to provide feedback as the policies being developed now will be with us in the 21st century. Governor Cuomo wants a 40% reduction in greenhouse gas and wants the energy mix to be 50% renewable by 2030. As the REV program continues to develop, various groups and agencies are expressing either support or concern over details being presented. Net metering, a program the result of social policy passed by the state legislators, allows customers to get market value credit for the surplus electricity they put on the grid. Customers producing more than 110% of their utility base load will be paid as wholesale generators.

The new vision will have the utilities handle DER (Distributed Energy Resources). Compensation for the power generated is the current focus and could fall into the "Real Time" or "Day Ahead Market" with the larger generators. The PSC wants private sector funding to play a role in developing new generating resources. At the same time they want to make sure the utilities get compensated for their efforts in securing and distributing the DER power. NYSERDA (New York State Energy Resource Development Authority) is transitioning from RPSCST (Renewable Portfolio Standard Customer Sited Tier) to the proposed "Clean Energy Fund". Customers with credible ready to go projects in Solar, Wind, Anaerobic Digester or Fuel Cells can still apply pending availability of funds from NYSERDA. As funds from SBC (System Benefit Charges) RPS (Renewable Portfolio Standards) get moved to the Clean Energy Fund, it may become more difficult for smaller projects to qualify. You may wish to contact the NY PSC or your local legislator to voice your concern especially if you have a pending project and anticipate NYSERDA funding.

In This Issue

- US Energy
- Tip of the Month
- NYISO Updates
- NYS Updates
- FERC
- PJM
- ISO-NE Updates
- US Energy Markets
- NYSERDA PON Updates
- NYISO SCR Curtailment
- Green Energy
- September Calendar
- Important Future Dates
- Historical Flat Dam Pricing
- Current Projected Pricing
- Glossary of Acronyms



US Energy

The US DOE (Department of Energy) has announced that the BBBPP (Better Building, Better Plants Program) has saved US manufacturers \$2.4 billion of their annual \$200 billion in electric power expense. A combination of US manufacturers, water and wastewater treatment groups have agreed to reduce their energy usage by 25% by the year 2025. The various groups consist of 2,400 manufacturing companies in addition two assortment of government or municipal entities. The cities of Los Angeles, California on the west coast, and the City of New York, NY on the east coast are the two largest water treatment facilities participating in BBBPP. Since the introduction of this program in 2010, participating agencies have reduced energy usage by 12% which amounts to 457 Trillion Btu's. Manufacturers account for over 25% of US energy usage.

High energy users consist of manufactures such as steel/ metal industries, cement Manufacturing, forestry/wood manufacturing, and glass manufacturing. With the current regime's obsession with greenhouse gas, improving manufacturing emissions which accounts for 34% of national greenhouse gases emissions annually can have an impact in reducing carbon emissions. Locally Harbec Plastics outside of Rochester NY has reduced their greenhouse gas emissions by 30%. Harbec uses renewable energy produced by two industrial wind turbines on site, and a DG/CHP micro turbine installation producing on site power. Details on participants in BBBPP can be found at: betterbuildingsolutioncenter.energy.gov/sites/default/files/attachment.2015BetterPlantsProgressUpdate.pdf.

NYISO Updates

NYISO (New York Independent System Operator) has imported Mr. Bradely C. Jones, a VP from ERCOT to replace retiring president Stephen Whitley as NYISO President and CEO. Previously, Mr. Jones was COO with ERCOT, an ISO based in Texas. His work in ERCOT was a commitment to excellence, grid reliability and a positive force of deregulated markets. That background makes him an excellent choice to head NYISO. Mr. Jones stated that he is "honored to join NYISO' and he recognizes the ISO service record, accomplishments and talented professional staff. Jones plans on building on the legacy of retiring CEO Whitley, and facing the challenge posed by NY REV, including reliability and moving forward with carbon reduction and more renewable energy.

Smart Grids are being hailed as technologies that will enhance reliability improve efficiency, support interconnection for renewable energy and lower overall



Tip of the Month!

