# ISO-NE Responses to Stakeholder Comments on the 2017 Transmission Planning Base Case Library Review

**Comments from Bruce McKinnon**

**Comment 1:** On page 2, Do all the listed circuits in Appendix A consist of fluid filled cables?

**Response 1:** Yes, all the circuits in Appendix A consist of fluid filled cables.

**Comment 2:** On page 2, How does the ISO or the TO's handle the derating of circuits in multiple circuit duct banks incorporating more than one additional circuit which could or could not be a "companion" circuit of the fluid cooled circuit?

**Response 2:** The methodology described in section 2 of the "Summary Document for 2017 Transmission Planning Base Case Library Review" describes how the ISO used the ratings that were submitted by the transmission owners in the NX-9 database in the basecases used for studies.

One example of a circuit that shares a duct bank with two other circuits is the 3162 circuit that shares the same duct bank as the 3163 and 3164 lines. For the 3162 cable, Eversource has provided 4 sets of summer ratings:

- Ratings with 3163 and 3164 in-service
- Ratings with 3163 out of service and 3164 in-service
- Ratings with 3163 in-service and 3164 out of service
- Ratings with 3163 and 3164 out of service

**Comment 3:** On page 2, are there instances of non-fluid cooled circuits having thermal impacts by other circuits in the same duct system? If so, how will these circuits be represented in these upcoming studies?

**Response 3:** All the circuits referenced on page 2 are fluid filled cables. While there might be thermal impacts on the ratings of non-fluid cooled circuits that share a duct bank depending on the status of the companion the circuits, the list of elements where the "default" summer rating in NX-9 was not the lowest rating only includes fluid filled cables. All the facilities included in Appendix A are fluid-filled cables.

**Comment 4:** On page 2, paragraphs 1,2 & 3, Are we overly stressing the analysis? What do other regional systems do? What about continuing to include the original assumption as a case c? > "Heat exchanger OFF and companion cable in service"?

**Response 4:** A majority of the facilities in Appendix A are Eversource owned facilities in the Boston area. As described by Eversource in the April 2013 PAC presentation[1] when one line in a pair of lines sharing cooling facilities is out of service coolant flow is stopped to prevent cross contamination and minimize leaks if the pipe if ruptured. Based on this the transmission planning studies have not relied upon the heat exchangers being in-service when the companion cable that shares cooling facilities is out of service.

Further, it is important to note that the objective of the methodology is to set the minimum rating that might be applicable to a facility in the study basecases. If a thermal overload is observed on any of the facilities with multiple ratings, it is incumbent on the study engineer to review whether the ratings being used are appropriate for the contingency condition that lead to the overload.

As an example, consider the scenario of two cables that share a heat exchanger. Further assume that the ratings with the companion cable out of service and heat exchanger out of service is lower than the ratings for the companion cable in-service with heat exchanger in-service. The study basecases will have ratings based on "the companion cable out of service and heat exchanger out of service". When contingency analysis is performed and an overload is seen on the facility, and if the contingency that lead to the overload does not take the companion cable out of service, the study engineer must compare the overload against the ratings with the companion cable in-service with heat exchanger in-service, and only report the overload as a criteria violation if the overload exceeds the ratings with the companion cable in-service with heat exchanger in-service.

**Comment 5:** On page 3, Is it necessary to fully explain the computational elimination of RTEG's as they are soon to become null and void?

**Response 5:** Since the FCA 12 obligations shows existing RTEGs with a qualified capacity that submitted accepted static and dynamic delist bids, the language related to RTEGs is maintained for now. The ISO will consider the elimination of the discussion of RTEGs in future summary documents that accompany study basecases.

**Comment 6:** On page 6 and Table 8, I was unable to assure myself that there is not a double counting of current and future PV installations that have already acquired a CSO.

**Response 6:** The ISO has been careful to avoid double counting any of the solar PV resources and has used the 2017 CELT PV forecast as the source for solar PV totals in New England. The Appendix D to the summary document details the methodology used.

To illustrate the methodology employed to model PV consider the 2022 summer peak load case. Tab 3.1.1 the CELT report (Tab 3.1.1) has the total nameplate for solar PV and includes the division of PV into

[1] https://smd.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/ceii/mtrls/2013/apr242013/a10_nstar_greater_boston_cable_ratings.pdf

"FCM PV", "Non-FCM PV" and Behind the Meter PV. The solar PV considered for the Summer 2022 basecase is the PV that is expected to be in-service as of May 31, 2017.

1. Total PV as of May 31, 2017 = 3802.1 (PV at the end of 2021 from CELT Report Tab 3.1.1) + 29 % of new PV in 2022
2. Total PV as of May 31, 2017 = 3802.1 (PV at the end of 2021 from CELT Report Tab 3.1.1) + 29 % of[ ( 4041.9-3802.1)-Difference of total PV at the end of 2022 and 2021 from CELT Report Tab 3.1.1]
3. Total PV as of May 31, 2017 = 3802.1 (PV at the end of 2021 from CELT Report Tab 3.1.1) + 29 % of ( 239.8)
4. Total PV as of May 31, 2017 = 3802.1 + 68.5
5. Total PV as of May 31, 2017 = 3871 MW (Rounded)

Now the 3871 MW above includes all PV that has cleared the FCM and that is forecasted.

The number for New England PV for the 2022 Summer case in Table 8 is 3799 MW.

The difference between the two numbers is 72 MW and these 72 MW are associated with solar PV generators that are explicitly modeled as generators in the basecases and hence need to be subtracted from the 3871 MW total to avoid double counting.

The one exception is Fusion PV (which is described in Appendix D of the summary document) since this PV was excluded from the 2017 PV forecast. Since this generator is in-service, this generator has been modeled in the basecases.

