

The materials that follow are updates to the July 12 updated version which was shown in the WebEx for the Special PC, and subsequently posted. Items which had been highlighted in yellow for the July 12 version have been accepted in this version and the yellow highlighted items contained in this version are changes to the "accepted" July 12 version.



## 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 <http://www.pjm.com/media/documents/merged-tariffs/oatt.pdf>. <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, Regional RTEP Project and Subregional RTEP Project \(baseline upgrades\)](#), (ii) Supplemental Projects; and (iii) Customer-Funded Upgrades. Baseline [Projects upgrades](#) 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~~refer 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; Supplemental Project drivers, or needs, are “supplemental” to those Operating Agreement specified criteria. Transmission Owners plan Supplemental Projects in accordance with the OATT, Attachment M-3 process (Attachment M-3 Process-). Projects planned through the Attachment M-3 Process include those that expand or enhance the transmission system ~~and~~. By way of example, a Supplemental Project could include ~~needs addressing~~a Transmission Owner project needed to address 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~~Upgrades:

Baseline ~~Projects~~upgrades 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~~baseline upgrades 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~~such facilities 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~~ The 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. If as a result of the do no harm study, system upgrades are required, such upgrades will be considered part of the Supplemental Projects and are the responsibility of the transmission owner sponsoring the Supplemental project.

~~PJM reliability planning studies. Once~~

As part of the review of Supplemental Projects, PJM will inform stakeholders if PJM determines that the proposed Supplemental Project will not adversely impact the reliability of the Transmission System, the a proposed Supplemental Project may does not meet the Operating Agreement definition of a Supplemental Project. Additionally, PJM will monitor the status of the projects being developed through the Attachment M-3 Process in order to associate the Supplemental Project with the need identified by the Transmission Owner in the Attachment M-3 Process. Projects proposed as Supplemental Projects that do not meet the definition of Supplemental Projects or cannot be integrated into the associated with the need identified by the Transmission Owner in the Attachment M-3 Process will not be included in the Local Plan as a Supplemental Project. Supplemental Projects not included in the Local Plan will not be included in the next RTEP base case. In this way

Through the Attachment M-3 Process, Supplemental Projects are subject to similar open, transparent and participatory PJM committee activities, as are PJM RTEP Projects ~~(comprising Regional RTEP Projects and developed through the TEAC and the Subregional RTEP Projects; Committee meetings~~ (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 a baseline upgrade might alleviate or partially mitigate the need for a Supplemental Project. ~~Any changes to the need associated with~~ In addition, PJM will determine if a Supplemental Project or might impact a baseline project will also need identified through the RTEP process, which might be discussed with in progress. A discussion of guidelines associated with the PJM stakeholders potential for overlapping needs is included in this Manual 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~~ ~~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,~~ ~~the~~ Attachment M-3 Process 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 of baseline upgrades and Supplemental Projects. Written comments can be provided to PJM through the Planning Community on PJM.com.

For administrative convenience, RTEP projects (i.e., baseline projects upgrades) 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~~baseline upgrades 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, the Attachment M-3 Process, Commencing September of the year preceding the next RTEP year.~~ PJM will include ~~in the activities associated with a part of~~ the model development for the next year's RTEP, ~~which begins in September base case~~ (see 18-month planning cycle illustrated in Exhibit 1 in this Manual), those Supplemental Projects ~~included submitted by the Transmission Owners for inclusion~~ 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 RTEP base case if the inclusion of these projects would not disrupt analysis associated with the development of the RTEP violations. Such additional Supplemental Projects must comply with the Attachment M-3 Process.

## 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 Drivers

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:

A Customer-Funded Upgrade is a Network Upgrade, Local Upgrade or Merchant Network Upgrade (Network Upgrade) the cost of which is paid for by a New Service Customer. 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 region~~ must do so ~~with~~through PJM's ~~defined~~ interconnection process. ~~In addition to the baseline analyses discussed above, as resources or merchant transmission requests detailed in OATT, Parts IV and VI, PJM studies the interconnection, and deliverability of generation or transmission Interconnection Requests or Upgrade Requests in the local area of at the request is restudied and updated. The generation and Point of Interconnection to determine whether Customer-Funded Upgrades are required to either interconnect to the system or upgrade existing transmission facilities. The interconnection process and deliverability testing procedures are discussed in further in this Manual at Attachment C and Manual 14A. The evaluation of generation and merchant transmission interconnection requests is codified in the PJM Open Access Transmission Tariff OATT, Parts IV and VI (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 Coordination of Baseline Upgrades, Supplemental Projects and Customer-Funded Upgrades**

Changes to the transmission system are incorporated into the RTEP base case based on the process drivers outlined in section 1.4.1 above in the form of three different types of upgrades or projects: 1) baseline upgrades (see sections 1.4.1.1 – 1.4.1.4); 2) Supplemental Projects (see sections 1.4.1.5); and 3) Customer-Funded Upgrades (see sections 1.4.1.6).

