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Chief Operating Officer

TO: NYPA BOARD OF TRUSTEES  
FROM: EDWARD WELZ, CHIEF OPERATING OFFICER  
DATE: DECEMBER 10, 2014  
SUBJECT: MONTHLY REPORT FOR THE BOARD OF TRUSTEES

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This report covers performance of the Operations group in November 2014.

## **Operations**

### *Plant Performance*

Systemwide net generation<sup>1</sup> was 2,274,678 MWh (megawatt-hours<sup>2</sup>) for November which is above the projected net generation of 2,160,351 MWh. For the year, net generation was 23,424,046 MWh which is above the projected target of 22,878,868 MWh.

The fleet availability factor<sup>3</sup> was 85.99 percent in November, and was 88.84 percent for the year. Generation Market Readiness factor<sup>4</sup> was 99.89 percent in November, which is higher than the monthly target of 99.40 percent. Year-to-date Generation Market Readiness factor was at 99.55 percent, which is above the annual target of 99.40 percent.

There were no significant forced outages<sup>5</sup> in November.

Generation Net Revenue in November was \$31.5 million with no loss of revenue for the month. Year-to-date net revenue was \$369.0 million while revenue loss remains at \$0.9 million.

Niagara River flows in November were above the historical average and are expected to be above normal levels for the year. St. Lawrence River flows for November were above forecast levels and are expected to be above historical levels for the year.

### *Transmission Performance*

Transmission reliability<sup>6</sup> in November was 97.58 percent, which was above the target of 94.48 percent. Year-to-date transmission reliability is 96.91 percent, above the target of 96.26 percent.

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

### *Safety*

The NYPA DART (Days Away, Restricted or Transferred) Rate for November is 1.53. For the year, the DART Rate is 1.30 compared to the target of 0.78.

The Operations DART Rate for November is 2.12. For the year, the DART Rate is 1.19 compared to the target of 1.08.

There were two lost time incidents in November that met the DART criteria.

For the year, there have been 19 injuries that resulted in lost time and met the DART criteria.

### *Environmental*

There was one reportable incident in November:

1. At Clark, a hydraulic line failure occurred on a mobile crane resulting in a release of less than 5 gallons of fluid.

For the year, there have been 26 incidents. The annual target is 32 incidents.

### *Life Extension and Modernization Programs*

#### Transmission LEM

T-LEM is a multiyear program that will upgrade the Authority's existing transmission system to maintain availability, increase reliability, and ensure regulatory compliance. The Program encompasses Authority transmission assets in the Central, Northern, and Western Regions. The Program is estimated to cost \$726 million and is comprised of several projects:

- **St. Lawrence Breaker & Relay Replacement:** Trustees authorized funding for Phase 1 in the amount of \$67.8 million (total \$110 million) at the December 2012 meeting.
  - PCB 1708 and PCB 1714 installed.
  - Walk down of synchronous condenser building took place 11/19/14 to develop demo plans.

- **STL Remote Substations and Switchyard LEM (CPR 558, 1162, and 1163)**
  - 2017 Construction Start – Plattsburgh.
  - Engineering for replacement of Adirondack breakers OCB 102 and 202 is in progress.
  - Engineering for Station Service Upgrade at Plattsburgh is in progress.
  - Conceptual design for Saranac station service in progress.
  - Plattsburgh Preliminary Engineering draft report issued 11/3/14 - in review.
- **NIA Protective Relay Replacement:** Trustees authorized funding for Phase 1 in the amount of \$25.9 million (total \$52 million) at the December 2012 meeting.
  - **PA 27, 301 & 302:** Upgrade completed.
  - **NIA Packard 195, Gardenville 180, and Panel 9NR:** The replacement of the Packard 194 relay with a 311L is planned for the 3<sup>rd</sup> quarter 2015. Contract award in progress.
  - **NIA NR2:** PM and RG&E conducted a Niagara Switchyard walk down 11/15/13 to confirm the design & installation concepts. RGE reported that current planned location for RGE's Station 255 will need to be revisited because of property owner issues and is now likely scheduled for construction 3<sup>rd</sup> quarter 2015.
- **NIA Switchyard LEM:** Trustees authorized funding for Phase 1 in the amount of \$154 million (total \$266.9 million) at the December 2012 meeting.
  - NIA DC Distribution Upgrade: Preliminary design in progress by RCM to address recommendations of NYPA Engineering DC Load Study. Site meeting held on 10/23/14 to discuss the preliminary design. RCMT is currently working on a worst case loading scenario and issued for review 11/25/14.
  - Packard 195 re-conductor NGRID began 10/12/14. NGRID set temporary pole, dead end both 195 and 192 line and dropped conductor; completed 10/15/14. Tower .5 outside of the Niagara Switchyard was demolished and removed. New tower foundation for tower .5 completed. NYPA terminated conductor in switchyard; OPGW cable to be terminated in JB in NIA Switchyard by NYPA. Project completion scheduled for 12/30/14.
  - 800MVA auto-transformer preliminary design review is in process. A QA meeting held 10/5/14. ABB issued transformer civil outline, schematic & control cabinet drawings.
  - 115kV circuit breaker award in progress; 230kV circuit breakers RFQ is in progress.
  - A construction kick off meeting was held with Scurfari Construction 11/20/14 for 115kV trenching and conduit installation.
  - RFQ for CT, PT's and Surge Arrestor proposals received 10/2/14; award recommendation is in progress.
  - Engineering for Tubular Bus, Disconnect Switches, and MODS by RCMT in progress.
- **CEC Switchyard LEM:**
  - CEAR and award for 765 kV Breakers approved by Trustees.
  - Contract award for 345 kV breakers and 765 kV potential transformers is in progress.

