May 14, 2018

Mr. Dawei Fan
NYISO Public Policy Planning
New York Independent System Operator, Inc.
10 Krey Boulevard
Rensselaer, New York 12144

RE: NEETNY Comments to AC Public Policy Transmission Need

Dear Mr. Fan:

NextEra Energy Transmission New York, Inc. ("NEETNY") appreciates this additional opportunity to provide comments on the draft evaluation of the AC Public Policy Transmission Need ("AC PPTN") and Evaluation Updates presented at the May 10, 2018 Electric System Planning Working Group ("ESPWG") meeting. NEETNY restates and incorporates by reference its prior comments submitted on May 3, 2018 and offers these additional comments to the New York Independent System Operator ("NYISO").

NEETNY has recommendations on four specific aspects of the draft evaluation:

- NYISO should evaluate Tier 1 and Tier 2 proposals it classified as "electrically similar" based on cost contained proposals that developers were required to submit.[1]
- The independent cost estimate for installation of concrete monopoles is significantly overstated and should be revised, and benefits of concrete monopoles are not considered.
    - Due to an error in our submittal, the installation cost for concrete poles in T022 from Churchtown – Pleasant Valley using SECO's methodology is overstated by about $14 million. The weight provided for the poles was incorrect.
- The evaluation of aging infrastructure upgrades, visual impacts and operability contains flaws and the minor differences are not sufficient to distinguish between projects.
    - T022 should be ranked Tier 1 when the aging infrastructure analysis takes National Grid's recent Asset Condition Reports into account.
    - When flaws in the visual impact analysis are addressed and assumptions are better understood, T023 should be ranked Tier 1.
- Synergy savings applied in the analysis are overstated.

[1] Order of the New York Public Service Commission (the "Commission") Finding Transmission Needs Driven by Public Policy Requirements, Case 12-T-0502, et. al., Proceeding on Motion of the Commission to Examine Alternating Current Transmission Upgrades, issued December 17, 2017 ("2015 AC Transmission Order").

NEETNY believes that these recommendations will help ensure that NYISO selects the more efficient and cost-effective project combination, and that New York electric customers will realize the full benefits of competition.

1. NYISO should use cost-contained bids to distinguish between project combinations that it grouped as "electrically similar".

The 2015 AC Transmission Order and the NYISO's AC Transmission solicitation required all proposals to include a cost containment price alternative.[2] More specifically, all developers were required to submit a proposal that included an 80/20 risk sharing mechanism. This is different from the Western NY PPTN where NYISO was not directed to solicit, and did not solicit, cost-contained proposals. Therefore, NYISO is in a position to fairly evaluate cost-contained proposals consistent with these directives.

Using the cost-contained pricing submitted by developers is the most logical and objective way to select the more cost-effective project from alternatives that were evaluated as "electrically similar" and do not, therefore, have meaningful distinguishing characteristics. In its AC Transmission PPTN evaluation, NYISO chose to group projects as "electrically similar" instead of fully evaluating all possible combinations of Segment A and B projects. Using these "electrically similar" groupings, NYISO assumed that certain combinations had identical performance for nearly every quantifiable evaluation criteria. The difference between the independent cost estimates for "electrically similar" T022, T023, T029 and T030, when combined with T027, is immaterial, and well within the margin of error of the independent cost estimates. The only fair and objective way for NYISO to ensure that it selects the more cost-effective project combination between projects that NYISO grouped as "electrically similar" is to use the cost-contained proposals.

To illustrate, as currently reported by NYISO, the combinations involving T027 that are currently ranked as Tier 1 or 2 do not have any meaningful differences in any quantitative evaluation metrics.[3] (As discussed further below, NEETNY strongly believes that T023 should also be ranked as Tier 1 and included in NYISO's ongoing analysis.) Further, even with the 5% synergy savings estimate included, which NEETNY believes is questionable, the independent cost estimate for the Tier 1 and 2 combinations involving T027 have less than a 2.5% difference between the highest and lowest estimate. That 2.5% difference is well within the margin of error in SECO's estimate.[4] Further, the 2.5% difference should be even less because the installation costs for concrete poles for T022 (and T021 and T023) are significantly overstated, as discussed

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2 2015 AC Transmission Order, App. C, para. 4.

3 AC Transmission PPTN: Evaluation Updates dated May 10, 2018, slide 17.

4 AC Transmission New York Public Policy Transmission Need, Technical Review Report, Revision 3, dated March 29, 2018, p. 25-26 ("SECO Report"). If T027 + T023 is included in this analysis the difference from lowest to highest is about 5.5%, which is still well-within the margin of error and is about the same as the synergy savings for combination T027 + T029, which savings may not be realized.

in more detail below.[5] Not only does using the cost-contained price proposals provide certainty to NYISO that it will select the more cost-effective project, but doing so also eliminates the significant questions and uncertainty around the synergy savings estimate and accuracy of installation cost estimates for concrete poles. Relying on independent cost estimates that are not significantly different to select between projects that offer the same benefits, instead of using cost-contained pricing that developers committed to in their proposals,[6] may deprive New York electric customers of potentially significant savings created through a competitive process, which is a central goal of the PPTN process. NEETNY believes that this situation is the exact reason that the Commission required developers to submit cost-contained proposals in the AC PPTN, particularly since the Commission required developers to submit similar projects.

NEETNY strongly believes that using the cost-contained prices that were required in this process is the only principled way to ensure that NYISO selects the more efficient and cost-effective project combinations, when the quantifiable benefits are effectively identical. Further, project design and other evaluation factors are also similar and do not provide a sufficient basis to distinguish project combinations.

2. The independent cost estimate for installation of concrete monopoles is erroneous and overstated.

NEETNY used concrete poles for its AC Transmission proposals due to the superior performance of concrete poles compared to steel for a similar price. NYISO's independent cost estimate drastically overestimates the installation cost of direct embed concrete monopoles, which significantly skews the comparison between AC Transmission proposals.[7]

a. The explanation provided for why direct embed concrete monopoles cost nearly four times more to install than direct embed steel monopoles is unsupported and incorrect.

The methodology used to estimate installation costs for concrete monopoles is flawed, and severely overestimates installation costs for T021, T022, and T023. For simplicity in this discussion, NEETNY compares T023 concrete installation costs to steel installation costs; the same comparisons are true for T021 and T022. NEETNY provides a detailed analysis of concrete installation costs, including proposed adjustments to SECO's estimate, for T021, T022, and T023 in Attachment A. T023 and T029 propose nearly identical designs for the

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[5] When the installation costs for concrete poles are corrected, as explained below, the cost for combination T027 + T022 is less than or similar to the SECO estimate for T027 + T029, and the SECO estimate for T027 + T030 is more than $15 million higher than T027 + T022.

[6] Importantly, NEETNY has agreed to cost-containment and risk sharing in its FERC ROE and incentives case, consistent with its cost-contained price proposed in the AC PPTN.

