



Time-Sensitive Needs Determination – Revision 1

*Revision to the November 16, 2017
Presentation*

Pradip Vijayan

SENIOR ENGINEER | TRANSMISSION PLANNING



Purpose

- Present the process to determine the time sensitivity of needs identified in a Needs Assessment
- Revised in January 2018 to clarify the time-sensitivity determination of short circuit needs to address stakeholder comments received at the November 16, 2017 PAC meeting



Overview

- Background
- Time-sensitivity determination for different study types
- Determining time-sensitive needs
- Schedule/next steps



BACKGROUND



Background

- At the conclusion of a Needs Assessment, where needs have been identified, a decision must be made with regard to developing regulated transmission upgrades (solutions) to resolve the needs
- The development of the solution(s) shall be accomplished by either:
 - the Solutions Study process (Section 4.2 of Attachment K) or
 - the Competitive Solution process (Section 4.3 of Attachment K)
- The initial determining factor of the decision for Reliability Transmission Upgrades is based on the time-sensitivity of each need in the Needs Assessment
 - **Time-sensitive needs** are those that occur within three years of the completion of the Needs Assessment report
 - **Non time-sensitive needs** are those that occur three years or beyond the completion of the Needs Assessment report
- If any of the needs identified are deemed to be time-sensitive and the requirements of Section 4.1(j) of Attachment K of the OATT have been met, then a Solutions Study process will be initiated. Otherwise if all of the needs identified are deemed to be non time-sensitive, then a Competitive Solution process will be initiated

TIME SENSITIVITY DETERMINATION FOR DIFFERENT STUDY TYPES

Steady-State Needs

- The steady-state needs that are identified in a Needs Assessment may be seen at peak load levels or off-peak load levels
- If the need is seen at peak load levels then a determination must be performed to identify the time-sensitivity of the need
 - This presentation discusses the methodology used to determine time-sensitivity of a need observed at peak load
- If needs are observed at off-peak load levels, then the needs will be deemed to be time-sensitive
 - Off peak load levels are studied at a static load level
 - The needs are deemed time-sensitive because the load level is possible under current day system conditions



Short-Circuit Needs

- If needs are identified as a result of short circuit analysis, the time-sensitivity of the short circuit need(s) must be determined
- The time-sensitivity of the short circuit need(s) is based on the expected in-service date of the future project that causes the equipment to exceed its capabilities
- In the event that equipment is found to exceed its capabilities in greater than three years from the completion of the Needs Assessment report, the need would not be considered time-sensitive
- In the event that equipment is found to exceed its capabilities within three years or less from the completion of the Needs Assessment report, the need would be considered time-sensitive



DETERMINING TIME-SENSITIVE NEEDS



Time-sensitive Needs at Peak Loads

- To determine the time-sensitive needs, additional analysis is performed to determine if the needs are observed within three years of the completion of the Needs Assessment Report
- An analysis is conducted at two separate load levels and those load levels are used to determine the time-sensitivity of the needs
 - Steady-state results for the study horizon base cases
 - Steady-state results for the time-sensitive year base cases
- The two sets of basecases are used to classify the needs into the following
 - **Time-Sensitive Need** – A need identified from the analysis using the study horizon base cases and the time-sensitive year base cases
 - **Non Time-Sensitive Need** – A need identified from an analysis using the study horizon base cases but not identified from an analysis using the time-sensitive year base cases
- The following slides describe each set of base cases



Study Horizon Base Cases

- Typically a Needs Assessment is conducted over a 10 year study horizon with the study base cases created for a time period 10 years into the future
- These base cases are referred to as the study horizon base cases
- All needs are established based on the study horizon base cases
- For example, a study which starts in 2017 will have initial study base cases created for the year 2027. In this example, the 2027 base cases will be referred to as the study horizon base cases



Time Sensitive Base Cases

- The year represented in time-sensitive year base cases is determined by the completion date of the Needs Assessment report which is the date when the final Needs Assessment report is posted to the PAC website
- For purposes of establishing time sensitivity, summer peak load for each year is assumed to occur anytime after June 1st
- Therefore, the appropriate summer peak load represented in the time-sensitive case will vary depending on whether the completion date of the Needs Assessment report occurs before June 1 versus on June 1 or later

Publishing Date of Final Needs Assessment Report	Time-sensitive year
Between January 1 st and May 31 st of Year N	Summer Peak of Year N+2
Between June 1 st and December 31 st of Year N	Summer Peak of Year N+3

- For example, if a Needs Assessment report was posted on March 1, 2018, the time sensitivity year base cases will be created using the year 2020 (N+2) peak load
 - This is because the most recent peak load for the date three years from the posting of the Needs Assessment report (March 1, 2021) will be the peak load in 2020