- Preliminary engineering report received from CH2M Hill and comments have been provided by NYPA. Final report submitted by CH2M Hill and is under review. Pending Engineering request.
- **CEC Auto-Transformer/Reactor Refurbishment:**
  - Based on options provided by ABB, NYPA has selected an option to repair/refurbish transformer using existing LTC and core pending outcome of inspection of damage.
  - LTC shipped to Germany for refurbishment, scheduled to arrive weekend of 11/8.
  - Transformer main tank and compartment arrived in ABB Varennes week on 10/20. Inspection of core revealed possible cause of core overheating. Inspection of windings the week of 11/24/14.
  - Reactor 1X & 1C refurbishment complete.
- **Massena Substation Reactor Refurbishment:**
  - Deferred to 2015.
  - Spare HV bushing delivered on 10/24/14 to site.
- **PV-20 Submarine Cable Replacement:**
  - Cable specification reviewed and accepted; proceeding with RFP.
  - Cumberland Head space issue being worked with multiple options being considered.
- **BG & CEC Relay Replacements:**
  - The project team continues to design, procure equipment, and install relays.
- **Massena Substation Autotransformer Replacement:**
  - All 6 auto Transformers in Erie PA; delivery to Massena Substation in December.
  - Op-Tech completed removing squelching stone for 2B and 2C.
  - Installation of cable tray and trench box to marshalling cabinets mostly completed.
  - Removed transformer 2B and 2C from existing foundation to temporary containment for demolition.
  - Formed for concrete infills for 2B and 2C.
- **Tower Painting:**
  - Contract awarded to Tower Maintenance 10/31/14.
  - Estimated start is April 2015 running through November 2015.
  - Kick Off meeting to be scheduled in November at STL. Need to invite GPI.

### LPGP LEM

The third unit outage (Unit 7) commenced on August 4th and the refurbishment work by Mitsubishi Hitachi Power Systems America (MHPSA) is well underway however a four day delay was encountered in late November due to the excessive snow accumulation (over six feet) and the local workers could not get to the facility. We anticipate that this time will be recaptured by working additional multiple shifts in order to maintain the unit's return to service date of March 20, 2015.

The first additional new spare set of shafts was delivered and will be installed in PG7 as previously reported. The cost to repair the original turbine shaft from PG7 is being

prepared to determine if it is feasible as compared to a new shaft. The fabrication of the second additional set of shafts was completed and is scheduled to be delivered by mid-December.

The initial analysis of the crack found on the shaft from PG5 indicates that it was not due to material defects when it was originally forged over 50 years ago; the crack developed from corrosion during operation (water and air exposure) and then it migrated (grew) as a result of fatigue. Based on these findings and the increased probability of finding shafts in similar condition, additional spare shafts will be ordered in order to maintain the completion of the LEM Program in 2020. There is an 18 month lead time for these shafts and the cost is presently being negotiated with MHP SA.