During the course of reviewing any upgrade or project, PJM will work with the Transmission Owners and stakeholders to identify any upgrades, or portions of upgrades, that have common system elements. By doing so, PJM is able to determine the proper classification of a project based on one or more types of drivers, as well as develop the more efficient or cost effective solutions.

#### **When a Previously-Identified Supplemental Project or Customer-Funded Upgrade Could Impact the Need for a Baseline Upgrade**

During a review of the RTEP, it may become apparent under certain specific circumstances that a previously identified Supplemental Project or Customer-Funded Upgrade might impact the need for a baseline upgrade identified in the current year RTEP analysis. Identification of the possible impact of a Supplemental Project or Customer-Funded Upgrade on the need for a baseline upgrade might result when 1) sensitivity studies are performed in accordance with section 1.4.2.1 below, 2) a Supplemental Project is submitted for inclusion in the Local Plan but has not been included in the base case due to the timing of the completion of the Attachment M-3 process and the RTEP base case build and analysis activities, or 3) a customer in the New Services Queue executes a service agreement, committing to the construction of any required Customer-Funded Upgrades, following the point in the base case build process when PJM determines the queue projects that should be included in the base case for the RTEP studies.

If a previously-identified Supplemental Project is included in the Local Plan, or a Customer-Funded Upgrade has been identified for a customer in the queue, prior to the opening of a proposal window and such Supplemental Project or Customer-Funded Upgrade would eliminate a violation identified by PJM in the open proposal window, PJM will include such violation in its RTEP planning process consistent with the Operating Agreement, Schedule 6, noting next to the posted violation the pre-existing Supplemental Project or Customer-Funded Upgrade. Once the baseline upgrade addressing the same system need as the Supplemental Project or Customer-Funded Upgrade is approved by the PJM Board, PJM will monitor such baseline upgrade and will cancel the baseline upgrade when construction of the Supplemental Project or Customer-Funded Upgrade is completed and PJM has verified that the baseline upgrade is no longer required.

#### **When an Existing Baseline Upgrade is Impacted by a Proposed Supplemental Project or Customer-Funded Upgrade**

Planning of Supplemental Projects and Customer-Funded Upgrades proceed on a timeline different than the timeline for baseline upgrade studies. For example, generally a baseline upgrade is identified five years into the future; however, a Supplemental Project for a new customer interconnection may be identified only 2 years into the future or a customer in the queue may advance construction of its facilities, requiring a Customer-Funded Upgrade, prior to when a baseline upgrade might be identified as needed. As a result of this potential mismatch due to timing, a baseline upgrade might be planned but a Supplemental Project or Customer-Funded Upgrade could be identified in their respective processes as needed prior to the baseline upgrade. A review of these circumstances might identify that a Supplemental Project or Customer-Funded Upgrade will fully or partially eliminate the violation identified in the baseline studies, which led to the specification of the need for the baseline upgrade. If a Supplemental Project or Customer-Funded Upgrade might –



impact the need for an existing baseline upgrade, PJM will review the circumstances specific to the proposed projects and will inform the stakeholders as to the identification of any potential overlap among the different system upgrades. Stakeholders will then be provided an opportunity to discuss PJM's findings prior to PJM making a decision as to how PJM will proceed.

#### **1.4.2.1 Coordination of Overlapping Needs and System Upgrades**

As part of the review of baseline upgrades, Supplemental Projects and Customer-Funded Upgrades, PJM will determine if there are overlapping needs addressed by the various types of system upgrades. In the event PJM determines that the various driver processes have identified a need for the same or similar upgrades, PJM and its stakeholders will review and discuss such overlapping needs. The following scenarios may be used to guide decisions when overlaps occur.

1. A baseline violation is identified or currently posted in an open proposal window and another driver process identifies the need for a reinforcement that may impact the same facilities:
  - a. If a Customer-Funded Upgrade is identified as needed in the New Services Queue process and a baseline violation is included in the RTEP planning process, PJM will continue to identify the required baseline upgrade and continue forward with the Customer-Funded Upgrade as outlined under the provisions of OATT, Parts VI in order to identify and maintain both upgrades.
  - b. If a Supplemental Project is identified prior to the opening of a proposal window and such Supplemental Project would eliminate a violation included in the problem statement associated with the open proposal window, PJM may lengthen the open proposal window in order to permit project proposers additional time to consider the availability of new or changed information regarding the facilities associated with the open proposal window.
2. PJM may remove a Supplemental Project or Customer-Funded Upgrade from the current RTEP base case in order to perform a sensitivity study. This analysis would be conducted to determine whether an underlying baseline need is masked by the Supplemental Project or Customer-Funded Upgrade included in the current RTEP base case. Performance of these sensitivity studies is intended to identify the presence of a baseline violation without the Supplemental Project or Customer-Funded Upgrade that is not yet in service. If a baseline violation is identified, PJM will discuss such findings with stakeholders in order to determine whether alternative solutions are needed to mitigate the identified baseline violation.
3. If while a previously planned Supplemental Project or Customer-Funded Upgrade is under construction PJM identifies a baseline violation or need associated with the facilities being upgraded, PJM will review the project status associated with the previously planned Supplemental Project or Customer-Funded Upgrade. During this review, PJM will discuss with stakeholders whether the previously planned Supplemental Project or Customer-Funded Upgrade may be delayed to allow consideration of the overlapping needs. A primary consideration in determining whether to delay the project is whether or not the need driving the previously planned Supplemental Project or Customer-Funded Upgrade would be negatively impacted as a result of any delay in construction or commencement of regulatory approval processes. Under these guidelines, delay in construction or regulatory approval processes should be considered if a different approach to address the system need may provide for a more efficient or cost effective solution.



