

**Comments of the New York Power Authority and North America Transmission
to the ESPWG on AC Transmission: Preliminary Results**
May 3, 2018

The New York Power Authority (“NYPA”) and North America Transmission, LLC (“NAT”) appreciate the comprehensive evaluation NYISO has completed, which is reflected in the preliminary evaluation results, draft transmission planning report, and draft SECo report. We provide the following comments in response to the April 30, 2018 presentation of preliminary results to the ESPWG.

For the better part of a decade, New York has been considering potential actions to address long-standing concerns that there is insufficient transmission capacity between upstate power generation sources and downstate consumers on the bulk electric transmission system. New York’s Clean Energy Standard (CES) will exacerbate this concern with 50 percent of New York’s electricity to come from renewable energy sources by 2030, much of which is expected to be located in the western and northern New York. As has been observed by many stakeholders in the Integrating Public Policy Task Force process, without sufficient incremental transmission capacity, carbon-reducing benefits of new CES resources will not be realized.¹ Given the lead-time associated with planning, permitting and constructing new transmission infrastructure, the projects selected through this proceeding will likely be the last significant transmission upgrades in New York prior to the deadline for achieving the CES. NYISO must use this opportunity to select the projects that best meet New York’s long-term needs and accommodate the CES.

The Central East interface accounts for the largest share of congestion in New York,² as well as the largest constraint for delivery of CES resources. As evident by the evaluation results, for each incremental increase in Central East transfer capability, the additional cost is more than offset by corresponding production cost benefits.³ Segment A proposals that maximize the transfer across the Central East interface provide the greatest benefits and performance at the lowest cost per MW of transfer. These are clearly the more efficient and cost effective proposals.

In contrast, there is no apparent correlation between UPNY/SENY transfer capability and corresponding production cost benefits.⁴ Therefore, for Segment B, the more efficient or cost effective proposals are those that meet the minimum transfer requirements at the lowest cost, have the least operating risk, and present the least community impact (and thus have the lowest overall permitting risk).

¹ See for example: Recommendations for the Integrating Public Policy Task Force by the City of New York, February 5, 2018 at slide 4a
http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg_ipptf/meeting_materials/2018-02-05/NYC%20IPPTF%20Presentation_020518.pdf;
and Evaluating Mechanisms to Meet Public Policy Goals presentation by Daymark Energy Advisors
http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg_ipptf/meeting_materials/2018-01-08/Evaluating%20Mechanisms%20to%20Meet%20Public%20Policy%20Goals.pdf

² See Figure 27 of the 2017 Congestion Assessment and Resource Integration Study (CARIS) Report which identifies \$4.046 billion (nominal \$) of historical Central East Demand\$ Congestion in the five year period from 2012 to 2016. This represents 64% of the total Demand\$ Congestion for all constrained paths in the state over this period.

³ The correlation of production cost savings and various transfer results are included in Attachment 1.

⁴ See Attachment 1

Segment A

The NYISO preliminary results identify clear distinguishing factors among the Segment A proposals, as summarized in the following table.⁵ Proposal T025 is consistently the top performing proposal, with the exception of property rights and Central East operability under N-1-1. Proposal T027 is the top performing proposal for those two categories and second only to proposal T025 in every other category.

Evaluation Criteria/Distinguishing Factor	T025 Combinations ⁶		T027 Combinations ⁶	
	Ranking	Value	Ranking	Value
Central East				
MW of Incremental Transfer	1	1,300	2	875
Cost/MW of Incremental Transfer (\$M/MW)	1	0.66	2	0.84
Operability (Min. incremental N-1-1 transfer)	5	382	1	1,115
Performance (GWh)	1	149,696	2	104,019
Other				
Property Rights (EMF easement feet)	7	8-25	1	0
Production Cost Savings (2018 M\$)	1	1,492	2	1,179
Production Cost Benefit/Cost	1	1.2	2	1.1

In fact, as can be seen in the table below, proposal combinations with Segment A proposals T025 and T027 are the only combinations with Production Cost Benefits / Costs greater than 1.0, and net positive benefits (based solely on production cost savings).