[7] Attachment B includes a letter from Valmont Industries, Inc., the only manufacturer of both steel and concrete poles in the U.S., comparing concrete and steel poles, including installation requirements. To the extent NYISO, SECO or Kenny Construction have any additional questions we encourage them to contact Valmont for additional benchmarking information.

Knickerbocker to Churchtown to Pleasant Valley 345 kV line. The primary difference is that T023 utilizes direct embed concrete monopoles while T029 utilizes direct embed steel monopoles. SECO's estimate for installation costs for direct embed concrete monopoles is nearly four times greater than its estimate for comparable direct embed steel monopoles. More specifically, the "Labor & Equipment Supply Rate" assumed for concrete poles in T023 is $62,253 per pole greater than similar steel monopoles utilized in T029. The total incremental increase for concrete pole installation is almost $23 million. The issue is exacerbated when the 15% contractor mark-up, 30% contingency, escalation, and indirect cost impacts are included, which inflates the total difference to about $40 million. The table below shows the cost differences using T023 and T029 to illustrate.

TABLE 1

Cost Impact to T023 using T029 Install Costs	Direct Embed Installation Cost ($/Pole)	Comparable # of Tangent Structures (from T023)	Comparable Total Installation Cost ($ 2017)
SECO Steel Average Cost (T029)	$23,705	374	$8,865,762
SECO Concrete Average Cost (T023)	$85,958	374	$32,148,424
SECO Cost Difference	$62,253		**$23,282,662**
Difference including 15% Contractor Mark-up, 30% Contingency, 3% Escalation, and Indirect Costs[8]			**$40,601,844**

In response to NEETNY's comments and questions about this cost disparity, SECO responded that the reason for the higher cost for concrete pole installation includes "offloading, traffic control, crawler crane, additional matting and construction roads, QA/QC, and additional labor."[9] A close examination of SECO's detailed cost estimates and assumptions as well as each individual item identified in SECO's response clearly demonstrates that the explanation for the cost difference is unreasonable, and the cost estimate is overstated.

The items identified by SECO are already accounted for in its detailed cost estimates, and included specific details on how they were calculated in the "Estimate Assumptions & Clarifications." It is not clear why SECO did not address differences between installation costs for concrete and steel monopoles in these detailed estimates or in its "Estimate Assumptions & Clarifications" for matting and construction roads. Developing specific estimates based upon unique project characteristics is far superior to using a crude $/lb metric, which significantly overstates installation costs for concrete poles because costs do not increase linearly with weight.

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[8] SECO assumes that certain indirect costs are a percentage of total cost including 1% Contractor mobilization/demobilization, 5.423% Project Management, 1% Utility PM, 1% Site Accommodation, 5% Transmission Line Engineering, 0.3% LiDAR, and 0.7% Surveys.

[9] NYISO AC PPTN: Evaluation Update, May 10, 2018, at slide 9.

Below, NEETNY discusses each specific item identified by SECO as a cause of the higher installation cost for concrete poles. NEETNY provides a revised installation cost calculation that starts with SECO's estimate for steel monopoles that are comparable to the relevant concrete monopole for the project and makes adjustments to SECO's installation costs to account for each item identified by SECO as a cause of the higher installation cost for concrete poles. A full comparison and list of adjustments is included in Attachment A to this letter for projects T021, T022 and T023.[10] Finally, NEETNY provides a sample calculation demonstrating that SECO's explanation and cost estimate is unreasonable.

i. Comments on specific items cited by SECO as causing higher installation costs for concrete poles and proposed revisions.

NEETNY addresses each specific item below and proposes conservative incremental cost increases using T023 as an example:

TABLE 2

	SECO Cost (T023)	30% incremental cost for concrete poles	Adjusted SECO Cost: Concrete Installation ($/pole)
Incremental Costs for Concrete			
Offloading			$961
Crawler Crane			$591
Traffic Control	$549,290	$164,787	$441
Matting	$18,173,106	$5,451,932	$14,577
Construction Roads	$2,575,584	$772,675	$2,066
QA/QC (1 additional person)			$400
Additional Labor			$400
Total Incremental Cost, T023 Concrete Install			**$19,435**

- Offloading and Crawler Crane Costs:
  - SECO's estimate for steel poles in T029 includes crane costs, so incremental costs can be estimated for heavier concrete poles.
  - As provided in NEETNY's May 3, 2018 comments, the additional crane costs can be estimated using equipment rates provided by the NY State Department of Transportation.

[10] The discussion in Section 2 of this letter focuses on T023 for simplicity, but the same analysis and similar adjustments are equally applicable to T021 and T021.

- The maximum possible cost differential between a concrete monopole and a steel monopole for both a truck mounted hydraulic crane (for offloading purposes) and crawler crane is **$**1,552 per pole.[11]

- Traffic control[12]:
  - SECO's detailed estimates for T022 and T023 already include $549,290 for traffic control.
  - Detailed estimates for T030 include the same $549,290 for traffic control, however an apparent mistake in T029's Churchtown – Pleasant Valley estimate understates its traffic control cost by $355,180.
  - Analyzing potential increases in traffic control for concrete poles compared to steel poles, NEETNY believes that a 15% premium would be conservative.[13] To be overly conservative, NEETNY doubles the 15% premium to 30% in Table 2 and Attachment A, which results in an incremental installation cost of $164,787, or $441 per pole, based on 374 poles.
- Matting[14]:
  - SECO included $18.2 million for matting in its detailed cost estimates and provided detail about the assumptions. The estimates and assumptions were identical for T022, T023, T029 and T030.
  - While it is possible that installing concrete poles may require more matting due to the additional weight, this would be limited to wetlands which account for less than 10% of the route. Matting will be reused as much as practical to reduce costs, which is a common and prudent construction practice.
  - NEETNY believes that a 15% premium is a conservative estimate for additional matting.[15] To be overly conservative, NEETNY doubles the 15% premium to 30% in Table 2 and Attachment A, which results in an incremental installation cost of $5.45 million, or $14,561 per pole, based on 374 poles.
- Construction Roads[16]:

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[11] New York State Department of Transportation, Operations & Asset Management Division, Office of Transportation Maintenance, Equipment Rental Rate Schedule, August 2017 at p. 27. A truck mounted hydraulic crane with 50 ton lifting capacity costs $961/structure and a crawler crane with 75 ton lifting capacity costs $591/structure based on NYSDOT equipment rates, a 10 hour work day, and two poles set per day.

[12] SECO Technical Review Report, Revision 4, Cost Details for T023, Item 1.14

[13] 15% is consistent with the premium SECO uses for other costs in its detailed cost estimates. SECO's Technical Report shows that T023 has an incremental cost of 15% over T029 for each line item from 6.1 thru 6.8.

[14] SECO Technical Review Report, Revision 4, Cost Details for T023, Item 1.6

[15] 15% is consistent with the premium SECO uses for other costs in its detailed cost estimates. SECO's Technical Report shows that T023 has an incremental cost of 15% over T029 for each line item from 6.1 thru 6.8.

