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TO: NYPA BOARD OF TRUSTEES

FROM: EDWARD WELZ, CHIEF OPERATING OFFICER

DATE: JULY 16, 2012

SUBJECT: MONTHLY REPORT FOR THE BOARD OF TRUSTEES

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This report covers performance of the Operations group in June 2012.

Operations

Plant Performance

Systemwide net generation[1] was 1,984,484 megawatt-hours[2] (MWh) in June 2012, compared to projected net generation of 2,326,121 MWh. Year-to-date net generation is 13,229,331 MWh, compared to the target of 13,801,665 MWh.

The fleet availability factor[3] was 92.9 percent in June 2012, and 88.6 percent for the year. Generation market readiness factor[4] was 99.9 percent in June, compared with the monthly target of 99.4 percent. Year-to-date generation market readiness factor was also at 99.9 percent.

In June, there were no significant unplanned generation events[5] during the month.

Generation net revenue in June was $26.1 million with a loss of revenue of $0.01 million for the month. Year-to-date Generation net revenue was $91.8 million and lost opportunity cost was $0.33 million.

Niagara River flows in June 2012 were below the historical average, and are expected to be below average for at least the next two years. St. Lawrence River flows during June 2012 were also below forecast. River flows are expected to be below historical levels beyond 2013.

Transmission Performance

Transmission reliability[i] in June was 99.45 percent, which was below the target of 99.74 percent. Year-to-date transmission reliability is 97.86 percent, above the target of 96.92 percent.

There were no significant unplanned transmission events in June to report.

Environmental

There were two reportable event for June 2012. For the year, there have been 13 reportable incidents. The annual target for 2012 is 29.

Transmission Initiative

No updates to report for the month.

Relicensing – Niagara Power Project

Internal review was completed in June of the draft Joint Permit Application for the US Army Corps of Engineers and the New York State Department of Environmental Conservation for permitting of the Frog Island Habitat Improvement Project (construction is anticipated in 2013).

At Reservoir State Park, minor landscaping and watering of planted areas continued. A small excavated section of Old Military Road adjacent to the Winter Pavilion remains incomplete pending submittal to NYSDEC of plans for addressing contaminated material before final repaving.

Concrete paver placement and planting installation has been ongoing at the Schoellkopf Overlook recreation improvement site, while work at the upper and lower Whirlpool overlooks is complete aside from plantings and railing installation. Railing fabrication continues, and railing mockups were delivered to the Schoellkopf site for determination of final finish application by State Parks officials.

Installation is progressing on the new stone connecting stairway at Whirlpool Street in the Niagara Gorge and on the two stone replacement fishing access stairs at Artpark. The steps, landings, and crib walls are complete on the south stairway at Artpark, with barrier posts and rails still to be placed at this stairway.

Tern nesting remains active and is being monitored at the three improved Common Tern Nesting Sites on the breakwaters in Buffalo Harbor, with nesting expected to continue into July. Results to date indicate further increases beyond last year's record number for nesting success overall, despite one of the three breakwaters suffering severe depredation by a mink.

Relicensing – St. Lawrence-FDR Power Project

The construction of the Nichols Island Habitat Improvement Project was awarded to Sheehan Construction at the June 26 Trustee meeting. A pre-construction meeting will be scheduled in early July to get this important project underway.

Site preparation and cofferdam installation are underway at the Little Sucker Brook Habitat Improvement Project pumphouse.

The roof has been completed at the WHWMA pump house. The cofferdam is being removed. Electric installation (the final step to commissioning) should take place in July.

Habitat Improvement Project monitoring activities continue, and results are generally good. Consistent with the weather in the North east this year, everything seems to occurring earlier than usual. Terns are nesting in the greatest numbers observed since the HIP started. Upstream eel migration is setting new records for this stage in the season.

Two additional lake sturgeon spawning beds are planned to be installed in the RMPD tailrace this fall. An application for COE approval has been filed and a construction RFP has been issued. A pre-bid site visit is scheduled for July 16 and bids are due August 2.

