

9.4 Allocation of Costs of Network Upgrades.

9.4.1 Network Upgrades Associated with Interconnections.

When under Section 9.3.3 it is determined that a generation or merchant transmission interconnection to a Party's system will have an impact on the Affected System such that Network Upgrades shall be made, the upgrades on the Affected System shall be paid for in accordance with the terms and conditions of the Party's OATT.

9.4.2 Network Upgrades Associated with Transmission Service Requests.

When under Section 9.3.4 it is determined that the granting of a long-term firm delivery service request with respect to a Party's system will have an impact on the Affected System such that Network Upgrades shall be made, the upgrades on the Affected System shall be paid for in accordance with the terms and conditions of the Party's OATT.

9.4.3 Network Upgrades Under Coordinated System Plan.

The Coordinated System Plan will identify Interregional Projects as: (i) Interregional Reliability Projects, (ii) Interregional Market Efficiency Projects, and (iii) Interregional Public Policy Projects. Consistent with the applicable OATT provisions, the Coordinated System Plan will designate the portion of the Interregional Project Cost for each such project that is to be allocated to each RTO on behalf of its Market Participants. The JRPC will determine an allocation of costs to each RTO for such Network Upgrades based on the procedures described below. The proposed allocation of costs will be reviewed with the IPSAC and the appropriate multi-state entities and posted on the internet web site of the two RTOs. Stakeholder input will be solicited and taken into consideration by the JRPC in arriving at a consensus allocation of costs.

9.4.3.1 Criteria for Project Designation as an Interregional Project:

Interregional Projects must be: (1) physically located in both the MISO region and the PJM region or (2) physically located wholly in one transmission planning region but jointly determined and agreed upon to provide benefits to the other transmission planning region or both transmission planning regions. These Interregional Projects will be designated in accordance with the following criteria:

9.4.3.1.1 Interregional Reliability Project Criteria:

An Interregional Reliability Project must :

- (i) be selected both in the MISO and PJM regional planning processes and be eligible for each region's cost allocation process; and
- (ii) by agreement of the JRPC, displace one or more reliability projects in either or both PJM and MISO as defined in their respective tariffs and more efficiently or cost-effectively meet applicable reliability criteria than the displaced reliability project(s).

Through their respective regional planning processes, PJM and MISO respectively will evaluate proposals to determine whether the proposed Interregional Reliability Project(s) addresses reliability needs that are currently being addressed with reliability projects in its regional transmission planning process and, if so, which reliability projects in that regional transmission planning process could be displaced by the proposed Interregional Reliability Project. The analysis of projects that are eligible to be displaced shall only include those projects that have not yet been approved by PJM's and MISO's respective Board and made part of the RTO's respective regional transmission plan.

9.4.3.1.2 Interregional Market Efficiency Project Criteria:

Interregional Market Efficiency Projects fall into one of two categories (a) Targeted Market Efficiency Projects (TMEP) projects; or (b) Market Efficiency Projects. Network Upgrades falling into either category must meet the following criteria applicable to their respective category:

(a) –Targeted Market Efficiency Projects

- i. ~~Are evaluated as part of a Coordinated System Plan or joint study process as described in Section 9.3.5.2(c) and demonstrated to have an expectation for substantial congestion relief and addresses one or more of the identified historical market efficiency issues and~~
- ii. ~~Address one or more constraints for which at least one dispatchable generator in the adjacent market has a GLDF of 5% or greater with respect to serving load in that adjacent market, as determined using a power flow model agreed to by the JRPC constraints that meet the criteria of Section 1.1 of Attachment 3 – Interregional Coordination Process and~~
- iii. ~~Have~~ has an estimated in-service date by the 4th summer peak season from the summer peak season date in which the upgrade project is approved by the last Board of the RTOs and
- iv. ~~H~~has a benefit to cost ratio of at least 1.00 and
- v. ~~has a total project cost not to exceed 4 times estimated annual project benefits and~~
- vi. ~~Is~~ with input from IPSAC, is recommended by the JRPC as a TMEP and approved by the Boards of each RTO