[16] SECO Technical Review Report, Revision 4, Cost Details for T023, Item 1.3

- SECO included $2.6 million for construction roads in its detailed cost estimates and provided detail about the assumptions. The estimates and assumptions were identical for T022, T023, T029 and T030.
- NEETNY performed a detailed access plan, and where access was limited, steel monopoles were proposed. Assembled steel monopoles are similar in length to concrete monopoles and require a nearly identical turning radius. However, there is a small possibility of wider turning radii required in certain areas.
- NEETNY believes that a 15% premium is a conservative estimate.[17] To be overly conservative, NEETNY doubles the 15% premium to 30% in Table 2 and Attachment A, which results in an incremental installation cost of $772,675, or $2,066 per pole, based on 374 poles.

- QA/QC costs[18]:
  - NEETNY assumes that SECO's costs in lines 6.2 and 6.3 of its detailed estimates include QA/QC.[19]
  - QA/QC costs should not be higher for concrete monopoles compared to steel. Notably, concrete poles are fabricated in a factory and then shipped to the installation site in one piece. Most of the QA/QC for concrete poles occurs in the factory and is already included in the material costs.[20] In contrast, steel monopoles are typically shipped in pieces and assembled in a laydown yard before being shipped to the installation location, which may require significant bolting and welding that requires additional QA/QC. There is no basis for assuming a premium for QA/QC for concrete pole installation over steel.
  - To be overly conservative, NEETNY adds one additional person for QA/QC in Table 2 and Attachment A, which results in an incremental cost of $400 per pole, assuming QA/QC is completed on two poles per day.
- Additional Labor:
  - Concrete pole installation typically utilizes the same installation crew as steel monopole installation. The crew consists of an operating engineer, three journeymen, an oiler/helper, and a foreman. In NEETNY's experience installing concrete poles does not require more labor than steel poles. In the calculations

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[17] 15% is consistent with the premium SECO uses for other costs in its detailed cost estimates. SECO's Technical Report shows that T023 has an incremental cost of 15% over T029 for each line item from 6.1 thru 6.8.

[18] SECO Technical Review Report, Revision 4, Cost Details for T023, Item 6.2 and 6.3

[19] SECO Technical Review Report, Revision 4, Knickerbocker to Churchtown and Churchtown to Pleasant Valley, Items 6.2 and 6.3. SECO shows T023 having 15% incremental costs compared to T029 for Project Management, Staffing, Utility PM, and Project Oversight.

[20] Per the American Society of Civil Engineers recommended practice for design and installation of concrete pole structures, concrete structure manufacturers perform comprehensive quality assurance and quality control measures at the factory to ensure the finished product complies with the specified requirements. Each pole is uniquely marked and inspected and a detailed written inspection report is recorded.

below, NEETNY demonstrates the implications of SECO's explanation. Further, even if additional labor was required, it would not have a meaningful impact on installation costs, adding only $400-$800 per pole for 1-2 additional people.

ii. Proposed revisions to SECO's estimate for concrete pole installation.

Although NEETNY believes that concrete and steel installation costs are comparable, NEETNY is providing an alternative view of costs by modifying the individual line items discussed in the previous section. Detailed adjustments for T021, T022, and T023 are provided in Attachment A. Analyzing the individual line items and taking into account the specific differences between steel and concrete monopole installation provides a more reasonable, and accurate, estimate. Table 3 summarizes the results shown in Attachment A, which provides significant cost reductions even when using extremely conservative cost increases for concrete monopole installation.

TABLE 3

NEETNY Installation Cost Analysis	T021	T022	T023
SECO Estimate Revision 5			
Average Concrete Install ($/pole)	$55,348	$85,972	$85,958
NEETNY Recommendation			
SECO – Average Steel Install ($/pole)	$12,442[21]	$14,924[22]	$23,705[23]
NEETNY Adjustment for Concrete ($/pole)	$18,901	$19,419	$19,435
Adjusted Concrete Install ($/pole)	**$31,343**	**$34,343**	**$43,155**
# of Tangents Affected	593	374	374
Cost Reduction with contractor markup, contingency, escalation and indirect costs	**$24.5 MM**	**$33.7 MM**	**$27.9 MM**

iii. A sample calculation demonstrates that SECO's explanation for higher installation costs for concrete poles is not reasonable.

[21] Based on SECO installation costs for single circuit steel monopoles from T021's Edic – Princetown, and double circuit steel monopoles from T029's Churchtown – Pleasant Valley. See Attachment A notes for additional details.

[22] *Ibid.*

[23] Based on SECO installation costs for double circuit steel monopoles from T029's Churchtown – Pleasant Valley. See Attachment A notes for additional details.

The difference between SECO's estimate for installing concrete poles and NEETNY's conservative adjusted cost is about $42,817 per pole for T023. Assuming that delta is attributable to additional labor, since NEETNY did not adjust the labor cost, implies that there would be an additional 162 people per pole.[24] That is clearly an unreasonable result. This illustrates that SECO's approach to account for installation cost differences between concrete and steel using a $/lb rate, and its explanation of which specific costs are higher for concrete pole installation, is unreasonable. A more reasoned approach is to analyze how the increased weight of concrete would impact the individual line items, if at all, and modify those costs.

b. T022 single circuit installation costs have an error.

NEETNY found that data provided to NYISO included incorrect weight information for some of the concrete tangents in T022. To the extent SECO does not modify it approach for estimating installation costs for concrete poles, it needs to correct the cost estimates for the T022 Churchtown to Pleasant Valley section. T022 includes a single circuit 345 kV design between Churchtown and Pleasant Valley. T023, on the other hand, includes a double circuit 345/115 kV pole, which on average weighs 26,349 pounds more. In the Pole and Foundation Tables provided by NEETNY in response to NYISO's RFI, NEETNY supplied incorrect weights for 229 concrete tangent structures between Churchtown to Pleasant Valley in T022. NEETNY inadvertently reported the weight for the single circuit poles in T022 to be the same as the double circuit poles in T023. NEETNY will submit corrected weights separately from this letter.

The concrete poles proposed for T022 between Churchtown and Pleasant Valley are the same single circuit concrete monopole 345 kV design, with the same height and weight, as what was proposed for T021 between Edic and Princetown. Table 4 shows the corrected cost for T022 using SECO's methodology, which results in a reduction of about $13.7 million. However, as discussed above, NEETNY believes that incremental costs for concrete pole installation are still overstated for T022, and believes further reduction is justified.

TABLE 4

T021 S/C Tangent Installation Edic – Princetown ($/Pole)	T022 S/C Tangent Installation Churchtown – Pleasant Valley ($/Pole)	T022 Churchtown – Pleasant Valley (# of Poles)	T022 Cost Delta Correct Weight ($ MM)	T022 Cost Delta Including 15% Contractor Markup, 30% Contingency, 3% Escalation, and Indirect Cost Impacts ($ MM)
$47,964	$82,418	229	$7.9	$13.7

[24] Calculated taking the $/structure difference of $42,817 divided by $53 (New York hourly prevailing wage rate) divided by 5 hours. This assumes that two poles are set per 10-hour work day.