The past year Lynx staff has been busy helping customers determine the size, fuel type, operation protocol, interconnection, air permitting and various options available for on-site generation. Let's start with nursing homes. Nursing homes are required to have stand-by generators to run critical loads for the protection of the residents. Security, elevators, life support, emergency lighting, sprinkler systems for fire protection and related items need to have back-up power. For installation that need more 100 kW or higher, funding from NYISO DR programs are available. In generator sizing we recommend natural gas fueled generators. They cost less and air permitting with title four is easier and less restrictive than diesel. If natural gas is not available we can use propane. Typically natural gas/propane generators less than 500 kW cost less than their diesel counterparts. Once sized we have to determine the voltage, the phase (single or three phase) and the size of the ATS (automatic transfer switch) which are rated in amperes.

The next option we encounter is base loading. In this mode, generators are sized for the thermal load of the facility. Generators can provide thermal heat energy from the radiator and the engine exhaust. The generators operate in a prime power mode producing power to for a portion of the facility and using the thermals normally lost, recovered and used in the facility for heating, process loads. It is possible to achieve 60% and greater generator efficiencies using the thermals. This operating mode is commonly called DG/CHP (Distributive Generation, Combined Heat and Power). A modified version of base loading has the generator run based on market price signals. Once the generator operating costs per kWh by using fuel, maintenance and eventual overhaul, are determined, that price is compared to the cost of a kWh from the grid. The customer can then decide which power source to use.

Islanding, another generating plan, means the generator is not connected to the grid. In such cases the facility will need to provide their own back up support. Since most facilities have variable demand during the day we typically have a multiple bank of generators, all parallel connected. If the generators are the same size they can be set up so each generator gets cycled for uniform run hours and wear.

If you need a generator, give our staff a call and we can work with you to determine the best generator option for your needs.

NYISO Updates Continued ...

distribution costs. Smart grid will support deployment of Distributive Generation (DG) and can be used in conjunction with pricing signals allowing consumers to self-generate when running the generators is more cost effective than purchasing from the grid. Smart grid technology can also support renewables, such as solar, and wind allowing the ISO to make adjustment to maintain grid integrity. It can also handle faster dispatching of flexible generators and balancing transmission and distribution circuits. Energy storage technologies can be part of the mix to provide capacity when solar or wind is intermitted or not available. In addition, smart grid can be used for variable load management such as controlling residential water heaters and air conditioning loads during periods of high demand. Some programs provided by suppliers or ESCO's are already in place through DR (Demand Response) programs. NYSERDA has various funding programs available to support DR and smart grid development. Considering NY peak demand fluctuates from around 18,000 MW to around 32,000 MW, depending on seasons and weather conditions, it is important to have the ability to shed load, shift transmission circuits, distribution circuits, fill in with DG, Energy Storage, and support from DR (Demand Response). Given all those resources, NYISO is able to keep the lights on while providing low cost power and grid reliability.

New York State Updates

New York Farm Bureau has concerns about the NY REV program, specifically the Clean Energy Fund and the potential impact on renewable energy funding. The Bureau is concerned that funding for current renewable energy programs administered by NYSERDA are being shifted to other areas of energy. The Bureau is in favor and supportive of education, outreach and technical support programs under the REV program. The PSC has been contacted and Farm Bureau is urging the commission take more time and weigh the consequences before finalizing drastic changes. The emphasis appears to be moving from implementing renewable energy projects to utility operated platforms for handling renewable energy and DG system that feed into the electric grid. On the current track, programs such as Anaerobic Digesters to electricity, funding for small 25 kW solar and windmill projects are all slated to being shifted to fund REV programs. Agriculture has been active with renewable energy resources such as hosting industrial windmill installations, solar installations, small commercial wind installations, DG/CHP systems, DR participation, providing biomass and anaerobic digesters for produce biogas. Switching funding now will set back the emerging renewable energy initiative and jeopardize the ultimate objectives of REV. To get specific details on the Farm Bureau position go to: www.nyfb.org under Legislative Affairs and Testimony/Comments.

FERC Updates

Mr. Philip Moeller has served as a FERC commissioner for both President Bush and President Obama. He is retiring as commissioner of FERC, thanking both presidents and involved senators for the opportunity to serve. Mr. Moeller also expressed his gratitude to the dedicated staff and co-workers at FERC making possible the many accomplishments in energy markets. He will continue to be active in the energy industry.