(a)(b) Market Efficiency Projects

- (i) ~~has an estimated Project Cost of \$20,000,000 or greater;~~
- (ii) is evaluated as part of a Coordinated System Plan or joint study process, as described in Section 9.3.5 of the JOA;

Comment [A1]: Dynamic cost cap

Comment [A2]: Deleted in the December 2015 filing

(iii) meets the threshold benefit to cost ratio as prescribed under the terms of, and using the benefit and cost measures prescribed under Section 9.4.3.1.2.1 of the JOA;

(iv) qualifies as an economic transmission enhancement or expansion under the terms of the PJM RTEP and also qualifies as a market efficiency project under the terms of Attachment FF of the Midwest ISO OATT (including all applicable threshold criteria), provided that any minimum Project Cost threshold required to qualify a project under either the PJM RTEP or Midwest ISO OATT shall apply the Project Cost of the Interregional Market Efficiency Project and not the allocated cost; and

(v) addresses one or more constraints for which at least one dispatchable generator in the adjacent market has a GLDF of 5% or greater with respect to serving load in that adjacent market, as determined using the Coordinated System Plan power flow model.

9.4.3.1.2.1 Determination of Benefits to Each RTO from an Interregional Market Efficiency Project:

(a) Targeted Market Efficiency Projects

The RTOs shall jointly evaluate the benefits to the combined markets and to each RTO for each potential TMEP resulting from Section 9.3.5.2(c), according to the following process:

- (i) Determine the GLDFs of each RTO on eligibility of the targeted constraints using criteria as addressed in Section 1.1 of the Attachment 3 – Interregional Coordination Process
- (ii) With input from IPSAC the TO(s) where the project is located, determine the estimated total installed project cost in study year dollars
- (iii) Determine the benefit to cost ratio, for each potential TMEP, calculated as 54 times the estimated historical, annual, total congestion cost relief from the average over the 23 years divided by the estimated total installed capital cost in study year dollars
- (iv) The estimated historical annual total congestion costs is the sum of each RTO's Day-Ahead Market congestion and Real-time (RT) balancing congestion; where the Day-Ahead (DA) congestion of each RTO is representative of each eligible flowgate's DA commercial flow times the RTO's DA shadow price, the RT balancing congestion for each RTO is representative of the difference between the RT and DA commercial flow for each RTO times the RT

Comment [A3]: This shorter payback period already discounts the benefits and would be in lieu of directly discounting DA + Balancing Congestion benefits for hedging. Such a project, would be paid back 5 times faster than a 20 year period IMEP for assets with a 40 year life span. Assuming no discount for ARR credits, the project would have a BCR of 5 to 1. If you assume total congestion can be discounted 80% for hedging, the undiscounted 5 to 1 BCR discounted 80%, would still be a 1 to 1 BCR. This would be a preferred approach over trying to estimate actual ARR credits and possibly having a zero or negative benefit to relieving historically congested constraints and leveling LMP's.

The RTOs have different philosophies on managing ARR/FTR markets. Rather than trying to compromise on the equity issues that creates, making a simplifying assumption that some percentage of congestion is un-hedged (10-20%) would incorporate the hedging discount and still keep TMEPs as an effective tool.