3. NYISO's evaluation of aging infrastructure, visual impacts and operability due to system upgrades for Segment B proposals are flawed, and moreover, should not be considered distinguishing factors.

Several factors that NYISO identifies in its updated analysis to rank projects should not be distinguishing factors, and some of the analysis of these factors is incorrect. First, the aging infrastructure benefit has not been evaluated with any detail and National Grid's recent condition assessments have not identified the 115 kV lines from Churchtown to Pleasant Valley as needing replacement. NYISO should not make a generic assumption that any replacement of existing infrastructure is necessary. Second, the visual impact analysis only focuses on structure height, and the analysis of T022 and T023 is incorrect. Third, operability due to system upgrades does not have a benefit that can be readily or accurately valued and are not unique to any one proposal. These benefits are nebulous at best and do not provide ratepayers any tangible benefits.

a. Aging Infrastructure should not be a distinguishing factor for Segment B proposals and available condition assessments suggest that the ranking for T022 is incorrect.

NYISO has not demonstrated whether or not the transmission lines being replaced by specific proposals actually need to be replaced. Instead, NYISO simply assumes that some projects are better than others because more existing infrastructure is replaced. T022 should be ranked as Tier 1, and not penalized for replacing less existing infrastructure than T023, T029 and T030 because publicly available information suggests that the existing lines in question may not need to be replaced.

T022 replaces less existing infrastructure than T023, T029 and T030 by not replacing both double circuit 115 kV structures from Churchtown to Pleasant Valley. The Churchtown to Pleasant Valley 115 kV line was identified in National Grid's 2012 Asset Condition Report as potentially needing replacement, but would require additional detailed analysis to determine if replacement was necessary.[25] This was based on screening analysis relying primarily on a Mott MacDonald study and targeted aerial photography.[26] In subsequent Condition Assessment reports, National Grid developed a new screening analysis that would incorporate more factors to help identify projects potentially needing replacement over the next 25 years, following a more detailed analysis.[27] In National Grid's Asset Condition reports from 2014 to 2017, which utilize

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[25] National Grid's Report on the Condition of Physical Elements of Transmission and Distribution Systems, October 1, 2012, p. 20, Figure 2-10

[26] National Grid's Report on the Condition of Physical Elements of Transmission and Distribution Systems, October 1, 2012, p. 19.

[27] National Grid's Report on the Condition of Physical Elements of Transmission and Distribution Systems, October 1, 2014, p. 17.

the new screening methodology, the Greenbush to Hudson and Hudson to Pleasant Valley 115 kV lines are no longer identified as projects potentially needing replacement.[28]

It is notable that other projects identified under National Grid's old methodology were still identified under the new methodology, such as the Huntley to Gardenville 115 kV lines. Since National Grid has not identified any of the 115 kV lines in the Segment B transmission corridor as a potential replacement candidate, it is incorrect for NYISO to conclude that replacing these lines offer any benefit that distinguishes T022 from T023, T029 and T030. Based upon this information, NYISO should rate T022 as "good" for "PSC Criterion: Aging Infrastructure" and rank T022 as Tier 1. When the Commission identified replacement of aging infrastructure as a goal, it presumably did not intend for NYISO to favor more expensive projects that replace more existing infrastructure that may not need replacement.

b. Visual Impact should not be a distinguishing factor between proposals.

The structure height analysis of T022 and T023 is incorrect. NEETNY designed its projects with the intent that the structures would be no more than 10 feet taller than the existing structures. NEETNY clearly noted in its proposal that structure heights were intended to be no more than 10 feet taller than the existing structures, and that the drawings provided in its proposal were based upon publicly available information on the height of the existing structures.[29] While the quality of the information about the height and ground elevation of the existing structures is sufficient for preliminary design, the final design would need to be verified with more detailed data about the existing structures and ground elevation.

NEETNY believes that SECO's calculation of the difference in height between T022 and T023 and the existing structures is likely based upon different data for existing structure heights and ground elevation than what NEETNY used for preliminary design. As a result, SECO's analysis shows that both T022 and T023 have numerous structures more than 10 feet taller than the existing structures. This conclusion is incorrect. As NEETNY provided in its RFI response, the structures in T022 and T023 are designed to be no more than 10 feet taller than the existing structures. To the extent NEETNY and SECO had different data about existing structure heights and ground elevation, those inconsistencies would be eliminated during detailed design and NEETNY should not be penalized because SECO had different data on the existing structures and ground elevation.

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[28] National Grid's Report on the Condition of Physical Elements of Transmission and Distribution Systems, October 1, 2017, p. 17, Figure 2A-5.

[29] NEETNY stated in an RFI response dated June 14, 2017 that: "Based on guidance from the NYPSC, for structures located in the Knickerbocker to Pleasant Valley ROW, NEETNY limited the height above ground to no more than 10 ft. above the existing structure height. Due to the lack of data from the incumbent utility, an assumption was made in regards to the height of existing structures. During detailed design, clearance violations in each model will be resolved, and structure height above ground will be validated." The public information that NEETNY relied upon included cross sections of the existing transmission corridor provided by New York Transco in the NYPSC's 2015 Comparative Analysis and the National Elevation Dataset.

Slight modifications in structure height during detailed design that are based upon better information about existing structures and ground elevation are not a design change and do not have any cost impact. By comparison, SECO has modified other proposals, such as T027 and T028, by assuming that gas pipelines can be relocated to accommodate the proposed substation design. Further, NYISO stated in the May 10th ESPWG meeting that although relocating the gas pipeline potentially had some permitting risk, they felt this risk could be mitigated and that it only had cost implications. NYISO's approach to relocating gas pipelines is fundamentally inconsistent with its ranking of T022 and T023 as Tier 2 and 3, respectively, while ranking T029 and T030 as Tier 1, based upon visual impacts. NEETNY's preliminary structure heights were designed with a clear intention to be within 10 feet of the height of existing structures, which can and will be accomplished during detailed engineering without any cost or permitting implications.

Further, as previously stated in NEETNY's May 3, 2018 comments, minimizing pole heights is important, but it should not be a distinguishing factor between proposals. The NYPSC made clear that visual impacts should be left to its decision, stating that:

> [S]tructure heights are often dependent on specific decisions as to structure location and span length which are often influenced by the consideration of site-specific impacts to natural resources, agricultural practices, and visual impacts. As to structure height, the Commission will not mandate criteria to be applied by the NYISO, but all proposers of transmission solutions should be aware as they prepare their submissions that minimization of structure heights will be an important issue in the siting review process so applicants should be careful to not lock themselves into designs that could not later be approved.[30]

The Commission has not mandated specific criteria for structure height and stated they would address such concerns in the Article VII process. NEENTY has also provided in its proposal and RFI responses a flexible design and a clear intent to stay within 10 feet of existing structure heights. As such, NYISO should not penalize T022 or T023 based upon visual impact, and should not use visual assessment to distinguish proposals. In any event, both T022 and T023 should be ranked as tier 1 for purposes of further analysis.

c. Operability due to system upgrades should not be a distinguishing factor

NYISO should not consider system upgrades to be a distinguishing factor among proposals if all proposals would benefit from the same system upgrades. NYISO explained that the system upgrades identified in T029 and T030, the Middleton upgrades, provides N-1-1 operability benefits. However, it is also true that these same upgrades would provide the same operability benefits for electrically similar projects T022 and T023.

