

## Section 1: Process Overview

In this section you will find an overview of PJM's transmission planning process that culminates in the Regional Transmission Expansion Plan (RTEP). This process (referred to in this Manual interchangeably as the RTEP process or more generically as the PJM Region transmission planning process) is one of the primary functions of Regional Transmission Organizations (RTOs.) As such, PJM implements this function in accordance with the Regional Transmission Expansion Planning Protocol set forth in Schedule 6 of the PJM Operating Agreement.

As further described in following portions of this manual, the PJM RTEP process consists of baseline reliability reviews as well as analysis to identify the transmission needs associated with generation interconnection and merchant transmission interconnection. PJM implements the planning of interconnections as part of the broader RTEP process pursuant to the PJM Open Access Transmission Tariff (OATT.) The relationship between Interconnection planning and the RTEP is discussed in later sections of this manual and in related manuals.

### 1.1 Planning Process Work Flow

The Manual 14 series provides information regarding PJM's regional transmission expansion planning protocol (RTEPP) to complement planning provisions in the PJM Operating Agreement, Schedule 6 and the PJM Open Access Transmission Tariff (OATT), Attachment M-3 (Attachment M-3 Process). These agreements can be found on-line at <https://www.pjm.com/library/governing-documents.aspx>.

This ongoing process has continued to evolve since 1997, when PJM's RTEPP (codified in PJM's Operating Agreement, Schedule 6) was approved by the Federal Energy Regulatory Commission (FERC). Since that time, the process has been expanded and enhanced in response to member and regulatory input as documented in the Operating Agreement Schedule 6, OATT Attachment M-3 and the PJM Manual 14 series. The current PJM regional transmission expansion plan (RTEP) process includes ample opportunity for stakeholder input through frequent oral and written exchange of information and reviews via the Transmission Expansion Advisory Committee (TEAC) and PJM's three (3) Subregional RTEP Committees (Mid-Atlantic, Southern and Western).

PJM and PJM Transmission Owners' planning processes are incorporated in an 18-month overlapping planning cycle which begins in September of the previous calendar year and extends through a full calendar year to the February of the next calendar year. This overlapping planning cycle is illustrated in Exhibit 1 in this Manual.

The PJM planning process activities, culminating in PJM's annual RTEP, constitute PJM's single, Order No. 890 compliant, transmission planning process.

All PJM OATT facilities are planned through and included in this open, fully participatory, and transparent process.

There are three (3) planning paths that ultimately culminate in the PJM RTEP base case, also referred to as the planning model. Facilities identified in each path allow for the opportunity for early, full and transparent participation by interested PJM stakeholders. The three paths include planning activities associated with: (i) Baseline Projects, (ii) Supplemental Projects; and (iii) Customer-Funded Upgrades. Baseline Projects include projects planned for (i) reliability, (ii) operational performance, (iii) FERC Form No. 715 criteria, (iv) economic planning, and (v) public

policy planning (State Agreement Approach). Supplemental Projects refers to transmission expansion or enhancements not needed to comply with PJM reliability, operational performance, FERC Form No. 715, economic criteria or State Agreement Approach projects. Transmission Owners plan Supplemental Projects in accordance with the Attachment M-3 Process. Projects planned through the Attachment M-3 Process include those that expand or enhance the transmission system and could include needs addressing transmission facilities at the end of their useful life, which, in accordance with good utility practice, is not determined by the facility's service life for accounting or depreciation purposes. Customer-Funded Upgrades refer to Network Upgrades, Local Upgrades or Merchant Network Upgrades identified pursuant to OATT Parts II, III and VI and paid for by the Interconnection Customer or Eligible Customer or voluntarily undertaken by a New Service Customer in fulfillment of an Upgrade Request.