Project ID	Prod. Cost Savings CES Scenario	Independent Cost Estimate	Production Cost Benefits / Cost	Net benefit
T018+T019	(830)	917	0.91	(87)
T021+T022	(714)	812	0.88	(98)
T021+T023	(707)	843	0.84	(136)
T025+T019	(1,492)	1,273	1.17	219
T025+T029	(1,417)	1,159	1.22	258
T025+T030	(1,461)	1,177	1.24	284
T026+T029	(626)	832	0.75	(206)
T026+T030	(615)	850	0.72	(235)
T027+T019	(1,179)	1,186	0.99	(7)
T027+T029	(1,129)	1,072	1.05	57
T027+T030	(1,108)	1,090	1.02	18
T028+T029	(840)	854	0.98	(14)
T028+T030	(704)	873	0.81	(169)
T031+T032	(570)	1018	0.56	(448)

⁵ The categories not identified in the table including expandability, schedule, and upgrades to aging infrastructure were comparable among the Segment A proposals and do not appear to be distinguishing.

⁶ The values in this column represent the top performing combination with Segment A proposals in combination with a Segment B proposal for the criteria.

Segment B

Since incremental UPNY/SENY transfer capacity does not translate into incremental production cost benefits (see Attachment 1), the analysis for Segment B proposals differs from Segment A. Since all proposals provide the necessary UPNY/SENY interface transfer, the distinguishing factors among Segment B proposals are cost and overall risk. Minimizing community impacts, specifically increases in structure heights, was identified in the December 17, 2015 Public Service Commission Order Finding Transmission Needs Driven by Public Policy Requirements. The risk of public opposition, particularly due to increases in structure heights, is identified as the key risk for Segment B proposals.⁷

Proposals T029/T030 are distinguished among the Segment B proposals from both a cost and design perspective, as summarized in the tables below. Proposal T029 is the lowest cost proposal in combination with either Proposal T025 or Proposal T027. Proposals T029 and T030 have the highest percentage of structures at the same or lower height than the existing structures. Proposal T030 has the highest Production Cost Benefit:Cost in combination with Proposal T025 and Proposal T029 has the highest Production Cost Benefit:Cost in combination with Proposal T027.

T025 Grouping	Independent Cost Estimate	Upgrades to Aging Infrastructure	Production Cost Benefit: Cost	Segment B % Structure Height <= Existing
T025+T019	1,273	313	1.17	22%
T025+T022	1,189	247	1.19	12%
T025+T023	1,222	313	1.16	2%
T025+T029	1,159	313	1.22	74%
T025+T030	1,177	313	1.24	74%
T025+T032	1,323	313	1.07	52%
T027 Grouping				
T027 Grouping	Independent Cost Estimate	Upgrades to Aging Infrastructure	Production Cost Benefit: Cost	Segment B % Structure Height <= Existing
T027+T019	1,186	329	0.99	22%
T027+T022	1,098	263	1.03	12%
T027+T023	1,131	329	1.00	2%
T027+T029	1,072	329	1.05	74%
T027+T030	1,090	329	1.02	74%
T027+T032	1,243	329	0.91	52%

Proposal T019 provides higher transfer results in combination with Proposal T027, but the higher transfer does not translate into production cost benefits that would justify the cost, or to offset the additional permitting risk, as well as the operating risk presented by the series compensation. As

⁷ See draft SECo report, Section 2.3.3, page 9

noted in NAT/NYPA comments submitted on April 13, 2018, series compensation presents a risk of damage to generator rotors due to the presence of sub-synchronous resonance under certain operating conditions. The NYISO is currently assessing this risk to determine the best means of capturing it in their final analysis.⁸

Conclusion

Proposal T025 and Proposal T027 are the more efficient or cost-effective Segment A proposals to address the AC Transmission Public Policy Transmission Need. The final ranking between the two proposals will depend upon the individual weighting placed by NYISO among the various criteria under consideration.