Additional details on the PV modeling are included in Appendix D.

**Comment 7:** On page 7 in paragraph 9, Where are the tracking sheets for any required Interconnection qualification network upgrades, is that a component of the queue projects tracking sheet?

**Response 7:** Network upgrades that are required for the interconnection of a generator are listed on the "RSP Project Tracking Sheet" tab in Appendix E. The "Queue Project Tracking Sheet" tab in Appendix E is populated from the Interconnection Queue and only lists the project, not network upgrades. The major project name column in the "RSP Project Tracking Sheet" may be filtered to access the network upgrades associated with the interconnection of queued generators and ETUs.

**Comment 8:** On page 9, What about the River Crossing project near Groton Ct.?

**Response 8:** The 1410 and 100 line structure replacement project that crosses the Thames River is included in the study and has an Asset Condition ID of 33. This project is listed as included as shown on the "Asset Condition tracking Sheet" tab in Appendix E.

**Comment 9:** On page 10, Please explain further the reasons for not including in the 2027 studies those active queued generating resources that have not acquired a CSO, but including them in the 2022 studies if their In-service date is prior to 6/2022? Is this consistent with your treatment of ETU resources for 2022? What treatment will these active generating resources be given in the studies for 2017? ……for Short Circuit studies?

**Response 9:** Note that the 2022 basecases are being used for the NPCC Area Transmission Review and the 2027 Basecases are being used for Transmission Needs Assessments. The difference in generating resources and ETUs included in the two basecases are based on the differences in the studies**.** As stated in section 4.1.(f) of the Attachment K to the OATT the ISO would consider the following in Needs Assessments to prevent reliability concerns:

- Resources that have cleared in a Forward Capacity Auction
- Resources that have been selected in, and are contractually bound by, a state-sponsored Request For Proposals
- Resources that have a financially binding obligation pursuant to a contract

The active queued generating resources and ETUs that do not meet the requirements of a resource to be relied upon in a Needs Assessment to prevent reliability concerns have been excluded from the 2027 basecase. This includes generators without a CSO.

The NPCC Area Transmission Review study is an evaluation of the New England system in accordance with NPCC Directory 1. This study includes all planned generators and ETUs and on that basis the 2022 basecase includes all generators and ETUs with an approved PPA as of June 1, 2017.

Yes, this is consistent with the treatment of ETU's.

The short circuit studies performed as a part of Needs Assessments include the impact of all PPA approved generators and ETUs. While these facilities cannot be relied to resolve a reliability need, they do contribute to the available short circuit current as they may be in service as part of the energy dispatch of the system. Additionally, all Proposed and PPA approved transmission projects are included in the short-circuit basecases.

**Comment 10:** Appendix A and Appendix E need Title Box Identifications added to each Excel sheet tabulation.

**Response 10:** The tab in Appendix A has had the name updated. All tabs in the excel sheet now have a title that identifies the contents.

**Comment 11:** Appendix A, There appears to be many circuits on the NSTAR system that diagrammatically appear to have companion circuits and are not listed in the Appendix A tabulations, how can a stakeholder feel confident that all of the circuits with rating permutations have been identified? Following up on my earlier inquiries related to Page 2 of the report, I have attached a list of underground transmission circuits apparently having the POTENTIAL of companion or mutual thermal derating affects have these all been cleared of such effects by the ISO?

**Response 11:** As noted in section 2, the NX-9 to PSS/E Bridge applies the default summer ratings to the basecases. Further, the section also states that a vast majority of the elements with multiple summer ratings have the lowest summer rating as the default summer rating in NX-9 and for these records no additional modifications were required. However, some other elements required a change in summer ratings.

Appendix A only lists the facilities for which the default summer rating were modified based on the ISO's review of the NX-9 records. All the facilities provided in the word document that accompanied the comments were in the list of facilities evaluated, and the default summer ratings for these facilities were the lowest ratings.

**Comment 12:** Appendix F, I appreciated the diagrammatic clarification of the NPCC intent of the Double Circuit Tower exclusion language.

**Response 12:** No response required.

**Comment 13:** Appendix E, What is the status of the MBTA combustion turbines? What is the Appendix listing status of the retirement of various small generators an example of such being the Front Street Diesels of the Chicopee Electric Light Department?

**Response 13:** The Front Street Diesels have an accepted partial non-price retirement in FCA 10 and these generators are modeled at their FCA 12 qualified capacity of 7.43 MW in the basecases. The L Street Jet has an accepted Retirement Delist bid. This generator was erroneously included in the draft 2022 and 2027 basecases. The L Street Jet has been removed from the final 2022 and 2027 basecases.

The Appendix A has been updated to include a retirement tracking sheet.

**Comments from Eversource**

Eversource provided small topology and contingency changes that were included in the final base cases.

**Comments from VELCO**

VELCO provided small topology changes that were included in the final base cases.

**Comments from National Grid**

National Grid provided small topology changes that were included in the final base cases.

**Comments from CMEEC**

**Comment 1:** CMEEC and Groton Utilities do not agree with the assumption that a 115kV throw over to the 69kV should not be modeled -- this thrower from 115 to 69 is done in practice (the 2014 incident of loss of both 115s for example). We cannot support it's omission and believe any results that omit this fact will be erroneous.

**Response 1:**

The ISO will not be including a load throwover scheme from the 115 kV system to the 69 kV system at Buddington. Today, there is no automatic throwover scheme at Buddington that transfers the 115 kV load to the 69 kV bus. Additionally, there are also no system modifications that are proposed which would allow such a scheme to be implemented. Therefore it would be inappropriate to include such a scheme in the model.