Relicensing – Blenheim-Gilboa Project

The baseline study effort is well underway. The desktop phase of the Cover Type/Wildlife Habitat mapping study is completed. Field verification will take place the week of July 9.

Water Quality monitoring continues. Data has been generally consistent with historic information. Inflow into the system is very low due to limited precipitation.

A meeting with the Wildlife Management Task Force is scheduled for July 9. A brief overview and discussion of the relicensing process will be provided at the meeting.

Life Extension and Modernization Programs

<u>St. Lawrence LEM Upgrade</u>

Work on Unit 20 at the St. Lawrence-FDR Power Project, the 16th of the 16 units, began on May 9, 2012, as part of the Project's Life Extension and Modernization[i] (LEM) program. Unit disassembly has been completed. Alstom's site team has mobilized. Installation of 30 stiffeners and weld build-up on the sealring flange and stayring flange at the site are complete. Milling machine installation is complete. Machining of stay ring flange, sealring flange, register and discharge ring machining commenced and is expected to be completed on or about August 17. Fabrication of the turbine runner has

been completed at Alstom, Sorel, Canada, and is ready for delivery to the site. Refurbishment of other components continue at Alstom. The unit is expected to return to service on December 21, 2012. The 2013 scheduled completion date for the LEM project remains unchanged.

LPGP LEM

The third feeder outage (Feeder 4) to replace the third GSU and potheads at the Switchyard and LPGP is scheduled to begin on October 1, 2012 and will be completed on November 23, 2012. The unit control upgrade and auxiliary system designs and fabrication are proceeding; the factory acceptance testing of this equipment along with the new Static Exciter, Unit Circuit Breaker and Iso Phase Bus are scheduled to occur within the next four months. The components for the first new turbine are in transit from Slovenia to Hitachi's facility located in Japan for assembly and the completed turbine is scheduled to arrive at LPGP in April 2013. The first unit outage is scheduled to begin December 2012 with the program completion scheduled for 2020.

RMNPP Unit 2 Standardization

Voith has encountered delays with the stator fabrication. They mobilized additional skilled craft and completed the stator on June 16th instead of the planned date of June 2nd. Additional delays were encountered with the physical installation of the stator in the unit due to the unforeseen field conditions as compared with the drawings regarding the concrete and sole plates, concrete had to be removed in order for the stator to fit properly. Niagara staff reviewed their re-assembly activities and available resources and the new return to service date is July 31, 2012.

Technical Compliance – NERC Reliability Standards

In June, the Northeast Power Coordinating Council (NPCC) continued its off-site spot check audit of NYPA's Purchasing and Selling Entity (PSE) function for NERC Reliability Standards IRO-005-3a, Requirement 10 – Reliability Coordination - Current Day Operations and VAR-001-2, Requirement 5 - Voltage and Reactive Control. The draft NPCC audit report was received in late June 2012. The NPCC Spot Check team found NYPA to have no findings of non-compliance, zero (0) Possible Violations, zero (0) Areas of Concern and zero (0) Recommendations. The NPCC Spot Audit report is expected to be finalized by the end of July 2012.

In June, the NYPA Reliability Standards and Compliance (RSC) group completed an internal "Targeted Reliability Standards Compliance Assessment" of the Niagara Power Project. This assessment was constructed as an internal control mechanism with the specific objective of ensuring that the facility's' personnel continue to use the NYPA policies and procedures relating to the NERC Critical Infrastructure Protection (CIP) standards. The assessment did not reveal any possible violations of NYPA's policies and procedures or of the NERC reliability standards. The Niagara Power Project and the supporting headquarters personnel demonstrated a very good understanding of and are

committed to their role in ensuring that NYPA remains compliant with the NERC CIP standards.