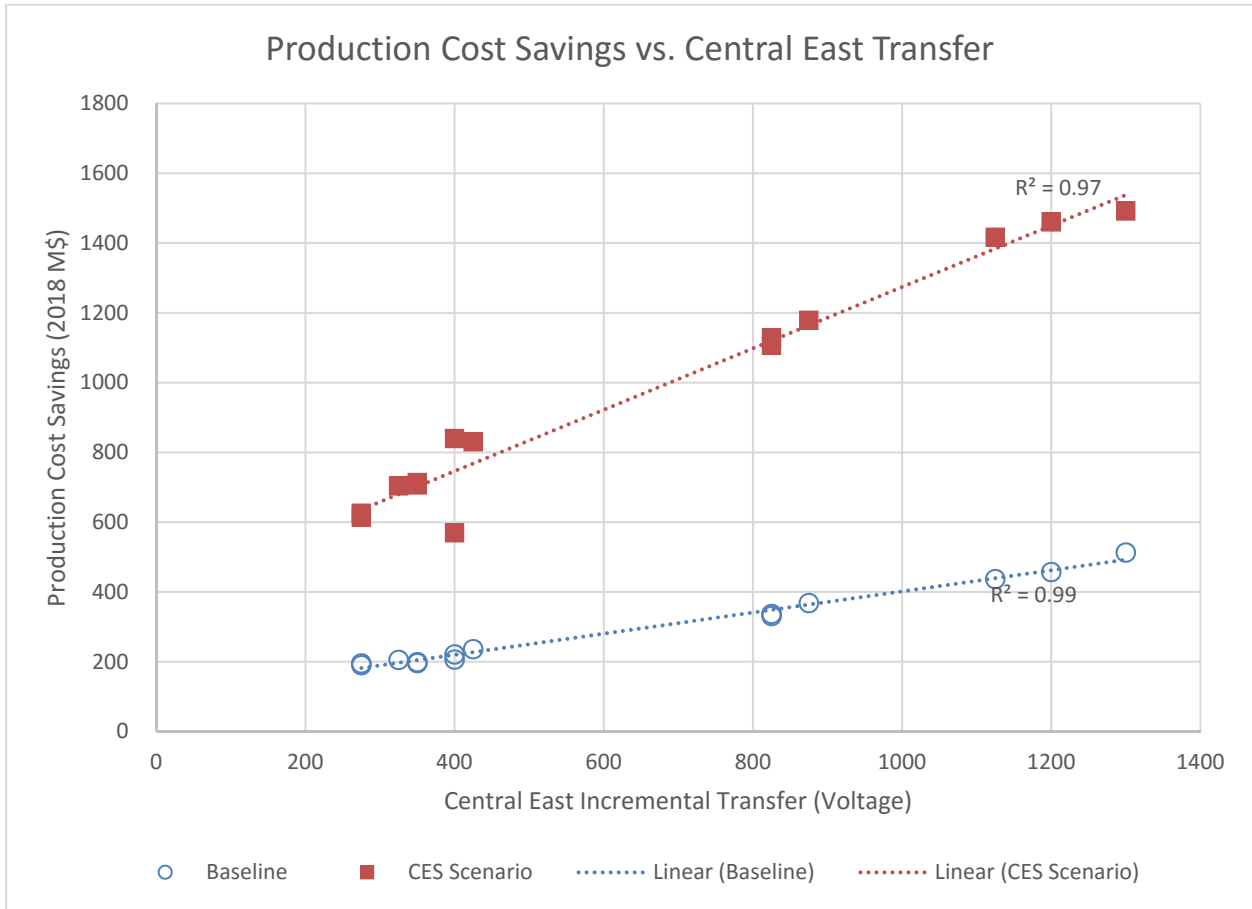
Proposal T030 is the more efficient or cost effective Segment B proposal in combination with Segment A Proposal T025, with the highest Production Cost Benefit:Cost. Proposal T029 is the more efficient or cost effective Segment B proposal in combination with Segment A Proposal T027, with the highest Production Cost Benefit:Cost.

⁸ See NYISO Presentation “Updates to Preliminary AC Transmission Need Results”, April 19, 2018, page 17

