

Section 2: Regional Transmission Expansion Plan Process

In this section you will find an overview of the PJM Region transmission planning process, covering the following areas:

- Components of PJM's 15-Year planning
- The need and drivers for a regional transmission expansion plan
- Reliability planning overview
- Specific components of reliability planning and the Stakeholder process
- Interconnection request drivers of RTEP
- Cost responsibility for reliability related upgrades
- Market efficiency planning review
- Specific components of market efficiency planning and the Stakeholder process.
- Operational performance driven planning
- Specific components of operational performance driven planning

2.1 Transmission Planning = Reliability Planning + Market Efficiency

Effective with the 2006 RTEP, PJM, after stakeholder review and input, expanded its RTEP Process to extend the horizon for consideration of expansion or enhancement projects to fifteen years. This enables planning to anticipate longer lead-time transmission needs on a ~~timelier~~ timely basis.

Fundamentally, the Baseline reliability analysis underlies all planning analyses and recommendations. On this foundation, PJM's annual 15-year planning review now yields a regional plan that encompasses the following:

1. Baseline reliability upgrades, discussed in this Section 2;
2. Generation and transmission interconnection upgrades, discussed in Attachment C and Manual 14A.
3. Market efficiency driven upgrades, discussed in this Section 2.
4. Operational performance issue driven upgrades, discussed in this Section 2.

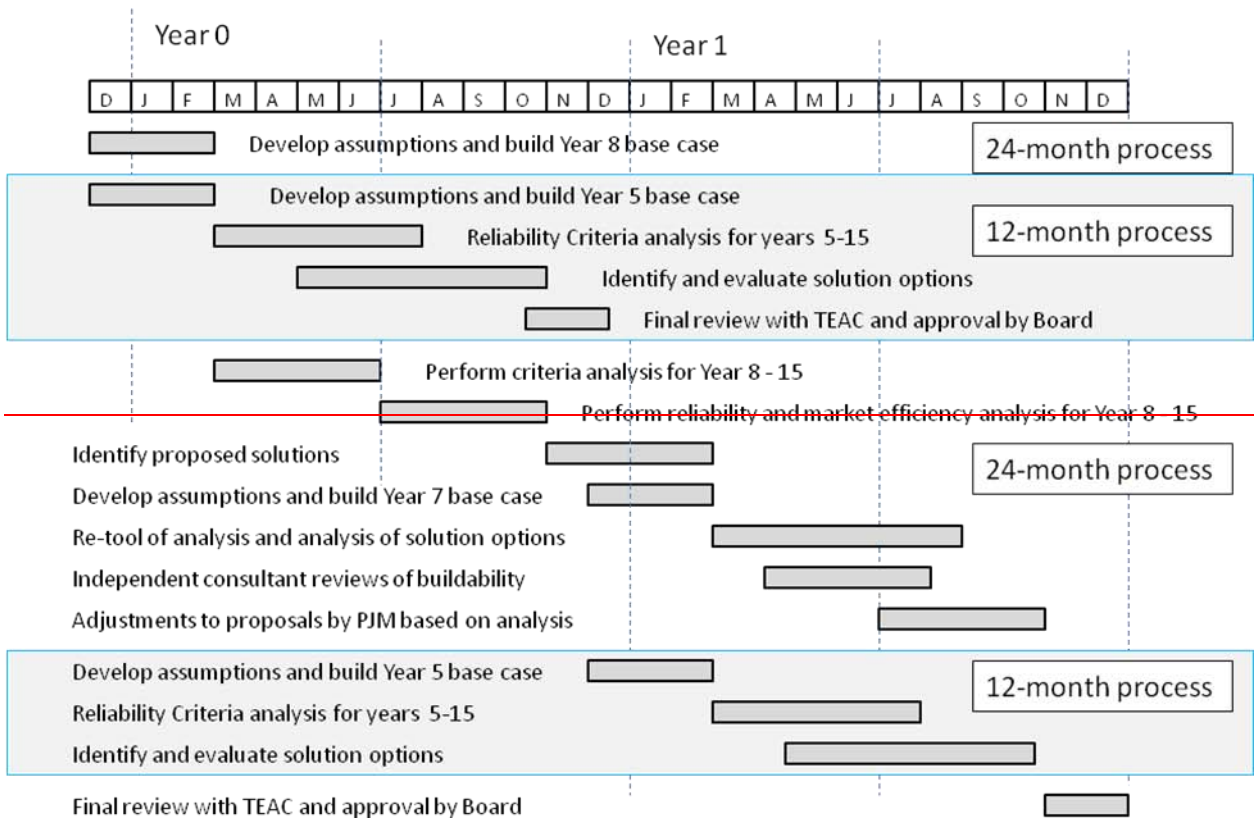
Exhibit 1 shows the 24-month ~~planning process~~ cycle-of-used for the 15-year RTEP ~~process~~ horizon. This 24-month ~~cycle-planning process~~ integrates reliability and market efficiency analysis ~~the upgrades noted above~~ with information transparency, stakeholder input and review and PJM Board of Manager approvals. Activities shown on this diagram and their timing are ~~an idealized view for illustrative purposes~~ The actual timeline may vary to some degree to that will be responsive to the RTEP and ~~S~~ stakeholder needs and thus may vary accordingly.