In other action FERC wants access to NERC (North American Electric Reliability Corporation) data in order to comply with section 215(d) (5) order of the Federal Power Act. Having access to: Transmission Availability Data System (TADS), Generation Availability Data System (GADS), and Protection System Operations Data) will allow FERC to monitor reliability trends and develop reliability standards. FERC official's state access to the aforementioned NEDRC data would allow the commission to effectively monitor, develop new reliability standards, establish priorities for the energy industry and provide oversight. US Congress charged NERC with developing reliability standards and FERC has oversight responsibilities. While some "turf" issues may surface, sharing data will enhance the efforts of both groups. A new rule, "Reliability Standard PRC-002-2 Disturbance Monitoring and Reporting Requirements", was approved September 17, 2015. That rule will make sure data is available allowing FERC to analyze bulk power market systems.

PJM Updates

PJM has a new president and chief executive as Andrew Ott replaces retiring CEO Terry Boston. Mr. Ott is currently going through a transition period working with Mr. Boston who will retire Dec. 31 2015. During that period Mr. Ott will meet with stakeholders, state and federal officials along with PJM workers and key ISO business official and government leaders. The new CEO has been with PJM for 18 years. His goals are to maintain exceptional performance and high standards of the RTO. Mr. Ott stated he plans on keeping open communications, and maintaining a productive relationship with PJM members along with stake holders. He comes well prepared serving as VP of PJM Market Operations, which includes implementation of wholesale markets in PJM.

PJM Interconnection Board has announced \$59 million in market efficiency upgrades. The announcement covers 11 market upgrades and is expected to save PJM consumers \$ 815 million in congestion costs over the next 15 years.

Savings are based on lowering congestion issues, by improving transmission lines, improving generation production efficiencies, and reducing load payments.

PJM Updates Continued...

By opening up project participation to outside investors and contractors multiple cost effective projects proposals have been submitted, which supports the power of deregulated markets. PJM will select the best proposals to provide economic benefits and reliable energy for the RTO

As the push for renewable energy and lower carbon emissions moves forward, PJM has over 4,361 MW of renewable energy based on a summary report from 2013 that is now in most cases operational. Fossil fuel prices are having an impact on renewable energy as shale gas, dropping oil prices have become more economical making renewable energy less competitive. The RTO has continued growth with wind, and solar energy partially because of state social policies mandating funding for a certain percentage of renewable energy along with state/federal grants and tax credits.

US Energy Markets

FERC has released their winter 2015 Energy Market Assessment. Based on projected weather forecasts, natural gas storage and low electric prices should be relatively stable. There are some regional potential trouble spots. For example, New England has not installed additional gas pipelines to make sure sufficient supply for generators is available during extreme cold weather. The ISO has taken some action including changing capacity markets and establishing fines for nonperformance for generators. In addition generators are required to have firm gas contracts for power plants or dual fuel options with natural gas and fuel oil, including on site oil storage, or LNG storage. The winter forecast for the northeast, northwest, and Midwest, projects moderate weather. However New England could still experience price volatility resulting from natural gas shortages or a prolonged cold spell. Overall, natural gas storage across the US is up but the current number of running drilling rigs is down the result of low gas prices. The recent congressional approval for exporting LNG should help raise prices as US gas is sent to Europe and Asia. Unlike the weather forecast for the majority of the country, the southeast is expected to experience a much colder winter. Futures pricing in natural gas and electric markets are below 2014 prices, made possible by the infusion of shale gas into the fuel mix powering the generators. Pipelines are being constructed in the Mid-Atlantic, south east and prairie states to move shale gas were needed. The exception already mentioned is New England which will not have sufficient carrying capacity for several more years. In deregulated markets, reserve capacity levels and protocol have been established by state regulators with review by FERC establish reserve capacity standards. Those standards require the states to make sure there is sufficient capacity to satisfy demand in case of a major generator or transmission line failure. The Southwest Power Pool has added Western area Power Administration, Upper Great Plains Basin Electric Power, Heartland Consumer Power District forming a regional modified RTO. FERC is providing some guidance however not all states are deregulated and have bulk power markets developed yet. The new integrated system will have more generating capacity and fuel mix diversity for generation. The region will also have the capacity to better handle price volatility, grid reliability and provide enhanced customer options and services.