Attachment 1 – Correlations of Production Cost Savings and Transfer Results

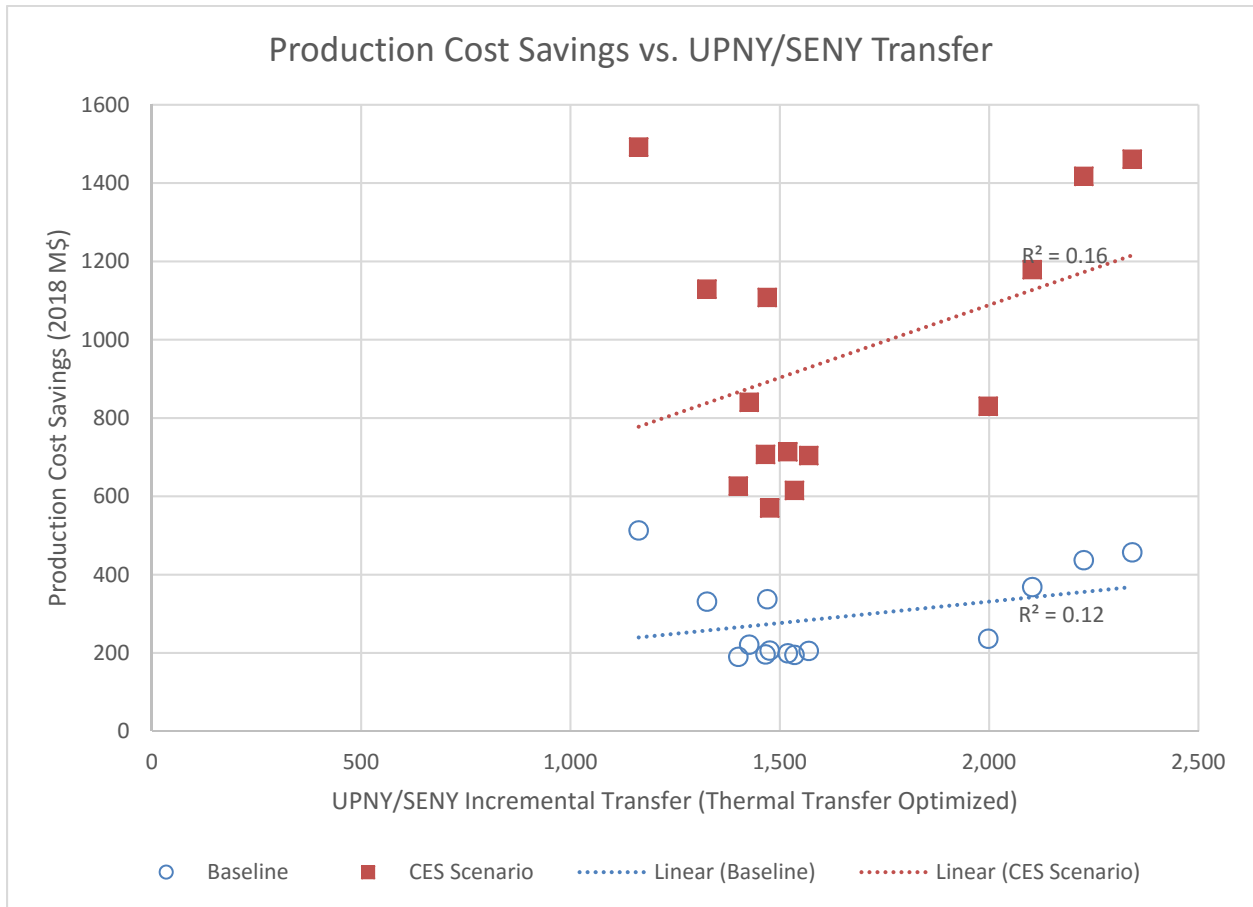
It was observed in the April 30, 2018 meeting that production cost savings correlate to Central East transfer results but there is no correlation between production cost savings and UPNY/SENY transfer results. The graphs below illustrate this finding.

The first graph is Production Cost Savings for the Baseline and CES Scenario (see Table 3-21 of the Draft AC Transmission Public Policy Transmission Planning Report on page 62) graphed against the Central East incremental transfer (see Table 3-7 of the Draft AC Transmission Public Policy Transmission Planning Report, page 46). A simple linear regression shows that the correlation is very strong with an R^2 of 0.99 and 0.97 for the two cases.¹ It can also be seen that there are not diminishing marginal returns from incremental transfer on Central East – the Production Cost Savings continue to increase with incremental transfer even at the highest levels of transfer.



¹ An R^2 of 1.0 is a perfect linear relations and an R^2 greater than 0.70 is generally considered a strong correlation.

The second graph below makes apparent the lack of correlation between incremental UPNY/SENY transfer and Production Cost Savings. Production Cost Savings for the Baseline and CES Scenario (see Table 3-21 of the Draft AC Transmission Public Policy Transmission Planning Report on page 62) are graphed against the UPNY/SENY transfer (Optimal Transfer Limit, see Table 3-8 of the Draft AC Transmission Public Policy Transmission Planning Report on page 47). There is no meaningful correlation with a simple linear regression R^2 of 0.12 and 0.16 for the two cases.² There are no meaningful incremental production cost benefits from higher UPNY/SENY transfer, in fact some of the project combinations with the lowest UPNY/SENY incremental transfer (on the left side of the chart) have some of the highest production cost savings. This remains true even under the CES scenario.



² An R^2 less than 0.3 is generally considered to have no correlation/weak correlation.