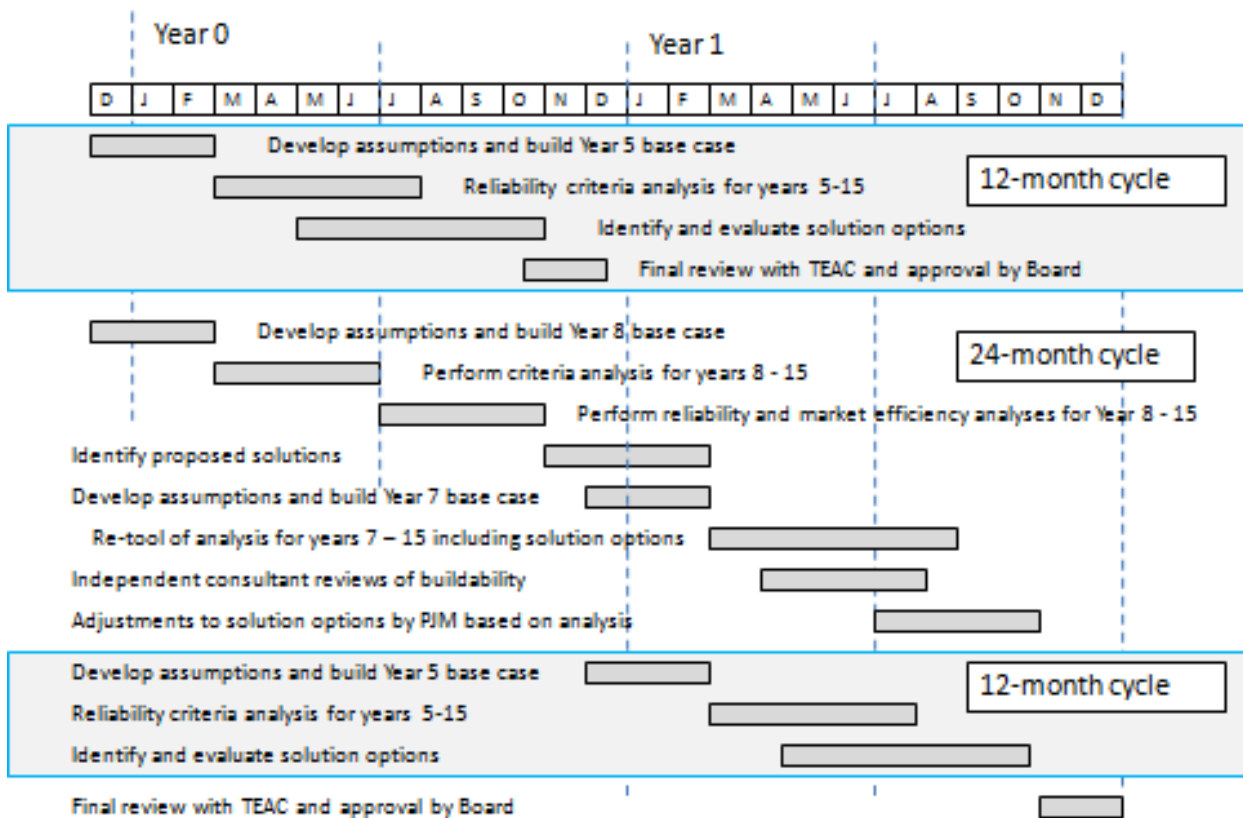
The 24-month ~~cycle~~ planning process is made up of two similar 12-month planning annual cycles to identify and develop shorter lead-time transmission upgrades and one 24-month planning cycle. ~~The two annual cycles are combined~~ to provide sufficient time for the identification and development of longer lead-time transmission facilities upgrades that may be required to satisfy planning criteria. Consistent with the requirements of the NERC TPL Reliability Standards ~~the 24-month planning process~~ each annual cycle includes both near-term (years one through five) and longer-term (years six through fifteen) assessments of the transmission system as described below.