#### Planning of Baseline Projects:

Baseline Projects are produced from PJM's planning cycle activities described in this manual, Operating Agreement Schedule 6, and illustrated in Exhibit 1 in this Manual. PJM leads the analysis and development of Baseline Projects related to reliability, operational performance, FERC Form No. 715 criteria and economic planning for all facilities 100 kV and above under PJM's operational control. These facilities are designated as Bulk Electric System (BES) facilities and are subject to the North American Electric Reliability Corporation (NERC) standards and criteria for such facilities. The PJM analyses ensure compliance with NERC, PJM and any applicable Regional Entity criteria (e.g. Reliability First (RF) or SERC Reliability Corporation (SERC)). In addition, the PJM-led analyses also include analysis of and solutions for transmission facilities with nominal voltages below 100kV to the extent they are under PJM's operational control (see <http://www.pjm.com/markets-and-operations/ops-analysis/transmission-facilities.aspx>). The TEAC and Subregional RTEP Committees provide the opportunity for stakeholders to engage in the PJM transmission planning process of such facilities, as described in this Manual.

In addition, for transmission facilities under PJM operational control, the Transmission Owner may submit its local planning criteria in its FERC Form No. 715 filing.

#### Transmission Owner Supplemental Projects:

Supplemental Projects refer to a transmission expansion or enhancement not needed to comply with PJM reliability, operational performance, FERC Form No. 715 or economic criteria and is not a State Agreement Approach project. Transmission Owners plan Supplemental Projects in accordance with the Attachment M-3 Process. Projects planned through the Attachment M-3 Process could include those that: (i) expand or enhance the transmission system; (ii) address Transmission Owner zonal reliability issues; (iii) maintain the existing transmission system; (iv) comply with regulatory requirements or (v) implement Transmission Owner asset management activities (which could include needs related to a transmission facility approaching the end of its useful life, which, in accordance with good utility practice, is not determined by the facility's service life for accounting or depreciation purposes).

Pursuant to the Attachment M-3 Process, Supplemental Projects are presented through the TEAC (230 kV and above facilities) or the Subregional RTEP Committees (below 230 kV facilities) for review and comment in a three-part meeting process that includes at a minimum (i) an Assumptions Meeting, (ii) a Needs Meeting and (iii) a Solutions Meeting. The Subregional RTEP Committees' Solutions Meetings are followed by a round of comments

before the Transmission Owners finalize the Supplemental Projects. The stakeholders are provided a final comment period before the Supplemental Project is included in the Local Plan. Supplemental Projects included in the Local Plan are provided to the TEAC and the PJM Board as informational before integrating the Supplemental Project into the RTEP base case. Supplemental Projects are not approved by the PJM Board. It should also be noted that prior to integrating a Supplemental Project into the RTEP base case PJM performs a “do no harm study” to evaluate whether a proposed Supplemental Project will adversely impact the reliability of the Transmission System as represented in the planning models used in all other PJM reliability planning studies. As part of the review of Supplemental Projects, PJM will determine if inform stakeholders if PJM believes that a proposed Supplemental Project meets the Operating Agreement Definition of Supplemental Project, and therefore is not required for a need associated with PJM reliability, market efficiency, operational performance or public policy requirements, and inform stakeholders if PJM believes that a project does not meet that definition. Additionally, PJM will facilitate and monitor the status of the projects being developed in the M-3 process to ensure that all Supplemental Projects included in the Transmission Owner’s submission to be included in the Local Plan can be identified as having been developed to meet a need identified by the Transmission Owner in the M-3 process. Proposed Supplemental Projects not meeting the Operating Agreement Definition of Supplemental Project, or which cannot be linked to a need presented by the Transmission Owner, will not be included in the Supplemental Project review process, per the OATT, Attachment M-3, and therefore cannot be submitted to be included in the Local Plan for inclusion in the RTEP. Once PJM determines that the proposed Supplemental Project will not adversely impact the reliability of the Transmission System, the proposed Supplemental Project may be integrated into the RTEP base case consistent with Schedule 6. In this way Supplemental Projects are subject to similar open, transparent and participatory PJM committee activities, as are PJM RTEP Projects (comprising Regional RTEP Projects and Subregional RTEP Projects; see discussion of TEAC and Subregional RTEP Committees.) As part of the review of Supplemental Projects, PJM will determine if the Supplemental Projects might eliminate a baseline violation identified in the RTEP processes which may be in progress. PJM will also apprise the relevant Transmission Owner if an RTEP Project is identified which might alleviate the need for a Supplemental Project. Any changes to the need associated with a Supplemental Project or baseline project will also be discussed with the PJM stakeholders. A discussion of guidelines associated with the potential for overlapping needs is discussed below in section 1.4.2.