The third runner was delivered in October and will be installed in PG7 as planned. The assembly of the fourth and fifth runners are well underway at MHP SA's facility located in Japan and are scheduled to be delivered in accordance with the unit outage work. The fabrication of the sixth runner components are occurring at two facilities: Japan Steel Works (JSW) located in Japan and Voestalpine located in Austria. The fabrication and inspections of the seven blades were completed at Voestalpine and the final inspections of the crown and band at JSW are scheduled for late December. These components will be shipped to MHP SA's facility located in Japan and assembled accordingly as planned.

PMHP SA was released for the fabrication of the remaining six turbines who then issued purchase orders to their subcontractor, the Litostroj foundry located in Slovenia for the individual turbine component fabrication. This same foundry successfully fabricated the components for the first five runners for LPGP and as previously reported, they went through insolvency proceedings that did not materialize and since such time resumed business as "normal". The pouring of the crown, band and three blades for the seventh unit runner components was recently completed and are on schedule.

The fabrications of the fourth and fifth sets of wicket gates are well underway and the final inspection is scheduled for early December. The release for the fabrication of the sixth set of wicket gates was issued.

The contract for the motor-generator (MG) refurbishment with Andritz Hydro was issued a "stop work order" as previously reported is still in effect as a result of faulty stator coils and the overheating of rotor pole damper bars as designed, furnished and installed by Andritz. Earlier this year, an independent third party generator consultant, Power Engineering Inc. (PE), was engaged to review the original MG as fabricated by Allis Chalmers and the Andritz design as it relates to the overheating issue. A meeting is scheduled for December 4<sup>th</sup> with PE and Andritz to discuss the design parameters and differences.

#### *Technical Compliance – NERC Reliability Standards*

##### Enforcement Actions – Northeast Power Coordinating Council (NPCC)

NYPA has three (3) minimal risk violations being processed pursuant to NYPA's participation in a NERC-sponsored Reliability Assurance Initiative (RAI) pilot

program for self-logging. There will not be any penalties associated with these violations.

#### Internal Investigation of Possible Violations

Since the last report, no new internal investigations were initiated. There are currently four (4) open internal investigations.

#### NPCC Spot Check Audit

On July 29, 2014, NPCC initiated an off-site Spot Check Audit of the operations and planning standard PRC-002-NPCC-001 – Disturbance Monitoring for NYPA's Transmission Owner function registration. NYPA submitted the required compliance documentation on October 17, 2014. The NPCC audit staff completed its review of NYPA's compliance documentation and provided a preliminary indication that NYPA is fully compliant with PRC-002-NPCC-001. The final NPCC Spot Check Audit report is expected to be issued by the end of 2014.

#### New Bulk Electric System (BES) Definition

As stated in earlier reports, the Federal Energy Regulatory Commission (FERC) approved the new Bulk Electric System (BES) definition and that NYPA has nearly 50 newly identified BES elements that will be subject to the NERC reliability standards in July 2016. In addition, under this new definition, NYPA may be required to register as a Transmission Operator (TOP) and/or a Transmission Planner (TP). NYPA continued its participation in meetings with the NYISO and the other NY Transmission Owners to assess new state-wide functional registration and compliance management impacts and actions pursuant to the new BES definition.

In November, the Technical Compliance staff, with support from the Law Department, developed a position paper regarding NYPA's registration as a TOP and TP. NYPA is taking a position that since it does not operate most of its newly identified BES assets, in a NERC functional model sense, that it will not be a TOP. The position paper includes a request of the NYISO to add some of NYPA's newly identified BES elements to its list of controlled assets for TOP compliance purposes. The position paper has been discussed with NYISO staff several times in the last few months; the NYISO is receptive to the request but it still has to be confirmed in writing. The position paper recommends that NYPA become a registered TP under a Coordinated Functional Registration (CFR) agreement with the NYISO, in which the NYISO will accept compliance accountability for all but a few requirements of the standards applicable to the TP function for NYPA's newly identified BES elements. These positions have also been discussed with NPCC staff.

In November, NYPA continued to work with NPCC on its review of NYPA's newly identified BES elements submitted via NERC's BESnet software application; the tool NERC developed to identify and monitor new BES assets. NPCC and NERC have reviewed and accepted NYPA's submittals. Related to this requirement, NYPA continues to work closely with Alcoa in the development of a joint exception request to exclude the Moses-Alcoa 115 kV transmission lines from the BES.