[30] 2015 AC Transmission Order at pp. 42-43.

Operability should not be a distinguishing factor because differences between projects are not significant and NYISO cannot assign a value, and has already dismissed proposals improving operability during construction.

4. Synergies are overestimated.

As NEETNY commented in its May 3, 2018 comments, valuing synergy savings using a generic 5% of project costs, when one developer builds both Segments, adds no value to the analysis. To include synergy savings in its analysis, NYISO should look only at reasonable synergies estimated for each specific project combination involving the same developer.[31] As SECO explained during the May 10, 2018 ESPWG meeting, the synergy estimate was developed by looking at percentages of total costs attributable to specific items, then assuming some percentage reduction on a percentage of total cost. Generically applying percentages to percentages of average costs does not appear to be a reasonable or defensible way to estimate synergy savings, especially when one project is substantially larger than the other. A simple example illustrates the biggest problem with SECO's methodology:

- If a single developer were to build
  - A $1 billion project and
  - a $1 million project,
  - SECO's synergy savings for combining the two creates $50 million in synergy savings (5% of $1.1 billion).

In this example, calculating synergy savings as a percentage of total project costs leads to an unreasonable result where the savings from adding the second project is 50 times greater than the cost of the second project. Therefore, if a blanket percentage savings is to be used, SECO should calculate the percentage only using the cost of the smaller project, not the combined project cost. In the example above, this approach would result in $50,000 in synergy savings (5% of the smaller $1 million project).

Sincerely,

Brian Duncan
Executive Director

[31] To the extent "electrically similar" projects are difficult to distinguish, it would be an absurd result if a project combination from a single developer was selected on the basis of a blanket synergy savings assumption, while firm cost containment commitments that were required to be submitted for each proposal are disregarded.

NEXTera™ ENERGY TRANSMISSION NEW YORK

ATTACHMENT A: PROJECT COSTS

PROJECT T021

		SECO Estimate Revision 5			NEETNY Revision	
SECO Item #	Description	Qty	Rate	Cost ($x1,000)	Recommended Rate or Incremental Cost	Cost ($x1,000)
Edic to Princetown Transmission Line (Single Circuit 345 kV)						
	Direct Labor, Material & Equipment Costs					
1.3	Access Road[1]			3,174,336	30%	4,126,637
1.5	Matting - Access and ROW[2]	-	-	19,751,424	30%	25,676,851
1.6	Matting - To Work Area[2]	-	-	1,764,000	30%	2,293,200
1.14	Maintenance and Protection of Traffic on Public Roads[3]	-	-	413,000	30%	536,900
3.1	Labor & Equipment Supply for 345KV S/C CONCRETE TANGENT[4]	472	$47,964	22,639,079	$9,516	4,491,552
	Additional Offloading Costs[5]	472	-		$961	453,592
	Additional Crawler Crane Costs[6]	472	-		$591	278,952
	Additonal QA/QC[7]	472	-		$400	188,800
	Additional Labor[7]	472	-		$400	188,800
	All other direct labor, material & equipment costs	-	-	94,304,104	-	94,304,104
	Subtotal 1			**142,045,943**		**132,539,388**
Princetown to New Scotland Transmission Line (Single Circuit 345 kV)						
	Direct Labor, Material & Equipment Costs					
1.3	Access Road[1]	-	-	945,648	30%	1,229,342
1.5	Matting - Access and ROW[2]	-	-	5,884,032	30%	7,649,242
1.6	Matting - To Work Area[2]	-	-	719,250	30%	935,025
1.14	Maintenance and Protection of Traffic on Public Roads[3]	-	-	60,000	30%	78,000
3.1	Labor & Equipment Supply for 345KV D/C CONCRETE VERTICAL TANGENT[4]	18	$84,708	1,524,752	$23,858	429,444
3.2	Labor & Equipment Supply for 345KV S/C CONCRETE DELTA TANGENT[4]	66	$84,051	5,547,366	$23,858	1,574,628
3.5	Labor & Equipment Supply for 345KV S/C CONCRETE VERTICAL TANGENT[4]	37	$84,051	3,109,887	$23,858	882,746
	Additional Offloading Costs[5]	121	-		$961	116,281
	Additional Crawler Crane Costs[6]	121	-		$591	71,511
	Additonal QA/QC[7]	121	-		$400	48,400
	Additional Labor[7]	121	-		$400	48,400
	All other direct labor, material & equipment costs			22,447,538	-	22,447,538
	Subtotal 2			**40,238,473**		**35,510,557**
All other Tline, Substation, Interconnection and System Upgrade Costs						
	Direct Labor, Material & Equipment Costs					
	Tline, Substation, Interconnection and System Upgrade Work			78,061,360		78,061,360
	Subtotal 3			**78,061,360**		**78,061,360**
	Subtotal 1+2+3			**260,345,776**		**246,111,305**
	15% Contractor Markup			39,051,866		36,916,696
	Subtotal 4			**299,397,642**		**283,028,001**
	Indirect Costs[8]					
6.1	Contractor Mobilization/Demobilization		1.000%	2,603,458	1.000%	2,461,113
6.2	Project Management and Staffing		4.347%	13,014,816	4.347%	12,303,227
6.3	Utility PM and Project Oversite		1.000%	2,603,458	1.000%	2,461,113
6.4	Site Accommodation/facilities/storage		1.000%	2,603,458	1.000%	2,461,113
6.5	Transmission Design and Engineering		5.000%	13,017,289	5.000%	12,305,565
6.6	LiDAR		0.300%	781,037	0.300%	738,334
6.8	Survey and Staking		0.700%	1,822,420	0.700%	1,722,779
	All other Indirect costs			35,816,453		35,816,453
	Subtotal 5			**72,262,388**		**70,269,697**
	Total Costs (Subtotal 4+5)			**371,660,030**		**353,297,698**
	30% Contingency			111,498,009		105,989,309
	Total Costs with Contingency 2017 Dollars			**483,158,040**		**459,287,007**
	Total Costs with Contingency 2018 Dollars			**497,652,781**		**473,065,618**
					DELTA	**24,587,163**