Planning for Customer-Funded Upgrades is performed through PJM’s New Services Queue and includes Network Upgrades, Local Upgrades or Merchant Network Upgrades identified pursuant to OATT Parts II, III and VI. Studies of interconnection and transmission service requests and any resulting transmission modifications are posted to PJM’s website in the project queue area (<http://www.pjm.com/planning/generation-interconnection.aspx>). In addition, any necessary transmission facility modifications are brought to the TEAC for presentation and stakeholder participation. Interconnection planning is discussed in more detail in Manual 14A.

## 1.2 TEAC and Subregional RTEP Committee and Related Activities

The PJM TEAC functions in accordance with its established charter and provisions of the Operating Agreement, Schedule 6. Additionally, in 2008 PJM began to facilitate more localized

planning functions through the Subregional RTEP Committees.

The TEAC and Subregional RTEP Committees provide a transparent and participatory planning process throughout the development of the RTEP, from early assumptions-setting stages to discussion of criteria violations and/or identified system needs, review of recommendations for alternative solutions and then review and comment regarding the solutions incorporated into the RTEP base case.

The Subregional RTEP Committees allow more focused and meaningful stakeholder participation and attention to the subregional and local Transmission Owner zonal issues. Currently there are

three PJM RTEP subregions : Mid-Atlantic, Southern, and Western. When a Subregional RTEP Committee meeting is needed and scheduled, it generally will be implemented as a separate meeting for each subregion.

All PJM stakeholders can participate in any or all subregional activities on a voluntary basis, with one exception. The exception is that the Transmission Owners that comprise each of the various subregions must participate in the Subregional RTEP Committee meeting that includes their area and each Transmission Owner must be present at the TEAC meeting where its Supplemental Projects are presented. PJM will facilitate TEAC and Subregional RTEP Committees to review Regional RTEP Projects, Subregional RTEP Projects and Supplemental Projects. PJM, with stakeholder input, may initiate additional Subregional RTEP Committees meetings consistent with OATT, Attachment M-3 to review and address stakeholder questions or concerns regarding needs or proposed solutions, as may be necessary or beneficial. Separate local meetings or more localized reviews may also be held by individual PJM Transmission Owners in the event that the individual Transmission Owner decides that it is a more appropriate way to address local issues. In addition to their participation in the TEAC and Subregional RTEP Committees meetings, stakeholders can also provide written comments on the development of the RTEP. Written comments can be provided to PJM through the Planning Community on PJM.com.

For administrative convenience, RTEP projects (i.e., baseline projects) are separated into Regional RTEP Projects (230 kV and above) and Subregional RTEP Projects (below 230 kV) (referred to collectively herein as “RTEP Projects”), as defined in the Operating Agreement, in order to make an initial categorization and posting of violations and upgrades that will enable stakeholders to more easily sort through and review issues of interest.

Regional RTEP Projects and Supplemental Projects (230 kV and above) will be reviewed at the TEAC. Subregional RTEP Projects and Supplemental Projects (below 230 kV) will be reviewed at the applicable Subregional RTEP Committee. The Subregional RTEP Committee is responsible for the initial review of Subregional RTEP Projects. For Regional and Subregional RTEP Projects, the TEAC and Subregional RTEP Committees follow the procedure set forth in the Operating Agreement, Schedule 6 specific to the TEAC and other applicable PJM committee procedures. For Supplemental Projects subject to Attachment M-3, the Attachment M-3 Process will apply.

