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Chief Operating Officer

TO: NYPA BOARD OF TRUSTEES
FROM: EDWARD WELZ, CHIEF OPERATING OFFICER
DATE: MAY 12, 2015
SUBJECT: MONTHLY REPORT FOR THE BOARD OF TRUSTEES

This report covers performance of the Operations group in April 2015.

Operations

Plant Performance

Systemwide net generation¹ in April was 1,801,657 MWh (megawatt-hours²) which is below the projected net generation of 2,206,897 MWh. For the year, net generation was 7,880,145 MWh which is below the projected target of 9,166,497 MWh.

The fleet availability factor³ in April was 81.86 percent year-to-date, and was 85.67 percent for the year. Generation Market Readiness factor⁴ in April was 97.26 percent year-to-date, which is lower than the target of 99.40 percent. Year-to-date Generation Market Readiness factor was at 98.16 percent, which is below the annual target of 99.40 percent.

There were four significant forced outage⁵ events in April:

1. Gilboa Unit 3 remained in a forced outage from December 5, 2014 because of cracks discovered in the main rotor ledge.
2. St. Lawrence Power Project units continued to be hampered by extreme ice conditions throughout the month. This resulted in the equivalent of 14.5 forced outage hours for the plant. In total, there were 125.9 equivalent forced outage hours due to ice problems through the year.
3. Gilboa Unit 1 had a tube failure on the thrust and lower guide bearing heat exchanger in March. The unit returned to service on April 7.
4. Astoria 500MW Unit 7A needed repairs on the generator end shield. This resulted in 210.7 forced outage hours.

Generation Net Revenue in April was \$28.8 million with lost revenue of \$0.2 million. Year-to-date net revenue was \$121.2 million while revenue loss was \$0.9 million.

Niagara River flows in April were slightly above the historical average and will be above normal levels during the year. St. Lawrence River flows for April were below historical levels but are expected to be above the average flow as the year progresses.

Transmission Performance

Transmission reliability^[i] in April was 98.46 percent, which was below the monthly target of 98.63 percent. Year-to-date transmission reliability is 98.57 percent, above the target of 97.83 percent.

There were no significant unplanned transmission outages in April.

Safety

The NYPA DART (Days Away, Restricted or Transferred) Rate for April is 0.75. For the year, the DART Rate is 1.71 compared to the target of 0.78.

The Operations DART Rate for April is 1.16. For the year, the DART Rate is 2.28 compared to the target of 1.08.

There was 1 lost time incidents in April that met the DART criteria.

For the year, there have been 9 injuries that resulted in lost time and met the DART criteria.

Environmental

There were four reportable incidents in April:

1. At Vernon GT, a hose clamp failed resulting in 70 gallons of oil being released.
2. At Plattsburgh Substation, a couple of gallons of oil were released from CT 226.
3. At Clark Energy Center, a capacitor failed releasing 2 gallons of oil.
4. A SPDES excursion occurred at Niagara at the Robert Moses Plant south drainage.

For the year, there have been 9 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.
 - Commissioning for PCB 1724 ongoing.
 - Station Service transformers and 480V switchgear 4A & 4B on order.
- **STL Remote Substations and Switchyard LEM (CPR 558, 1162, and 1163)**
 - Adirondack Sub work will be included in the MA1 rebuild package.
 - Engineering for replacement of Adirondack breakers OCB 102 and 202 in progress.
 - Engineering for Station Service Upgrade at Plattsburgh in progress.
 - RFP is being assembled for storm water drainage improvement.
- **NIA Protective Relay Replacement (CPR 209):** Trustees authorized funding for Phase 1 in the amount of \$25.9 million (total \$52 million) at the December 2012 meeting.
 - NIA Packard 195, Bay10 Relay/1NR, Gibson 198, Gardenville 180/ Panel 9NR & Bay 18:
 - Relay replacement outage in progress Bay 10 Relay/1NR, Gibson 198 (4/6/2015-6/14/2015).
 - Replacement of the Packard 194 relay with a 311L is planned for the 3rd 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:** RCMT issued 60% drawings and 90% drawings are being reviewed.
 - 800MVA auto-transformer design/fabrication is in process.
 - 115kV circuit breaker contract awarded; kick off meeting was held on 1/16/15
 - 230kV circuit breaker recommendation to be presented at the May Trustee meeting.
 - 115kV trenching and conduit installation is in progress.
 - Engineering for Tubular Bus, Disconnect Switches, and MODS by RCMT in progress.