The first step in the process is to develop the set of assumptions that will be used for the subsequent analyses. These assumptions are vetted with stakeholders at TEAC and Subregional RTEP Committee meetings. Each year a series of power-flow base cases are then developed based on the assumptions. The yearly series of cases ~~will~~ include the latest information and assumptions available related to load, resources and transmission topology. ~~Specifically, a~~ new 5-year base case is developed for near-term baseline reliability analyses. Applicable reliability criteria testing is performed on this 5-year base case as described in section 2.3 of this manual. Base cases for retool analyses of years closer than 5-years are developed as required.

In addition to these near-term base cases additional power-flow base cases are developed for long-term planning. These long-term cases are used to evaluate the need for more significant projects requiring a longer time to develop. These longer lead time projects generally provide a more regional benefit. The long-term base case developed at the start of each 24-month planning cycle is based on the system conditions that are expected to exist in 8 years. ~~Long term criteria analysis is completed on this base case during the first year of the 24-month cycle.~~ As noted in Figure 1, this 8-year out base case is updated and retooled at the start of the second year of the 24-month planning annual cycle (i.e. at that point a 7-year out base case), with additional criteria analysis being run to validate the findings from the analysis that was conducted during the first year of the 24-month planning cycle of the previous study. ~~These long term cases are used to evaluate the need for more significant projects requiring a longer time to develop. These longer lead time projects generally provide a more regional benefit.~~

Figure-Exhibit 1





The scope of the near-term baseline analysis which that is completed as part of each 12-month planning annual cycle includes an exhaustive review of applicable reliability planning criteria on all BES facilities as described in section 2.3 of this manual. As noted above, PJM typically performs this near-term analysis on a 5-year out base case. Retool analyses of previous near-term assessments are also completed, as required. Any identified criteria violations are reviewed with stakeholders throughout the planning process. Ultimately, solutions to address the criteria violations are developed, reviewed with the TEAC and/or Sub-regional RTEP Committee as applicable, and submitted to the PJM Board of Managers for approval. Through this planning process, a baseline system without any criteria violations is developed for the near-term (i.e., 5-year baseline). This baseline system, without any criteria violations, is then used for subsequent interconnection queue studies.

Longer-term planning is also completed as part of the development of the RTEP to identify solutions to planning criteria violations that require longer lead times to implement. As part of the 24-month planning RTEP cycle PJM initially develops an eight 8-year out base case that is used to evaluate planning criteria for the longer-term planning horizon. Long term criteria analysis is completed on this base case during the first year of the 24-month cycle. A combination of a full AC powerflow solution and linear analysis, as described in this manual, is used to determine the loading on facilities for years 9 8 through 15. Potential

Violations and ~~alternative upgrades~~ proposed solutions to address them are developed by stakeholders and PJM staff during the first year of the 24-month RTEP planning cycle. As shown in Figure 2, during the second year of the 24-month planning cycle, the base case used for the long-term analysis during the first in the previous year (i.e., now year 7) is updated to reflect the latest assumptions about load, generation, DR, EE, and transmission topology. Long term criteria analysis is completed on this base case during the second year of the 24-month cycle. A combination of a full AC powerflow solution and linear analysis, as described in this manual, is again used again to determine the loading on facilities for years 8 through 15. Potential violations identified during the first in the previous year are validated and the ~~alternative upgrades~~ proposed solutions to address those violationsthem are refined during the second year of the 24-month planning cycle. An independent consultant may be used to develop an independent cost estimate and evaluate the buildability of proposed solutions. Results of all offrom these longer-term analyses, including potential violations and their solutions, are reviewed with the TEAC throughout the 24-month planning process. Ultimately, any required long-lead time solutions that are identified through this planning process are presented to the PJM Board of Managers for approval.

Figure-Exhibit 2