4. A Supplemental Project or Customer-Funded Upgrade is identified which impacts the need for a previously identified baseline upgrade

- a. PJM will review the conditions that drive the needs for each of the projects and review these needs with the stakeholders. This review will include, but is not limited to, the determination of how each upgrade may or may not satisfy the needs of one or more of the processes, and a review of the time that the upgrades may need to be in service in order to inform these discussions.
- b. Following a review of the applicable information, PJM shall determine the steps to be taken in order to preserve baseline reliability while also accommodating other system needs for the M-3 and the New Services Queue processes.

**1.4.3 Addition and Removal of System Upgrades from the RTEP Base Cases**

The development of an RTEP requires PJM to maintain a base case that includes all previously-identified system reinforcements regardless of the driver to be used in its analysis of system needs.

Each year, PJM must lock down the assumptions included in the annual RTEP base case in order to move forward with its analysis. PJM will employ the following guidelines regarding when to include the following types of upgrades in the annual RTEP base case:

1. Baseline upgrades will be included in the next RTEP base case once the baseline upgrade is approved by the PJM Board in accordance with Schedule 6 of the Operating Agreement
2. Customer-Funded Upgrades will be included in the next RTEP base case once: (1) the Customer-Funded Upgrades are included in an executed Interconnection Service Agreement, Upgrade Construction Service Agreement, Wholesale Market Participation Agreement or Transmission Services Agreement; or, (2) if the completion of the RTEP requires inclusion of New Service Queue Requests with an executed Facilities Study Agreement in order to meet the new load requirements resulting from normal forecasted load growth.
3. Supplemental Projects will be included in the next RTEP base case following inclusion of the Supplemental Project in the Local Plan. ~~Notwithstanding this, a Supplemental Project can be removed from the RTEP and displaced by a PJM determination that a project in the regional plan is more efficient or cost effective than the Supplemental Project.~~
4. A Customer-Funded Upgrade may be removed from the RTEP base case upon termination or cancellation of an executed service agreement provided such upgrade is not required by a subsequent New Services Queue Request with an executed service agreement.
5. Baseline upgrades and Supplemental Projects may be removed from the next RTEP base case if PJM identifies that the baseline upgrade or the Transmission Owner identifies that the Supplemental Project is no longer needed, while considering if the cancellation costs for the upgrade or project might exceed the costs to complete the upgrade or project, and the construction status of the baseline upgrade/Supplemental Project has not progressed to the point that the baseline upgrade or Supplemental Project must be completed to maintain system reliability.
6. If a relevant federal, ~~state, or municipal agency~~ or ~~state~~ siting authority identifies concerns with the project through a final regulatory order ~~denying a siting application for a project included in the RTEP~~ or refuses to allow the project to move forward under the conditions specified in such order, the following guidance is provided:
  - a. The entity receiving a regulatory order from the relevant federal ~~agency, state~~

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~~agency, municipal agency, or state~~ siting authority shall promptly notify and provide PJM with a copy of such order;

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i. Upon receipt of such notice, PJM will review the impacts associated with removing the project from the RTEP or continuing to include such project in light of such final regulatory order (see section 1.4.2.1 above for guidance relative to the review process);

b. PJM shall present to the TEAC the results of PJM's re-evaluation for review and comment.

c. Projects denied siting authority in a final regulatory order by ~~a the relevant federal, state, or municipal agency, or state~~ siting authority authorities will generally be removed from the RTEP base case as determined by PJM after discussion with the relevant Transmission Owner(s) or Designated Entity and vetting with stakeholders at the TEAC. Projects will generally not remain in the RTEP models during the duration of an appellate action. Decisions to remove a baseline upgrade from the RTEP base case will be submitted to the PJM Board and decisions to remove a Supplemental Project from the RTEP base case will be submitted to the applicable Transmission Owner. In those circumstances in which PJM determines the need to deviate from this guidance, PJM will discuss such decisions with the TEAC.

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