In June, NYPA staff continued to manage compliance enforcement actions related to several of the NERC Reliability Standards that are applicable to NYPA's NERC registrations. The actions and statuses are briefly stated below:

a. **PRC-005-1 R2 - Transmission and Generation Protection System Maintenance and Testing** (NERC Violation ID: NPCC2011-00236): NYPA self-reported to NPCC a potential violation of the requirement R2 of PRC-005-1 on February 11, 2011. The associated mitigation plan closure documents are being reviewed by NPCC staff. NPCC has not yet contacted NYPA about settlement discussions related to this violation.

b. **CIP-004-3 R2 - Cyber Security - Personnel and Training** (NERC Violation ID: NPCC20122-00446): NYPA self-reported to NPCC a potential violation of requirement R2 of CIP-004-3 on February 16, 2012. The mitigation plan and associated closure documents were submitted to NPCC for review and approval in April 2012, submitted to NERC for approval on May 18, and were approved by NERC and submitted to FERC on June 14.

c. **CIP-004-3 R4 - Cyber Security - Personnel and Training** (NERC Violation ID: NPCC2012-200459): NYPA self-reported to NPCC a potential violation of requirement R4 of CIP-004-3 on March 12, 2012. The mitigation plan was submitted in April 2012 and completed in late June 2012. The mitigation plan closure documents are being assembled for submittal to NPCC in July 2012.

d. **CIP-006-3 R4 - Cyber Security – Physical Security of Critical Cyber Assets** (NERC Violation ID: NPCC2012-200657): NYPA self-reported to NPCC a potential violation of requirement R4 of CIP-006-3 on June 21, 2012. The self report is being reviewed by NPCC staff.

In June, NYPA continued to implement its work plan for responding to a 2010 NERC Alert Recommendation that requires NYPA to review its current facility ratings methodology for their solely and jointly owned transmission lines to verify that the methodology used to determine facility ratings is based on actual field conditions (in particular line ground clearances). The next status update must be submitted to NERC via NPCC in July 2012. The assessment has revealed that there are about 261 line clearance discrepancies in NYPA's 1,400 miles of transmission lines; about 52 of which are on lines rated as high priority. Staff is developing a mitigation plan to eliminate the discrepancies on the high priority lines by the end of 2012. Field verification surveys are planned which may confirm fewer discrepancies requiring mitigation. NYPA is in the process of reviewing each discrepancy for environmental and licensing impacts. Contact

has been established with other utilities to seek their assistance in remediating some of the discrepancies. In addition, NYPA plans to meet with NYS Public Service Commission to review discrepancies on Article VII lines. NYPA plans to meet with the NYISO once feedback has been gathered from the other utilities and the impact assessment completed to confirm the mitigation plans for the high priority lines.

On June 21, the Federal Energy Regulatory Commission (FERC) issued a proposal that would approve the North American Electric Reliability Corporation's (NERC) revisions to the definition of the bulk electric system to provide greater clarity and ensure consistency in identifying system elements across the nation's reliability regions. Under the new definition, all assets operating at 100kV or greater will be elements of the bulk electric system. NERC's Notice of Proposed Rulemaking (NOPR) also proposes to approve NERC's new rules of procedure for adding elements to and removing them from the definition on a case-by-case basis. While proposing to approve the revisions to the definition of bulk electric system, the NOPR also seeks comment on certain issues, including the exclusion of certain facility configurations from the definition. Pursuant to this new definition, NYPA staff in June began a reliability compliance gap analysis for 35 transmission assets, under NYPA's current NERC functional registrations, that will become newly subject to the NERC reliability standards.

Research and Technology Development

The joint NYPA / EPRI project entitled "Life Management of Creep Strength Enhanced Ferritic (CSEF) Steels, Grade 91" was completed and the final report issued by EPRI. Early failures can occur in power plant components fabricated from CSEF steels unless the required condition of the microstructure is developed and maintained during processing. The objective of this project was to establish requirements of optimizing manufacture and construction practices for Grade 91 components based on the best available information in order to ensure that deficient material is never installed.