NYPA staff continued discussions with NY Transmission Owners to reach agreements that clarify the roles and responsibilities for compliance management for the Transmission Owner (TO) standards related to NYPA assets operated and

maintained by others. NYPA's discussions with these organizations also focused on reaching agreements, before April 2016, for managing compliance with the Version 5 Critical Infrastructure Protection (CIP) cyber security standards for assets owned by NYPA but that reside in facilities owned by others.

#### Critical Infrastructure Protection (CIP) Standards - Version 5

In November, NYPA continued to monitor regulatory developments associated with NERC's Critical Infrastructure Protection (CIP) Version 5 reliability standards for cyber security. These new reliability standards will have substantive impacts on NYPA's operations-related cyber security compliance program. In response, a comprehensive CIP Version 5+ Compliance Transition Project Plan (Plan) has been developed to leverage NYPA's existing CIP Version 3 compliance program and includes tasks to expand the program to include the newly identified Cyber Systems, the identification of critical milestones, and key internal resources. The plan includes ongoing and some new activities and will be ramped up during the remainder of 2014.

The CIP Version 5+ Capital Expenditure Request will be presented to the Board of Trustees in January 2015. Expenditure estimates for implementation of the revised standards have been included in the Operations budget plan for 2014-2016.

When completed, these efforts will enable NYPA to demonstrate compliance with the new standards by the April 1, 2016 enforcement date.

#### Physical Security Standard

Recently, FERC directed NERC to develop a new physical security standard (CIP-014-1 – Physical Security). It is anticipated that FERC will approve this standard by the end of 2014 and that it will become effective six months after approval.

In November, NYPA continued to work with the NYISO and NY Transmission Owners to develop a modeling methodology to ensure consistency across New York State in the assessment and identification of transmission facilities that will be subject to this standard. Those facilities that are identified from the modeling studies will be subject to other requirements including a vulnerability assessment and a documented security plan that must be reviewed and updated every 30 months.

#### NERC Reliability Assurance Initiative

The VP Technical Compliance, R. Crissman, is serving on a RAI Industry Advisory Group, established by NERC, which will provide implementation guidance to industry for this NERC initiative. The objective of the initiative is to establish more risk-based compliance monitoring and enforcement processes for NERC's reliability standards; the implementation is planned to be completed by the end of 2015. Mr. Crissman served as a panelist in two NERC-sponsored RAI workshops in November and delivered a presentation regarding NYPA's participation in a RAI enforcement pilot program to the NERC Board of Trustees Compliance Committee at its meeting in Atlanta, GA on November 12. The presentation was well received by NPCC and NERC.

## Energy Resource Management

### *NYISO Markets*

In November, Energy Resource Management (ERM) bid 2.57 million MWh of NYPA generation into the NYISO markets, netting \$53.6 million in power supplier payments to the Authority. Year-to-date net power supplier payments are \$723.5 million.

### *Fuel Planning & Operations*

In November, NYPA's Fuels Group transacted \$22.9 million in natural gas and oil purchases, compared with \$21.7 million in November 2013. Year-to-date natural gas and oil purchases are \$331.7 million, compared with \$292.6 million at this point in 2013. The total \$39.1 million increase is mainly due to the higher cost of winter fuel and/or fuel consumption at the Astoria Energy II Plant (\$16.3 million), 500-MW Combined Cycle Plant (\$23.9 million), and Richard M. Flynn Power Plant (\$10.3 million), which was offset by a decrease at the Small Clean Power Plants (-\$11.4 million).

## GLOSSARY

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<sup>1</sup> **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.

<sup>2</sup> **Megawatt-hour (MWh)** – The amount of electricity needed to light ten thousand 100-watt light bulbs for one hour. A megawatt is equal to 1,000 kilowatts and can power about 800 homes, based on national averages.

<sup>3</sup> **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).

<sup>4</sup> **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.

<sup>5</sup> **Significant Unplanned Generation Events** – Those events (forced or emergency outages of individual generator units) of duration greater than 72 hours, or have a total repair cost of greater than \$75,000, or result in greater than \$50,000 of lost revenues.

<sup>6</sup> **Transmission Reliability** - A measurement of the impact of forced and scheduled outages on the statewide system's ability to transmit power.

<sup>7</sup> **Significant Unplanned Transmission Events** – Those events (forced or emergency outages of individual transmission lines) which directly affect the reliability of the state's transmission network, or affect the availability of any component of the state's transmission network for greater than 8 hours, or that have a repair cost greater than \$75,000.