Review of RTEP Projects and Supplemental Projects at the TEAC and/or Subregional RTEP Committees normally occurs during the February through August RTEP stakeholder analysis and review periods (see Exhibit 1). However, additional Supplemental Projects for unforeseen needs that a PJM Transmission Owner identifies later in the year will follow OATT, Attachment

### M-3 Process for inclusion in the RTEP.

Stakeholders will be provided the information necessary for participation in the discussions and evaluations, including: (1) the PJM and/or Transmission Owners models, criteria and assumptions that underlie transmission system plans, (2) the procedure to access the study information necessary to replicate the PJM and/or Transmission Owner planning studies and participate in the evaluation and discussion of the identified need, (3) information regarding the project proposed to address the identified need, (4) the current cost estimate for the project, and (5) a description of the proposed modifications to existing facilities that may be part of the project.

In addition, projects that originate through Transmission Owner planning will be posted on the PJM web site. This site will include all currently planned Baseline and newly planned Supplemental Projects and Transmission Owner Initiated projects from past RTEP cycles that are yet to be placed in-service). This website will provide tracking information about the status of listed projects and planned in-service dates. It will also include information regarding criteria, assumptions and availability of study cases.



## 1.3 Planning Assumptions and Model Development

### 1.3.1 Reliability Planning (including Operational Performance and Public Policy Planning)

PJM's planning analyses are based on a consistent set of fundamental assumptions regarding load, generation and transmission built into power flow models. Load assumptions are based on the annual PJM entity load forecast independently developed by PJM (found at <http://www.pjm.com/planning/resource-adequacy-planning/load-forecast-dev-process.aspx>.) **This forecast includes** the basis for all load level assumptions for planning analyses throughout the 15 year planning horizon. Generation and transmission planning assumptions are embodied in the base case power flow models developed annually by PJM and derived from the Eastern Reliability Assessment Group processes and procedures pursuant to NERC standard MOD-032, as well as Transmission Owners' assumptions included in their respective FERC Form No. 715. As necessary, PJM updates those models with the most recent data available for its own regional studies. All PJM base power flow and related information are available pursuant to applicable Critical Energy Infrastructure Information, Non-Disclosure and OATT-related requirements (accessible via <http://www.pjm.com/planning/rtep-development/powerflow-cases.aspx> or by contacting the PJM Planning Committee contacts.) Each type of RTEP analysis (e.g., load deliverability, generator deliverability etc.) encompasses its own methodological assumptions as further described throughout the rest of this Manual. Additional details regarding the reliability planning criteria, assumptions, and methods can be found in following sections and this manual's Attachments.

Attachment J contains the checklist for the new equipment energization process to be utilized by Transmission Owners and Designated Entities from inception to energization of upgrade projects.

### 1.3.2 Economic Planning

PJM will perform a market efficiency analysis each year, following the completion of the near-term reliability plan for the region. PJM's market efficiency planning analyses will utilize many of the same starting assumptions applicable to the reliability planning phase of the RTEP development. In addition, key market efficiency input assumptions, used in the projection of future market inefficiencies; include load and energy forecasts for each PJM zone, fuel costs and emissions costs, expected levels of potential new generation and generation retirements and expected levels of demand response. PJM will input its study assumptions into a commercially available market simulation data model that is available to all stakeholders. The data model contains a detailed representation of the Eastern Interconnection power system generation, transmission and load. In addition, the market efficiency analysis of the cost/benefit of potential market efficiency upgrades will also include the discount rate and annual revenue requirement rate. The discount rate is used to determine the present value of the enhancements' annual benefits and annual cost. The annual revenue requirement rate is used to determine the enhancements' annual cost. PJM will finalize the market efficiency analysis input assumptions soon after the development of the PJM load forecast that is generally available approximately in late January. Prior to finalizing, PJM will review the proposed assumptions at the PJM Transmission Expansion Advisory Committee. This review will provide the opportunity for stakeholder review of and input to all of the key assumptions that form the basis of the market efficiency analysis. In this way, PJM will facilitate a comprehensive stakeholder review and input regarding RTEP study assumptions. All final assumptions and analysis parameters will be presented to the TEAC for discussion and review and to the PJM Board for consideration.