Staff developed an efficient Generator Scheduling Program for St. Lawrence optimizing the MW-output from the plant based on water-flow and water-head. Working with the System Applications department, the performance of the developed algorithms was compared with the existing SCADA system. The results matched the SCADA output and were sometimes better under certain operating conditions. System Applications' staff requested R&TD to develop a reverse algorithm for optimizing water flow based on MW-outputs and heads. These two modules for optimizing flow versus MW-output are the basis for other additional operational modules which need to be developed in future. The requirements for this program were obtained in consultation with the System Applications and Hydro Engineering departments, but the choice and efficacy of algorithms are the unique expertise of R&TD staff.

Working with Niagara staff, R&TD performed a site survey on all of 13 (Robert Moses) and five (switchyard) transformers in preparation for the installation of the Kelman On-line Transformer Gas Analyzers. The location and nature of the mounting pads were identified for every transformer along with top and bottom oil sampling feeds. NYPA

had procured nine Kelman gas analyzers for installation at Marcy and Astoria, but decided to make the installation of this equipment at Niagara a higher priority. Niagara staff agreed to support the installation and perform modifications on existing drawings but the job may likely be completed in 2013 in view of other priority tasks at the site. Kelman Gas Analyzers perform periodic (every four hours) dissolved gas analysis (DGA) of transformer oil indicating the transformer's health. Traditionally, DGA analysis was done through manual sampling every six months.

Work on the Dynamic Line Rating project included staff coordination with IT and Computer Systems Engineering regarding configuring the server PC and transferring the required system data from the NYPA Energy Management System to the server. Part of the work has been done and it should be completed this summer. In addition, revised installation drawings from Commonwealth Associates regarding the equipment installations for the NR-2 transmission line were received. A revised schedule was submitted by Commonwealth for finishing all the work for the project by mid-July 2012.

Staff met with EPRI and Elimpus Inc. representatives and performed a detailed evaluation of the antenna array system installed at St. Lawrence, Clark Energy Center, and Niagara. Elimpus Inc. displayed new models of antenna systems which were portable (hand-carried and car mounted) as well as fixed systems. Elimpus was requested to provide a quote so that NYPA can initiate a cost-benefit analysis. Based on NYPA's analysis, EPRI will make a decision recommending that existing antenna array systems be reused or dismantled. The vendor agreed with EPRI plans to initiate a new interest group to share information and experiences between different utilities and perform post-event analysis. Continuous monitoring of partial discharge from antenna array systems is used to indicate the health of the equipment and thus aids in early detection and prevention of failures. Antenna array systems are suitable for monitoring partial discharges emanating from current transformers, potential transformers, bushings, arrestors, insulators and disconnect switches in substations but not from transformers and metal-caged circuit breakers.

R&TD staff, along with EPRI and Asset Management staffs, met at the Harlem River Substation (Bronx) to finalize the on-site location of an infrared camera installation. This camera will allow substation-wide infrared/visualization monitoring and should alert operators to any problems such as a previous transformer bushing fire. Staff agreed on two potential locations for the camera installation and discussed the technical details [software application to manage the system, wireless technology to transmit data, and mode of power supply to sustain the system (solar or AC)]. R&TD requested a teleconference with engineers responsible for the Harlem River Substation in order to schedule support for the project.

A meeting was held at CEC with NYSERDA, RPI, and site staff regarding the New York State Synchrophasor Measurement project. The group reviewed the equipment purchase / installation and research & development work conducted as part this project. RPI staff also updated the patches on the Flexible Integrated Phasor System (FIPS) software which enhances the user interface and provides real-time synchrophasor information for various

applications. Discussions were also conducted with site staff regarding the export of Energy Management System's PSS/E output files to the FIPS software. Several options were reviewed and site staff requested R&TD staff to seek Cyber Security and IT approvals

Energy Resource Management

NYISO Markets

In June, Energy Resource Management (ERM) bid 2.15 million MWh of NYPA generation into the NYISO markets, netting almost $50.3 million in power supplier payments to the Authority. Year-to-date net power supplier payments are $242 million.