Notes

1	Access Roads - NEETNY performed a detailed access plan, and where access was limited, steel monopoles were proposed instead of concrete. Steel monopoles are typically assembled in a laydown yard, and shipped to the installation location, and would have the same length as a concrete monopole. Also, the weight of poles on a truck would be equivalent as multiple steel poles would be shipped compared to a single concrete monopole. To be overly conservative, a 30% incremental cost is applied.
2	Matting - Concrete poles may require additional matting due to the additional weight, but this is limited to wetlands which account for 6% of the route. Matting will be reused as much as practical, a common and prudent construction practice. To be overly conservative, a 30% incremental cost is applied.
3	Traffic Control - To be overly conservative, a 30% incremental cost is applied.
4	Tangent Structure Installation Costs - NEETNY has replaced the concrete tangent structure installation costs with comparable steel tangent structures as follows: - For the proposed S/C concrete poles between Edic to Princetown, T021's Edic-Princetown steel installation costs of $9,516 per structure was used, item 3.4. - For the proposed D/C concrete poles between Princetown to New Scotland, T029's Churchtown-Pleasant Valley steel installation costs of $23,858 per structure was used, item 3.4. - For the proposed S/C concrete poles between Princetown to New Scotland, since the proposed height and weight are similar to a D/C concrete pole, T029's Churchtown-Pleasant Valley steel installation costs of $23,858 per structure was used, item 3.4
5	Offloading - New York State Department of Transportation, Operations & Asset Management Division, Office of Transportation Maintenance, Equipment Rental Rate Schedule, August 2017 at p. 27. NYSDOT Equipment Rates for a truck mounted hydraulic crane with 50 ton lifting capacity costs $961/structure, assuming a 10 hour work day, and two poles set per day.
6	Crawler Crane - NYSDOT Equipment Rates for a Crawler Crane with 75 ton lifting capacity, assuming a 10 hour work day, and two poles set per day.
7	QA/QC and Additional Labor costs should not be higher for concrete monopoles compared to steel monopoles. Notably, concrete structures are fabricated in a factory and then shipped to the installation site in one piece. Most of the QA/QC for concrete poles occurs in the factory and is already included in the material costs. In contrast, steel monopole structures are typically shipped in pieces and assembled in a laydown yard before being shipped to the installation location, which may require significant bolting and welding that requires additional QA/QC. To be overly conservative, two additional workers (1 for QA/QC and 1 for Additional Labor) at New York's prevailing wage rate of $52/hour is assumed, resulting in an incremental $400 per structure based on a 10 hour work day, and two poles set per day.
8	SECO has provided a table of assumptions for each project, including % rates used to calculate mobilization/demobilization, project management, utility PM, site acommodation, engineering, LiDAR and survey costs. All the costs associated with these rates go down, as they are calculated based on the Direct Labor, Materials & Equipment Costs.

PROJECT T022

		SECO Estimate Revision 5			NEETNY Revision	
SECO Item #	Description	Qty	Rate	Cost ($x1,000)	Recommended Rate or Incremental Cost	Cost ($x1,000)
Knickerbocker to Churchtown Transmission Line (Double Circuit 345/115 kV)						
	Clearing, Access, Foundations, Structures, Conductor, Insulator Costs					
1.3	Access Road[1]			1,040,688	30%	1,352,894
1.5	Matting - Access and ROW[2]	-	-	6,475,392	30%	8,418,010
1.6	Matting - To Work Area[2]	-	-	834,750	30%	1,085,175
1.14	Maintenance and Protection of Traffic on Public Roads[3]	-	-	194,110	30%	252,343
3.3	Labor & Equipment Supply for 115/345KV D/C TANGENT, CONCRETE[4]	145	$91,587	13,280,072	$23,464	3,402,280
	Additional Offloading Costs[5]	145	-		$961	139,345
	Additional Crawler Crane Costs[6]	145	-		$591	85,695
	Additonal QA/QC[7]	145	-		$400	58,000
	Additional Labor[7]	145	-		$400	58,000
	All other Clearing/Foundation/Structure/Conductor/Insulator costs	-	-	37,797,803	-	37,797,803
	Subtotal 1			**59,622,815**		**52,649,545**
Churchtown to Pleasant Valley Transmission Line (Single Circuit 345 KV)						
	Clearing, Access, Foundations, Structures, Conductor, Insulator Costs					
1.3	Access Road[1]	-	-	1,534,896	30%	1,995,365
1.5	Matting - Access and ROW[2]	-	-	9,550,464	30%	12,415,603
1.6	Matting - To Work Area[2]	-	-	1,291,500	30%	1,678,950
1.14	Maintenance and Protection of Traffic on Public Roads[3]	-	-	355,180	30%	461,734
3.3	Labor & Equipment Supply for 115/345KV D/C TANGENT, CONCRETE[4]	229	$82,418	18,873,608	$9,516	2,179,164
	Additional Offloading Costs[5]	229	-		$961	220,069
	Additional Crawler Crane Costs[6]	229	-		$591	135,339
	Additonal QA/QC[7]	229	-		$400	91,600
	Additional Labor[7]	229	-		$400	91,600
	All other Clearing/Foundation/Structure/Conductor/Insulator costs			49,575,304	-	49,575,304
	Subtotal 2			**81,180,952**		**68,844,728**
All other Tline, Substation, Interconnection and System Upgrade Costs						
	Direct Labor, Material & Equipment Costs					
	Tline, Substation, Interconnection and System Upgrade Work			48,039,695		48,039,695
	Subtotal 3			**48,039,695**		**48,039,695**
	Subtotal 1+2+3			**188,843,462**		**169,533,968**
	15% Contractor Markup			28,326,519		25,430,095
	Subtotal 4			**217,169,981**		**194,964,063**
	Indirect Costs[8]					
6.1	Contractor Mobilization/Demobilization		1.000%	1,888,435	1.000%	1,695,340
6.2	Project Management and Staffing		5.406%	11,740,209	5.406%	10,539,757
6.3	Utility PM and Project Oversite		1.000%	1,888,435	1.000%	1,695,340
6.4	Site Accommodation/facilities/storage		1.000%	1,888,435	1.000%	1,695,340
6.5	Transmission Design and Engineering		5.000%	9,442,173	5.000%	8,476,698
6.6	LiDAR		0.300%	566,530	0.300%	508,602
6.8	Survey and Staking		0.700%	1,321,904	0.700%	1,186,738
	All other Indirect costs			20,580,209		20,580,209
	Subtotal 5			**49,316,330**		**46,378,024**
	Total Costs (Subtotal 4+5)			**266,486,311**		**241,342,087**
	30% Contingency			79,945,893		72,402,626
	Total Costs with Contingency 2017 Dollars			**346,432,205**		**313,744,713**
	Total Costs with Contingency 2018 Dollars			**356,825,171**		**323,157,054**
					DELTA	**33,668,117**