### 1.3.3 FERC Form No. 715

The Transmission Owner's process specific to the Transmission Owner's zone, including projects that could address the end of useful life of existing facilities, which, in accordance with good utility practice, is not determined by the facility's service life for accounting or depreciation purposes, may be memorialized as Transmission Owner planning criteria under the Transmission Owner's FERC Form No. 715.

### 1.3.4 Supplemental Projects

Supplemental Projects are included in both PJM and Transmission Owners planning models for the applicable reliability studies conducted outside the Attachment M-3 Process, to the extent the Supplemental Project impacts the transmission system.

The Transmission Owners' planning of Supplemental Projects follows the sequence of steps set out in OATT, Attachment M-3. PJM will include in the activities associated with the model development for the next year's RTEP, which begins in September (see 18-month planning cycle illustrated in Exhibit 1 in this Manual), those Supplemental Projects included in the Local Plans submitted for incorporation into the PJM planning model in the July timeframe.

Additional Supplemental Projects for unforeseen needs that a PJM Transmission Owner identifies later in the year, and which are finalized after July, may be included in the base case if the inclusion of these projects would not disrupt analysis associated with the development of the RTEP violations.

## 1.4 RTEP Process Key Components

PJM's goal is to ensure electric supply adequacy and to enhance the robustness of energy and capacity markets. Achieving these objectives requires the successful completion of PJM's planning, facility construction and operational and market infrastructure requirements.

### 1.4.1 Key Process Components

Key components of PJM's 15-year transmission planning process discussed in this Manual include:

#### 1.4.1.1 Baseline reliability analyses:

The PJM Transmission System ("PJM System") provides the means for delivering the output of interconnected generators to the load centers in the PJM energy and capacity markets. Baseline reliability analyses ensure the security and adequacy of the Transmission System to serve all existing and projected long term firm transmission use including existing and projected native load growth as well as long term firm transmission service. RTEP baseline analyses include system voltage and thermal analysis, and stability, load deliverability, and generator deliverability testing. These tests variously entail single and multiple contingency testing for violations of established NERC reliability criteria regarding stability, thermal line loadings and voltage limits. Baseline reliability analyses are discussed in more detail in Section 2 and Attachment C.

#### 1.4.1.2 Economic analyses (Market Efficiency studies):

In addition to reliability based analyses PJM also evaluates the economic merit of proposed transmission enhancements. These analyses focus on the economic impacts of security constraints on production cost, congestion charges to load and

other econometric measures of market impacts. PJM's market efficiency analyses are discussed in Section 2 of this Manual and Attachment E. PJM development of economic transmission enhancements is also codified under Schedule 6 of the PJM Operating Agreement.

#### **1.4.1.3 Operational performance issue reviews and accompanying analyses:**

Maintaining a safe and reliable Transmission System also requires keeping the transmission system equipment in safe, reliable operating condition as well as addressing actual operational needs. On an ongoing basis, PJM operating and planning personnel assess the PJM transmission development needs based on recent actual operations. This may lead to special studies or programs to address actual system conditions that may not be evident through projections and system modeling.

To ensure that system facilities are maintained and operated to acceptable reliability performance levels, PJM has implemented an Aging Infrastructure Initiative to evaluate appropriate spare transformer levels and optimum equipment replacement or upgrade requirements. This initiative, based on a Probability Risk Assessment (PRA) process, is intended to result in a proactive, PJM-wide approach to assess the risk of facility failures and to mitigate operational and market impacts. Section 2 of this manual provides further discussion of the PRA process.