Fuel Planning & Operations

In June, NYPA's Fuels Group transacted $17.0 million in natural gas and oil purchases, compared with $19.0 million in June 2011. Year-to-date natural gas and oil purchases are $95.2 million, compared with $117.3 million at this point in 2011. The total $22.1 million decrease is mainly due to the cost of fuel/lower generation at the 500-MW Combined Cycle Plant (-$18.8 million for fuel cost and -$15.3 for March/April outage), Small Clean Power Plants (-$10.8 million) and the Richard M. Flynn Power Plant (-$13.0 million), which was offset by the start up of the Astoria Energy II Plant (+$35.8 million) in July of 2011.

Regional Greenhouse Gas Initiative

On June 6th, Auction 16 of the Regional Greenhouse Gas Initiative[6] was held. During the auction, RGGI allowances cleared at the CPI-adjusted auction price floor of $1.93/ton for Vintage 2012. NYPA did not participate in the June auction because the majority of NYPA's estimated required allowances for 2012 were purchased in March. Any remaining allowances needed for 2012 can be secured through two more quarterly auctions to be held in September and December. Since the inception of this program, NYPA has spent $25 million on 11 million RGGI allowances, or $2.28/ton on average. Year to date, NYPA has spent $1.93/ton on average for Vintage 2012 allowances.

GLOSSARY

[1] **Net Generation** – The energy generated in a given time period by a power plant or group of plants, less the amount used at the plants themselves (station service) or for pumping in a pumped storage facility. Preliminary data in the COO report is provided by Accounting and subject to revision.

[2] **Megawatt-hour (MWh)** – The amount of electricity needed to light ten thousand l00-watt light bulbs for one hour. A megawatt is equal to 1,000 kilowatts and can power about 800 homes, based on national averages.

[3] **Availability Factor** – The Available Hours of a generating unit over the Period Hours (hours in a reporting period when the unit was in an active state). Available Hours are the sum of Service Hours (hours of generation), Reserve Shutdown Hours (hours a unit was not running but was available) and Pump Hours (hours a pumped storage unit was pumping water instead of generating power).

[4] **Generation Market Readiness Factor** – The availability of generating facilities for bidding into the New York Independent System Operator (NYISO) market. It factors in available hours and forced outage hours that drive the results.

[5] **Significant Unplanned Generation Events** – Forced or emergency outages of individual generator units of duration greater than 72 hours, or with a total repair cost of greater than $75,000, or resulting in greater than $50,000 of lost revenues.

[6] **Regional Greenhouse Gas Initiative (RGGI)** – A cooperative effort by Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. These nine states have capped CO_2 emissions from the power sector, and will require a 10 percent reduction in these emissions by 2018. RGGI is composed of individual CO_2 Budget Trading Programs in each of the nine participating states. Regulated power plants can use a CO_2 allowance issued by any of the nine participating states to demonstrate compliance with the state program governing their facility. Taken together, the nine individual state programs function as a single regional compliance market for carbon emissions, the first mandatory, market-based CO_2 emissions reduction program in the United States. New Jersey was a tenth state within the RGGI program but New Jersey's governor pulled the state out of the program in 2011.

[i] **Transmission Reliability** – A measurement of the impact of forced and scheduled outages on the statewide system's ability to transmit power.

[i] **Life Extension and Modernization Program** — A major undertaking in which all the turbines at the St. Lawrence-Franklin D. Roosevelt project are being replaced and the generators and other components significantly refurbished. The program is intended to ensure that the project operates at maximum efficiency far into the future.

[6] **Regional Greenhouse Gas Initiative (RGGI)** – A cooperative effort by Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. These nine states have capped CO_2 emissions from the power sector, and will require a 10 percent reduction in these emissions by 2018. RGGI is composed of individual CO_2 Budget Trading Programs in each of the nine participating states. Regulated power plants can use a CO_2 allowance issued by any of the nine participating states to demonstrate compliance with the state program governing their facility. Taken together, the nine individual state programs function as a single regional compliance market for carbon emissions, the first mandatory, market-based CO_2 emissions reduction program in the United States. New Jersey was a tenth state within the RGGI program but New Jersey's governor pulled the state out of the program in 2011.