Notes

1	Access Roads - NEETNY performed a detailed access plan, and where access was limited, steel monopoles were proposed instead of concrete. Steel monopoles are typically assembled in a laydown yard, and shipped to the installation location, and would have the same length as a concrete monopole. Also, the weight of poles on a truck would be equivalent as multiple steel poles would be shipped compared to a single concrete monopole. To be overly conservative, a 30% incremental cost is applied.
2	Matting - Concrete poles may require additional matting due to the additional weight, but this is limited to wetlands which account for less than 10% of the route. Matting will be reused as much as practical, a common and prudent construction practice. To be overly conservative, a 30% incremental cost is applied.
3	Traffic Control - To be overly conservative, a 30% incremental cost is applied.
4	Tangent Structure Installation Costs - NEETNY has replaced the concrete tangent structure installation costs with comparable steel tangent structures as follows: -For the proposed D/C concrete poles between Knickerbocker to Churchtown, T029's Knickerbocker-Churchtown steel installation costs of $23,464 per structure was used, item 3.7. -For the proposed S/C concrete poles between Churchtown to Pleasant Valley, T021's Edic-Princetown steel installation costs of $9,516 per structure was used, item 3.4.
5	Offloading - New York State Department of Transportation, Operations & Asset Management Division, Office of Transportation Maintenance, Equipment Rental Rate Schedule, August 2017 at p. 27. NYSDOT Equipment Rates for a truck mounted hydraulic crane with 50 ton lifting capacity costs $961/structure, assuming a 10 hour work day, and two poles set per day.
6	Crawler Crane - NYSDOT Equipment Rates for a Crawler Crane with 75 ton lifting capacity, assuming a 10 hour work day, and two poles set per day
7	QA/QC and Additional Labor costs should not be higher for concrete monopoles compared to steel monopoles. Notably, concrete structures are fabricated in a factory and then shipped to the installation site in one piece. Most of the QA/QC for concrete poles occurs in the factory and is already included in the material costs. In contrast, steel monopole structures are typically shipped in pieces and assembled in a laydown yard before being shipped to the installation location, which may require significant bolting and welding that requires additional QA/QC. To be overly conservative, two additional workers (1 for QA/QC and 1 for Additional Labor) at New York's prevailing wage rate of $52/hour is assumed, resulting in an incremental $400 per structure based on a 10 hour work day, and two poles set per day.
8	SECO has provided a table of assumptions for each project, including % rates used to calculate mobilization/demobilization, project management, utility PM, site acommodation, engineering, LiDAR and survey costs. All the costs associated with these rates go down, as they are calculated based on the Direct Labor, Materials & Equipment Costs.

PROJECT T023

		SECO Estimate Revision 5			NEETNY Revision	
SECO Item #	Description	Qty	Rate	Cost ($x1,000)	Recommended Rate or Incremental Cost	Cost ($x1,000)
Knickerbocker to Churchtown Transmission Line (Double Circuit 345/115 kV)						
	Clearing, Access, Foundations, Structures, Conductor, Insulator Costs					
1.3	Access Road[1]			1,040,688	30%	1,352,894
1.5	Matting - Access and ROW[2]	-	-	6,475,392	30%	8,418,010
1.6	Matting - To Work Area[2]	-	-	834,750	30%	1,085,175
1.14	Maintenance and Protection of Traffic on Public Roads[3]	-	-	194,110	30%	252,343
3.3	Labor & Equipment Supply for 115/345KV D/C TANGENT, CONCRETE[4]	145	$91,587	13,280,072	$23,464	3,402,280
	Additional Offloading Costs[5]	145	-		$961	139,345
	Additional Crawler Crane Costs[6]	145	-		$591	85,695
	Additonal QA/QC[7]	145	-		$400	58,000
	Additional Labor[7]	145	-		$400	58,000
	All other Clearing/Foundation/Structure/Conductor/Insulator costs	-	-	37,962,804	-	37,962,804
	Subtotal 1			**59,787,816**		**52,814,546**
Churchtown to Pleasant Valley Transmission Line (Single Circuit 345 KV)						
	Clearing, Access, Foundations, Structures, Conductor, Insulator Costs					
1.3	Access Road[1]	-	-	1,534,896	30%	1,995,365
1.5	Matting - Access and ROW[2]	-	-	9,550,464	30%	12,415,603
1.6	Matting - To Work Area[2]	-	-	1,312,500	30%	1,706,250
1.14	Maintenance and Protection of Traffic on Public Roads[3]	-	-	355,180	30%	461,734
3.3	Labor & Equipment Supply for 115/345KV D/C TANGENT, CONCRETE[4]	229	$82,395	18,868,352	$23,858	5,463,482
	Additional Offloading Costs[5]	229	-		$961	220,069
	Additional Crawler Crane Costs[6]	229	-		$591	135,339
	Additonal QA/QC[7]	229	-		$400	91,600
	Additional Labor[7]	229	-		$400	91,600
	All other Clearing/Foundation/Structure/Conductor/Insulator costs			69,099,126	-	69,099,126
	Subtotal 2			**100,720,518**		**91,680,168**
All other Tline, Substation, Interconnection and System Upgrade Costs						
	Direct Labor, Material & Equipment Costs					
	Tline, Substation, Interconnection and System Upgrade Work			45,383,098		45,383,098
	Subtotal 3			**45,383,098**		**45,383,098**
	Subtotal 1+2+3			**205,891,432**		**189,877,812**
	15% Contractor Markup			30,883,715		28,481,672
	Subtotal 4			**236,775,147**		**218,359,484**
	Indirect Costs[8]					
6.1	Contractor Mobilization/Demobilization		1.000%	2,058,914	1.000%	1,898,778
6.2	Project Management and Staffing		5.423%	12,840,316	5.423%	11,841,635
6.3	Utility PM and Project Oversite		1.000%	2,058,914	1.000%	1,898,778
6.4	Site Accommodation/facilities/storage		1.000%	2,058,914	1.000%	1,898,778
6.5	Transmission Design and Engineering		5.000%	10,294,572	5.000%	9,493,891
6.6	LiDAR		0.300%	617,674	0.300%	569,633
6.8	Survey and Staking		0.700%	1,441,240	0.700%	1,329,145
	All other Indirect costs			22,851,379		22,851,379
	Subtotal 5			**54,221,924**		**51,782,017**
	Total Costs (Subtotal 4+5)			**290,997,071**		**270,141,501**
	30% Contingency			87,299,121		81,042,450
	Total Costs with Contingency 2017 Dollars			**378,296,192**		**351,183,951**
	Total Costs with Contingency 2018 Dollars			**389,645,078**		**361,719,469**
					DELTA	**27,925,609**