#### **1.4.1.4 FERC Form No. 715**

Each Transmission Owner specifies reliability criteria it uses to evaluate system performance in its FERC Form No. 715 filing. As part of the RTEP process, PJM will identify system needs using each Transmission Owner's planning criteria, which could include end of useful life, which, in accordance with good utility practice, is not determined by the facility's service life for accounting or depreciation purposes and other asset management activities, reflected in the Transmission Owner's FERC Form No. 715.

#### **1.4.1.5 Supplemental Project Planning**

Transmission Owner may identify a need associated with a transmission expansion or enhancement not required to comply with the PJM reliability, operational performance, FERC Form No. 715 or economic criteria and is not a State Agreement Approach project. The PJM Transmission Owners plan Supplemental Projects in accordance with the Attachment M-3 Process. Projects planned through the Attachment M-3 Process could include those that: (i) expand or enhance the transmission system; (ii) address local reliability issues; (iii) maintain the existing transmission system; (iv) comply with regulatory requirements; or (v) implement Transmission Owner asset management activities (which could include needs related to a transmission facility approaching the end of its useful life, which, in accordance with good utility practice, is not determined by the facility's service life for accounting or depreciation purposes).

#### **1.4.1.6 Customer-Funded Upgrade analyses:**

All entities requesting interconnection of a generating facility (including increases to the capacity of an existing generating unit) or requesting interconnection of a merchant transmission facility within the PJM RTO must do so within PJM's defined interconnection process. In addition to the baseline analyses discussed above, as



resources or merchant transmission requests interconnection, deliverability in the local area of the request is restudied and updated. The generation and transmission interconnection process and deliverability testing procedures are discussed in Attachment C and Manual 14A. The evaluation of generation and merchant transmission interconnection requests is codified in the PJM Open Access Transmission Tariff (available on the PJM Web site at <http://www.pjm.com/>).

#### 1.4.1.7 The Final RTEP Plan:

Based on all of the requirements for firm transmission service on the PJM System, PJM develops an annual RTEP to meet those requirements on a reliable, economic system development and environmentally acceptable basis.

Furthermore, by virtue of its regional scope, the RTEP process assures coordination of expansion plans across multiple transmission owners' systems, permitting the identification of the most efficient or cost-effective expansion plan for the region. The RTEP developed through this process is reviewed by PJM's independent Board of Managers who has the final authority for approval of the RTEP (except approval of Supplemental Projects) and implementation. The following Section 2 describes the PJM RTEP Process analysis.

#### 1.4.2 Key Process Component Interactions

The Regional Transmission Expansion Plan (RTEP) incorporates changes to the system based on the process drivers outlined in section 1.4.1 in the form of reinforcements to the system as three different types of upgrades; 1) baseline upgrades (see 1.4.1 – 1.4.4), 2) Supplemental Projects (see 1.4.5), and 3) Network Upgrades (see 1.4.6). These transmission system reinforcements for one driver may require modification of facilities identified for another driver. During the course of the review of any upgrade, whether it is a Network Upgrade, baseline upgrade, or Supplemental Project, PJM will work with the Transmission Owners and the Stakeholders to identify any upgrades, or portions of the upgrades, which have common system elements in order to determine the proper classification of a project based on one or more of these types of drivers.

In the event that all or a portion of a baseline upgrade is required for a need previously identified as the driver for a Supplemental Project or a Network Upgrade pursuant to a sensitivity study conducted under section 1.4.2.1, the baseline upgrade will be classified as needed, and constructed as a baseline upgrade, only if the Supplemental Project or Network Upgrade does not move forward to construction. Any identification of the need for a baseline upgrade will require that PJM administer the processes to identify the violation as available for competitive solicitation under the rules established in Schedule 6 of the Operating Agreement. PJM will note in the RTEP that the baseline need exists and will only cancel the baseline upgrade when the Network Upgrade or Supplemental Project is constructed in a timeframe which mitigates the need for a baseline upgrade.