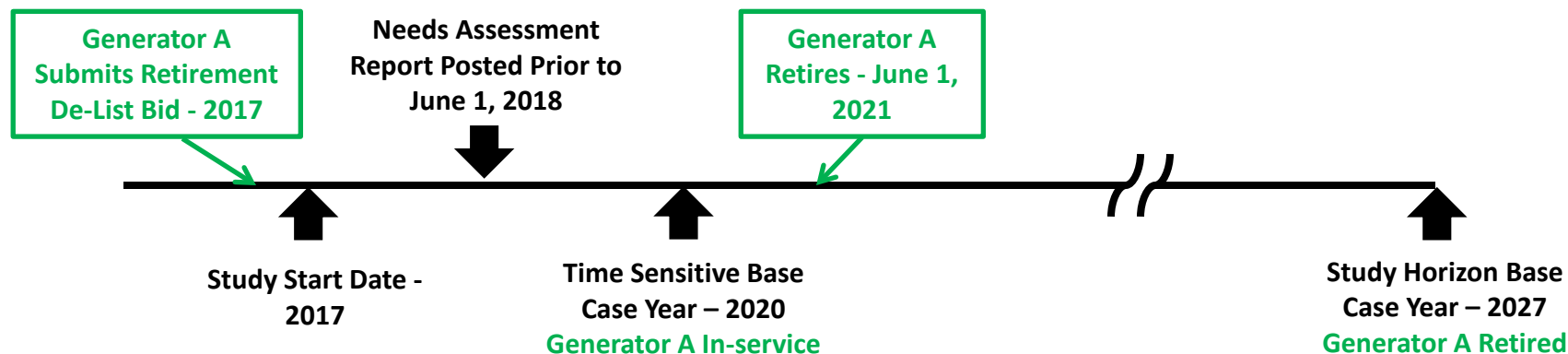
Load and Transmission Topology Changes

- The time-sensitive year base cases are created based on the Study Horizon base cases
- The New England load is scaled to match the load in the appropriate time-sensitive year
- The study horizon base case transmission topology is not changed
 - Includes transmission projects in the 10 year study horizon that may not be in-service in the time-sensitive year
 - This avoids identifying a need using the time-sensitive base cases which would be solved by a previously identified transmission project



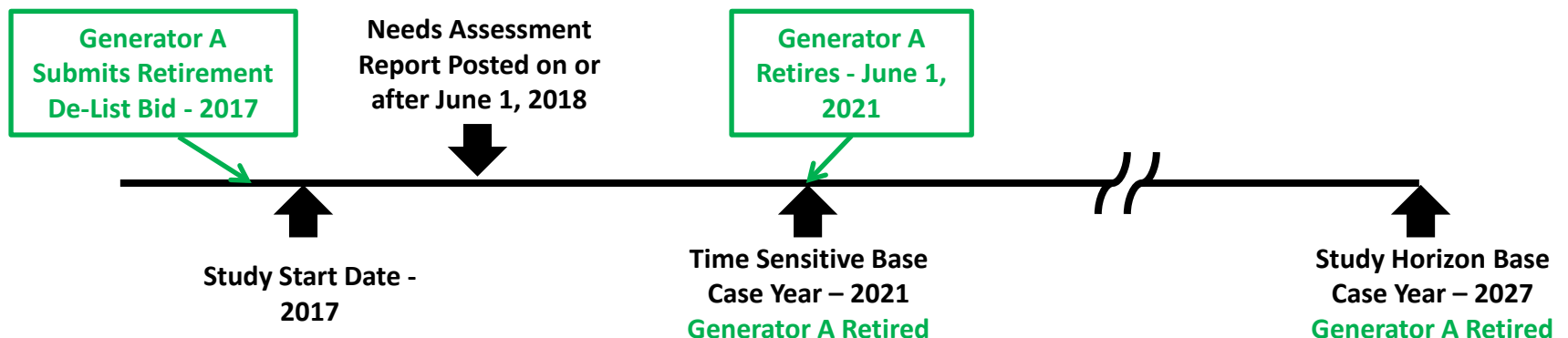
Generation Changes

- All generators that are in the study horizon base cases are retained in the time-sensitive year base case
 - Includes generators that may have an in-service year beyond the time-sensitive year
 - The rationale is similar to the reason to include transmission projects that are not expected to be in-service in the time-sensitive year
- For time-sensitive base cases that are created when the Needs Assessment report is posted before June 1st, turn on any relevant generator(s) that have submitted a retirement de-list bid through the Forward Capacity Market (FCM) with a retirement date after the time-sensitive year



Generation Changes, (Cont.)

- If any relevant generator(s) retires in the same year or an earlier year than the time-sensitive base case year, then the relevant generator(s) are considered retired in the time-sensitive base cases. This could happen for a few reasons shown in the example timeline below
 - The retirement of the relevant generator(s) is from an earlier FCA e.g. the Retirement De-list Bid is submitted in 2016 or earlier or
 - For a Retirement De-List Bid submitted in 2017, the Needs Assessment report is posted on or after June 1, 2018



Dispatch Adjustments

- The dispatch of study area generators in the study horizon base cases is maintained in the time-sensitive year base cases
 - The only exception is any generator(s) that were assumed to be retired in the study horizon base cases but are expected to be in-service in the time-sensitive year
 - These generators are assumed online in all the dispatches
 - Dispatch adjustments will be made outside the study area to maintain load-energy balance
- If a generator that is retired in the study horizon base case is expected to be in-service in the time-sensitive basecase
 - Additional dispatches may be considered in the time-sensitive year base cases with the retired generator offline
 - When creating the new dispatches, the same methodology that was used to establish the dispatches in the study horizon base cases will be used



SCHEDULE/NEXT STEPS



Schedule/Next Steps

- A draft version of the Time-Sensitive Needs Determination document will be provided for stakeholder comment in Q4 2017
 - Once completed, this document will be added to the Transmission Planning Technical Guide



Questions