ISO-NE Updates

With increasing competition from Marcellus Shale gas, another nuclear plant has submitted a request for ISO to allow the plant to retire in 2019. The Pilgrim Nuclear Power Station located in Plymouth Massachusetts plans on closing the 680 MW plant. Vermont Yankee, which produced 620 MW, closed in 2014. The nuclear plant closures will stress ISO-NE reliability and impact their EPA Carbon reduction goals, as nuclear plants are considered carbon free. Plant age and economic factors are the reason given for closing. The plants natural gas is currently supplying 44% of the generator fuel, according to the ISO's 2014 report. With coal plant and nuclear plant closings 10% of their generation capacity of ISO-NE will be lost. Wind and solar generation is expected to make up the capacity loss. The ISO can reject the plant closure request if it jeopardizes grid stability. It appears new generation coming on line, will be dual fuel consisting of natural gas and fuel oil. Continued restriction of pipeline capacity for gas requires dual fuel capabilities. Another severe winter with a repeat of the "polar vortex" could prove expensive; however forecasters are projecting a mild winter.

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

NYSERDA PON Updates continued....

- 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

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 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.

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



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 intervals meters which run around \$1,500 as NYSERDA no longer funds them. Lynx can work you to support the purchase with proceeds from your DR participation. Lynx will work to keep you informed and updated as changes get approved. Prices for participation in DR programs are up as Governor Cuomo is getting behind peak load reduction programs and dramatic changes 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 your 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 funds. 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.

October 2015

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

Future Dates

November:

1 Start of Winter Season
 5-6 NYISO ICAP Monthly Auction
 10 Monthly Auction Results
 18 Certification
 20-23 NYISO ICAP Spot Auction
 25 Spot Auction Results

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Commodity Pricing

Historical - Flat DAM

	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
NYISO-A	28.91	24.60	29.31	27.88	26.56	26.32
NYISO-F	26.23	20.63	26.05	28.00	26.78	26.36
NYISO-J	30.35	24.95	30.01	31.10	32.45	27.79
NYISO-K	35.24	30.72	41.92	36.18	35.58	35.29
PJM-PSEG	31.84	25.50	27.89	27.23	28.60	25.52
PJM-JCPL	31.67	25.26	27.46	26.88	26.75	25.24
PJM-APS	34.47	31.09	32.93	29.89	29.69	30.74
PJM-PECO	31.50	24.76	26.81	26.05	26.76	24.73
PJM-PPL	32.22	24.45	26.39	25.96	25.95	25.06
PJM-DLCO	34.44	30.35	31.35	28.65	28.80	29.67
PJM-PENELEC	33.06	28.56	31.21	29.25	29.13	28.69
PJM-METED	33.94	24.40	26.12	26.28	25.95	25.16
PJM-BGE	40.82	43.53	42.59	36.25	36.58	39.09
ISONE-CT	25.23	21.89	26.88	30.27	30.79	35.68

Current Projections

	Oct-15	Nov-15	Dec-15	Oct-15 to Sep-16		
	Flat	Flat	Flat	Flat	Peak	Off Peak
NYISO-A	29.21	33.06	43.86	33.34	41.86	25.95
NYISO-F	32.62	49.15	69.56	39.99	46.61	34.25
NYISO-J	32.73	46.88	67.00	41.23	49.42	34.13
NYISO-K	43.41	54.84	76.74	53.97	62.41	46.65
PJM-PSEG	28.22	36.36	55.18	35.02	41.88	29.07
PJM-JCPL	27.22	34.84	53.40	33.99	40.41	28.42
PJM-APS	30.47	34.23	44.20	35.50	41.71	30.12
PJM-PECO	26.34	33.95	51.45	33.00	39.26	27.57
PJM-PPL	26.19	33.74	51.18	32.82	39.12	27.36
PJM-DLCO	30.81	31.08	36.41	33.28	38.87	28.42
PJM-PENELEC	29.90	33.73	43.70	34.88	41.19	29.41
PJM-METED	26.40	33.84	50.99	32.95	39.28	27.46
PJM-BGE	38.57	43.29	56.71	44.78	52.74	37.88
ISONE-CT	41.02	50.61	70.39	43.96	51.47	37.45

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