If a Supplemental Project or Network Upgrade might obviate, modify or eliminate the need for an existing baseline upgrade, PJM will review the circumstances associated with the various process needs and will inform the Stakeholders as to the identification of the potential overlapping system upgrade needs. If the baseline upgrade is canceled in favor of the Supplemental Project or Network Upgrade, the the following guidelines may be used when determining the proper classification of costs associated with the issues of overlapping needs as identified above for baseline upgrades, Network Upgrades, and Supplemental Projects, in accordance with the applicable provisions of the PJM Tariff:

1. The costs to mitigate the baseline requirement, and the associated cost allocation, will be

based on the lower of:

- a. The cost of the original baseline upgrade that is no longer required and
  - b. The cost of the portion of the Network Upgrade or Supplemental Project that will be classified as a baseline upgrade
2. All remaining Supplemental Project costs will be the responsibility of the Transmission Owner which specified the need for the Supplemental Project
  3. All remaining Network Upgrade costs will be governed by the procedures set forth in Part VI of the PJM Open Access Transmission Tariff

#### 1.4.2.1 Overlapping needs and upgrades

As part of the review of Supplemental Projects, Network Upgrades, and baseline projects, PJM will determine if there might be an overlap of the various system upgrade needs. In the event it is identified that the various processes have identified the need for the same or similar upgrades which might overlap in the required construction of facilities, PJM and the stakeholders will review and discuss these overlapping needs. The following scenarios and discussions may be used to guide decisions when interactions occur.

- (1) Baseline violations identified or currently posted in an open Project Proposal Window when another process identifies the need for reinforcement that may impact same facilities.
  - a. If a Network Upgrade is identified as needed in the New Services Queue process, the baseline violation remediation process, both with or without a Project Proposal Window as appropriate and in accordance with provisions in the Operating Agreement, will continue to identify a required baseline upgrade and the Network Upgrade process will continue as outlined under the provisions of Parts IV and VI of the PJM Tariff
  - b. If a Supplemental Project is identified as needed, PJM may lengthen the proposal window associated with the baseline violation with overlapping Supplemental Project needs in accordance with the Operating Agreement in order to consider the availability of new or changed information regarding the facilities involved in the Project Proposal Window
- (2) PJM may remove a system upgrade contained in the current base case in order to perform a sensitivity study. This study would be conducted to determine if there may be an underlying baseline need which is being masked through the presence of the system upgrade in the base case. Performance of these sensitivity studies is intended to determine the presence of a baseline violation without the system upgrade that is not yet in service. If a baseline violation is identified, PJM will discuss the implications of the violations with stakeholders in order to consider the need for any plans to mitigate the baseline violation which is evident without the original system upgrade in the base case.
- (3) During the time that a previously planned system upgrade is under construction or has commenced approval processes outside of the PJM TEAC or SRTEP Committee processes, PJM may identify a baseline violation or need associated with the facilities being upgraded, modified, etc. If a baseline violation or need is identified, a review of the project status associated with the previously planned system upgrade should occur. During this review, PJM shall discuss with stakeholders and PJM shall determine if the system upgrade may be delayed to allow consideration of the overlapping needs. A primary consideration of feasibility to delay a project is whether the original need for the

previously planned system upgrade is not negatively impacted as a result of any delay in construction of the previously planned system upgrade. The delay in construction of any previously planned system upgrade, under these guidelines of review overlapping needs, shall be considered to determine if a different approach to the system upgrade scope may provide for a more efficient or cost effective solution.