- **CEC Switchyard LEM:**
 - CEAR and award for 765 kV circuit breakers approved by Trustees.
- **CEC Auto-Transformer/Reactor Refurbishment:**
 - Reactor 1A, 1C, 1X completed.
 - Reactor 1B in progress.
 - Change Order issued to ABB to repair Auto-Transformer 1X to address the damage caused by ABB as well as legacy issues discovered during the inspection. The unit is expected to return to CEC by December 31.
- **Massena Substation Reactor Refurbishment:**
 - Refurbishment of (2) reactors is planned for 2015.
 - Reactor 1X outage: 8/3/15 – 10/2/15.
 - Reactor 1B to be worked on under Clearance 55202 (MSC7040 line) from 10/3/15 - 10/25/15.
- **PV-20 Submarine Cable Replacement:**
 - RFP issued 2/18/15.
 - Bid walk down completed on 3/12/15.
 - Proposals received for cable removal; evaluation in progress.
- **BG & CEC Relay Replacements:**
 - The project team continues to design, procure equipment, and install relays.
- **Massena Substation Autotransformer Replacement:**
 - All auto-transformers have been delivered to Massena; installation in progress.
 - Bank 2 is planned to return-to-service in May 22, 2015; Bank 1 return-to-service will be in 2016.
- **Tower Painting:**
 - Painting started in the Northern NY region and is expected to run through November 2015.

LPGP LEM

The fourth unit outage (Unit 2) commenced one week sooner than originally planned on March 25, 2015 (coordinated with a planned feeder outage) and the unit dis-assembly work was completed by the Plant staff as scheduled. The sand blasting of the stay vanes and ring is underway; the unit return to service date is November 10, 2015.

The rotor from Unit 2 was visually inspected when it was placed in the Assembly Bay and it appears to have signs of overheating in a number rotor poles and jumpers as previously reported; approximately four rotor poles will either be sent out for refurbishment or replaced with spares.

The “stop work order” that was issued to Andritz Hydro Corporation for the motor-generator refurbishment contract back in May 2013 is still in effect due to quality issues encountered with the new stator coils and concerns with the performance of new rotor poles that they designed and furnished in the first unit, Unit 11 as previously reported. Since such time, Andritz re-analyzed their design of the

rotor poles that they installed in the first unit (Unit 11) and concluded that it does not meet the design intent. A meeting is scheduled with Andritz for May 7th to discuss the remedy of the Unit 11 rotor poles and to possibly re-start the contract work with design changes and quality control improvements.

The fourth runner (to be installed in Unit 2) has been delivered and the fifth and sixth runners are presently being assembled in MHPSA's facility located in Japan (which is typical for all runners). The fabrication of the seventh runner components have been completed by the Litostroj foundry located in Slovenia and are in transit to MHPSA's facility. The components for the eighth runner are in various stages of fabrication at the Litostroj foundry and will be inspected in May.

The fourth set of wicket gates arrived on site and the fabrication of the fifth set of wicket gates is underway. The third set of spare shafts was delivered and the fabrication of three additional spare sets of shafts was released. MHPSA has recently identified a potential "financial situation" with the forging foundry Hyunjin, located in South Korea, who furnished the first three sets of spare shafts. MHPSA ordered the fourth spare set of shafts from Hyunjin and will be ordering the fifth and sixth spare set of shafts from a new forging foundry, Taewoong also located in South Korea given the circumstance with Hyunjin as a precaution. NYPA's QA staff will be inspecting the Taewoong facility in May.