Notes

1	Access Roads - NEETNY performed a detailed access plan, and where access was limited, steel monopoles were proposed instead of concrete. Steel monopoles are typically assembled in a laydown yard, and shipped to the installation location, and would have the same length as a concrete monopole. Also, the weight of poles on a truck would be equivalent as multiple steel poles would be shipped compared to a single concrete monopole. To be overly conservative, a 30% incremental cost is applied.
2	Matting - Concrete poles may require additional matting due to the additional weight, but this is limited to wetlands which account for less than 10% of the route. Matting will be reused as much as practical, a common and prudent construction practice. To be overly conservative, a 30% incremental cost is applied.
3	Traffic Control - To be overly conservative, a 30% incremental cost is applied.
4	Tangent Structure Installation Costs - NEETNY has replaced the concrete tangent structure installation costs with comparable steel tangent structures as follows: - For the proposed D/C concrete poles between Knickerbocker to Churchtown, T029's Knickerbocker-Churchtown steel installation costs of $23,464 per structure was used, item 3.7. - For theproposed D/C concrete poles between Churchtown to Pleasant Valley, T029's Churchtown-Pleasant Valley steel installation costs of $23,858 per structure was used, item 3.4.
5	Offloading - New York State Department of Transportation, Operations & Asset Management Division, Office of Transportation Maintenance, Equipment Rental Rate Schedule, August 2017 at p. 27. NYSDOT Equipment Rates for a truck mounted hydraulic crane with 50 ton lifting capacity costs $961/structure, assuming a 10 hour work day, and two poles set per day.
6	Crawler Crane - NYSDOT Equipment Rates for a Crawler Crane with 75 ton lifting capacity, assuming a 10 hour work day, and two poles set per day
7	QA/QC and Additional Labor costs should not be higher for concrete monopoles compared to steel monopoles. Notably, concrete structures are fabricated in a factory and then shipped to the installation site in one piece. Most of the QA/QC for concrete poles occurs in the factory and is already included in the material costs. In contrast, steel monopole structures are typically shipped in pieces and assembled in a laydown yard before being shipped to the installation location, which may require significant bolting and welding that requires additional QA/QC. To be overly conservative, two additional workers (1 for QA/QC and 1 for Additional Labor) at New York's prevailing wage rate of $52/hour is assumed, resulting in an incremental $400 per structure based on a 10 hour work day, and two poles set per day.
8	SECO has provided a table of assumptions for each project, including % rates used to calculate mobilization/demobilization, project management, utility PM, site acommodation, engineering, LiDAR and survey costs. All the costs associated with these rates go down, as they are calculated based on the Direct Labor, Materials & Equipment Costs.

ATTACHMENT B: LETTER FROM VALMONT

Utility Division, Valmont Industries, Inc.
Two Perimeter Park South, Suite 475 West
Birmingham, Alabama 35243 USA
800-533-5103
www.valmont.com

SPUN CONCRETE POLE COMPARISON TO ALL-STEEL POLES
May 10, 2018

Valmont Industries, Inc. ("Valmont") has been manufacturing utilities poles since 1982. Valmont is the only manufacturer of both steel and concrete poles in the U.S and is one of the largest pole suppliers in the World. Since 1992, Valmont has worked closely with NextEra Energy and its affiliates to develop a spun concrete pole that resists the harsh environments in which transmission lines are typically constructed and is more durable than steel poles. Valmont is the industry technical leader and leads or have led many committees writing the Industry Standards. We participate in the Prestressed Concrete Institute (PCI) pole committee, the ASTM precast concrete committee, and the ASCE-Manual 123 design guide for concrete poles committee. Because we manufacture both types of poles, we are uniquely qualified to discuss the differences between steel and concrete poles. We are not biased toward either type and both have their place in certain situations. Valmont always recommends using the "best pole for the hole" to our customers with the most economically viable solution.

On November 19, 2015 and December 2-4, 2015, we made a field inspection of each potential pole location for the NextEra Energy Transmission New York, Inc. ("NEETNY") AC transmission line project in the Albany, NY area. We determined that we could access each hole location with a spun concrete pole. If, in the future, it is determined that a full length spun concrete will not be able to get to a certain hole location, we can re-design it as a two-piece concrete pole with a steel flange connection or use a hybrid pole with a concrete bottom and steel top. We are the only manufacturer that can offer these solutions. Based upon our analysis, we recommended that NEETNY use concrete for its AC transmission project.

Set forth below are the primary reasons that using concrete poles is the best option for NEETNY's AC transmission projects.

COMPARISONS AND NOTES-
A spun concrete pole will be less expensive than an all-steel pole of the same size and type due to the following advantages:

- **Saves Money-**
  - Concrete poles have a lower pole cost than steel. Moreover, given that steel prices have increased 25% in the past 2 months and are climbing rapidly this

year, concrete poles provide improved price stability vs. steel (escalation mitigation).

  - Concrete poles have a shorter design and engineering cycle than steel poles due to the proprietary state-of-the-art technology in our products, software and manufacturing processes.
  - Short manufacturing lead times for spun concrete poles (currently 10-15 weeks delivery after receipt of order) vs. steel poles (currently 42-46 weeks delivery after receipt of order).
  - We use the same simple, readily available materials in each pole so it is easier to control our pole lead times. We can also accommodate last minute design changes when they occur.
  - Spun concrete is a direct buried product, which reduces foundation costs, eliminates the need for baseplates or anchor bolt cages, and eliminates the need for ground sleeves or below-ground pole coatings.

- **Lower Installation & Maintenance Cost-**
  - Concrete poles are sequentially shipped directly to the hole location. In comparison, steel poles are shipped in sections to a laydown yard, where they must be identified, moved and jacked together. Afterwards, they are shipped to the hole location, which requires more time and money.
  - With respect to installation, taller steel poles and concrete poles require virtually the same crane and road access due to the boom length needed for both pole types. Moreover, steel poles have concrete foundations that require concrete trucks to pour. Accordingly, access road specifications needed to install steel poles are the same as concrete poles because installing steel poles requires both cranes and concrete trucks.
  - Concrete poles are a direct-embedded pole vs. steel poles, which require a drilled pier. Direct-embedded concrete poles require a smaller auger, which reduces cost and minimizes ground disturbance.
  - Concrete poles are maintenance-free in the ground. In comparison, steel poles require a lifetime inspection and maintenance program that will add costs in the future that may not be captured when evaluating the capital cost.

- **Concrete poles can be delivered more quickly than steel-**
  - As stated above, spun concrete poles can be delivered approximately 30-weeks sooner than comparable steel poles. Using concrete poles eliminates the most time-consuming and expensive item which is the lower sections of steel poles.
  - Concrete poles can be shipped in sequential order to the hole and utilize a pre-engineered, pre-made foundation rather than poured concrete foundations for steel poles. Accordingly, concrete poles can be drilled and set the same day and perform as well as steel in wet and hot (corrosive) soils.

POLE COMPARISONS-

In 2017 and 2018, 99.8% of Valmont's spun concrete poles were shipped with no complaints and with on-time delivery of 99.2%. No other manufacturer of any transmission pole type can come close to this performance.

Here is a list of a few of our spun concrete pole customers that have found concrete as the most reliable and economically efficient solution for their need:

- U.S. Army Corps of Engineers for the Puerto Rico restoration
- Southern Company (Alabama Power, Ga. Power, Gulf Power, Mississippi Power, etc.)
- AEP-TNC
- Brazos
- Central Hudson
- Anixter for PPL
- Duke Energy
- Florida Power & Light Co.
- Lower Colorado River Authority
- Oncor
- South Texas Electric Coop.
- CenterPoint-Houston
- Georgia Transmission
- SCE&G
- Scana
- And many others.

Please contact me at 321-258-9225 if you have any questions. Thank you!

Sincerely,

JOHN C. CHANDLER, III

John C. (Chip) Chandler, III
Director of Business Development
Global Utility Division
Cell: 321-258-9225