### 1.4.3 Addition and removal of upgrades from RTEP power flow base cases

The development of a Regional Transmission Expansion Plan (RTEP) requires that PJM maintain a base case to be used in various types of analysis. PJM must finalize the assumptions in a base case in order to move forward with the analysis while minimizing the amount of modeling changes to the base case on a normal basis. For the system topology in the RTEP base case to be stable, PJM will employ the following guidelines for all upgrades:

1. Baseline upgrades will be included in the next RTEP case if the baseline upgrade is approved by the PJM Board in accordance with Schedule 6 of the Operating Agreement
2. Network Upgrades will be included in the next RTEP case if 1) the Network Upgrades are associated with a New Service Queue Request which has executed an Interconnection Service Agreement, or, 2) if the completion of the RTEP requires incorporation of New Service Queue Requests which are at the Facilities Study stage in the queue process in order to meet the new load requirements resulting from normal forecasted load growth
3. Supplemental Projects will be included in the next RTEP case if the Supplemental Project was submitted by the Transmission Owner in accordance with Section 1.3.4 of this Manual 14B
4. A Network Upgrade may be removed from the RTEP base case consistent with termination of the process for a New Service Request as outlined in Part VI of the PJM Open Access Transmission Tariff (OATT) and PJM Manual 14A or an Interconnection or Construction Service Agreement
5. Baseline upgrades and Supplemental Projects may be removed in the next RTEP base case if the need for the baseline upgrade or Supplemental Project is no longer valid and the construction status of the baseline upgrade/Supplemental Project has not progressed to the point that the upgrade or project must be completed to maintain system reliability. Baseline requirement validity is determined through a review of the applicable criteria, whether it is reliability criteria, market efficiency criteria, a change in the stated Public Policy driver, or change in status of the operational performance driver for the upgrade; and
6. During the process of preparing for construction of upgrades, be it a baseline upgrade, a Network Upgrade, or a Supplemental Project, the relevant siting authority may identify concerns and provide an order indicating a refusal to allow siting of the project under the current conditions specified in the application for siting. In the event this occurs, the following guidance is provided in or to determine the proper actions to be taken subsequent to this refusal.
  - a. The entity which has received an indication from the relevant siting authority will identify to PJM that this action has occurred in order to allow for a review the conditions of the refusal to site the project
  - b. PJM will review the impacts associated with the possible removal or continued inclusion of the project which has received this refusal to allow siting
    - i. See Section 1.4.2.1 above for guidance in the review process

- c. PJM provides recommended action to take based on current review of the conditions associated with the siting refusal as well as impacts to all other aspects of the PJM RTEP

## 1.5 Planning Criteria

### 1.5.1 Reliability Planning

PJM and/or Transmission Owners' planning information, including models, criteria and assumptions, provided pursuant to Operating Agreement, Schedule 6 or OATT, Attachment M-3 must be adequate to allow stakeholders to replicate the results of planning studies.

Stakeholders have the opportunity at a national level through the participatory standards development process of the North American Electric Reliability Corporation (NERC) to influence the industry planning criteria that form the basis of PJM's planning process (found at <http://www.nerc.com/Pages/default.aspx>.) NERC regional criteria development, applicable to PJM, is also open to stakeholder input through the open and participatory process of ReliabilityFirst Corporation (found at <https://rfirst.org/ProgramAreas/Standards/>.)

Additionally, regional and Transmission Owner planning criteria that go beyond and complement the NERC Reliability Standards can be created and incorporated into PJM planning through participation in PJM's Planning Committee and other related stakeholder processes (please refer to <http://pjm.com/committees-and-groups/committees.aspx>.) In this manner, PJM, as the independent planning authority, avails stakeholders full opportunity to participate in the planning process from assumptions setting to the final plan. The PJM annual regional plan is based on the effective criteria in place at the time of the analyses, including applicable standards and criteria of the NERC and the applicable regional reliability entity<sup>1</sup>, the various Nuclear Plant Licensees' Final Safety Analysis Report grid requirements and the PJM and Transmission Owner Reliability Planning Criteria (Attachment D). Section 2 details the specific

---

<sup>1</sup> The ReliabilityFirst Regional Reliability Corporation (RRC) for the PJM Mid-Atlantic and Western Regions (which replaced the former ECAR, MAAC and MAIN RRCs on January 1, 2006) and the Virginia-Carolinas (VACAR) Area Reliability subregion of the SERC Reliability Corporation for PJM Southern Region.