The time frame between the future unit outages has been condensed in order to maintain the completion of the LPGP LEM program in 2020 as originally planned.

Technical Compliance – NERC Reliability Standards

Enforcement Actions – Northeast Power Coordinating Council (NPCC)

During the reporting period, no new possible violations of the North American Electric Reliability Corporation (NERC) Reliability Standards were reported to the NPCC. There is one (1) possible violation being processed under NERC's risk-based enforcement program for self-logging of minimal risk issues.

Internal Investigation of Possible Violations

No new investigations were initiated in April. There are seven (7) open investigations.

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. 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. 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 registered as a TOP.

In April, NYPA continued to engage the New York Independent System Operator (NYISO) and other NY Transmission Owners in discussions to add some of NYPA's newly identified BES elements to their list of controlled assets for Transmission Operator (TOP) compliance purposes. NYPA, NYISO, and NYSEG representatives met on April 20, 2015 to discuss the possibility of the NYISO accepting TOP and TP compliance accountability for the NYPA Plattsburgh to Saranac 115 kV transmission line and Plattsburgh 115 kV capacitor banks 5 and 6. Follow-up discussions with the NYISO are anticipated to occur in May 2015. NYPA staff anticipates finalizing this process by July 1, 2015.

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. In April, RSC staff and consultants continued to work closely with Alcoa to finalize the power flow analysis and exclusion exception summary documentation. It is anticipated the exclusion exception request will be submitted to NPCC for evaluation in late May/early June 2015.

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 of the 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

As stated in previous reports, NYPA's CIP Version 5 (V5) Implementation Project team continued to execute the transition plan. The compliance teams are working closely with internal stakeholders in the following areas:

- Categorization of NYPA's Bulk Electrical System (BES) facilities and BES Cyber Systems and the supporting compliance evidence,
- Development and implementation of CIP V5 software specifications documentation for Critical Information Management Systems (CIMS), Access Information Management System (AIMS), and MAXIMO applications,
- Review and update of the existing CIP policies and procedures,
- Initiation of a plan for NYPA's Medium Impact microprocessor-based relays,
- Implementation of the physical security controls at NYPA's BES facilities, and
- Monitor all CIP regulatory changes and lessons learned.

As part of NPCC's CIP V5 Outreach program, NPCC will be conducting a CIP V5 transitions assessment of our progress in moving from a Version 3 to Version 5 compliance posture. NYPA is scheduled for an assessment in September 15-17, 2015. The assessment is an opportunity for NYPA to validate its approach and implement any recommendations for adjustments made by NPCC.

Execution of the Transition plan and the NPCC CIP V5 assessment will enable NYPA to demonstrate compliance with the new standards by the April 1, 2016 enforcement date.

Physical Security Standard

FERC approved the new physical security standard (CIP-014-1 – Physical Security) on November 20, 2014 and it will become effective October 1, 2015.

In April, NYPA continued to attend meetings with the NYISO and New York Transmission Owner planning staffs to help facilitate the development of 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.

Energy Resource Management

NYISO Markets

In April, Energy Resource Management (ERM) bid 2.13 million MWh of NYPA generation into the NYISO markets, netting \$25.8 million in power supplier payments to the Authority. Year-to-date net power supplier payments are \$235.7 million.

Fuel Planning & Operations

In April, NYPA's Fuels Group transacted \$9.5 million in natural gas and oil purchases, compared with \$23.5 million in April 2014. Year-to-date natural gas and oil purchases are \$141.1 million, compared with \$209.2 million at this point in 2014. The total -\$68.0 million decrease is due to the lower cost of fuel and / or fuel consumption at the Astoria Energy II Plant (-\$23.4 million), 500-Mw Combined Cycle Plant (-\$26.9 million), and Richard M. Flynn Power Plant (-\$11.5 million), and Small Clean Power Plants (-\$6.2 million).

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 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.
- 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** – 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.
- ⁶ **Transmission Reliability** - A measurement of the impact of forced and scheduled outages on the statewide system's ability to transmit power.
- ⁷ **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.