Comment [A4]: 2 years might be a more agile approach if there is residual congestion after an upgrade, possibly on a new constraint in the same vicinity

shadow price for flowgate for each RTO for each DA and RT binding hour of each historical calendar year

(v) DA commercial flow is representative of each RTO's total cleared DA generation, load and export/import transaction impacts in any given hour to each flowgate. RT commercial flow is representative of each RTO's total cleared RT generation, load and export/import transaction impacts in any given hour to each flowgate

(vi) The total expected congestion cost relief amount for a project would be the expected congestion cost changes using the project's impact the targeted monitored constraint in the sensitivity case as a reference as described in Section 9.4.3.1.2 (a) (i); where the proportional amount of the targeted flowgate's historical total congestion cost is added as a benefit when the flowgate is substantially relieved by the project in the sensitivity case

(b) Market Efficiency Projects

The RTOs shall jointly evaluate the benefits to the combined Midwest ISO and PJM markets, and to each market individually, by evaluating multiple metrics using a multi-year analysis to determine whether a proposed project qualified as an Interregional Market Efficiency Project. The RTOs shall perform this evaluation as follows:

(i) The RTOs shall utilize a benefit metric to analyze the anticipated annual economic benefits of construction of a proposed Interregional Market Efficiency Project to Transmission Customers of each RTO. Benefits are measured for a project by the estimated change in the benefit metric with and without the incorporation of the proposed project. The benefit metric is based upon the impact of the project on: (1) APC (adjusted to account for purchases and sales) and (2) NLP. The benefit metric for each RTO shall be developed by weighting the APC benefit and the NLP benefit. The benefit metric shall be calculated as the sum of seventy percent (70%) times the change in APC benefit for each RTO plus thirty percent (30%) times the change in NLP benefit for each RTO where the change in APC and NLP is calculated by subtracting the APC and NLP values determined without the proposed Interregional Market Efficiency Project:

$$\text{Benefit Metric} = (70\% \text{ of change in APC} + 30\% \text{ of change in NLP})$$

The APC for each RTO represents each RTO's production costs adjusted for interchange purchases and sales. For each simulation hour in which an RTO is selling interchange, the APC shall be

calculated by multiplying the interchange sales MW times the RTO's generation-weighted LMP and then subtracting this value from the RTO's production cost. For each simulation hour in which an RTO is purchasing interchange, the APC shall be calculated by multiplying the interchange purchase MW times the RTO's load-weighted LMP and then adding this value to the RTO's production cost.

The NLP benefit for each RTO represents each RTO's gross load payment minus the estimated value of congestion-hedging transmission rights in each RTO. The NLP shall be calculated by multiplying the LMP at each modeled load bus in the RTO by the load (in MW) at the bus, for each simulation hour (load LMP * load (in MW)), and then subtracting from that product the estimated value of congestion-hedging transmission rights for that hour. For each simulation hour, the value of an RTO's transmission rights shall be calculated by subtracting the RTO generation-weighted LMP from the RTO load-weighted LMP and then multiplying this difference times the lower of the RTO's total generation MW level or the RTO's total load MW level.

The benefit metric shall be calculated for each RTO for each year of simulation. Benefits for intermediate years between simulated years will be based on interpolation. The annual benefit for an Interregional Market Efficiency Project shall be determined as the sum of the benefit values for each RTO. The total project benefit shall be determined by calculating the present value of annual benefits for, at a minimum, the first ten years of project life after the projected in-service year, with a maximum planning horizon of 20 years from the current year.

(ii) The RTOs shall employ a threshold benefits-to-costs ratio test to evaluate a potential Interregional Market Efficiency Project. Only projects that meet the benefits-to-costs ratio threshold shall be designated as an Interregional Market Efficiency Project. The costs applied in the benefits-to-costs ratio shall be the present value, over the same period for which the project benefits are determined, of the annual revenue requirements for the project. The annual revenue requirements for the Interregional Market Efficiency Project are determined from the estimated Interregional Market Efficiency Project installed costs and the fixed charge rate applicable to the constructing transmission owner(s).

The benefits-to-costs ratio threshold for a project to qualify as an Interregional Market Efficiency Project shall be 1.25 to 1. To determine the present value of the annual benefits and costs, the discount rate shall be based on the transmission owners' most recent after-tax embedded cost of capital weighted by each transmission owner's total transmission capitalization. Each transmission owner shall provide the RTOs with the transmission owner's most recent

after-tax embedded cost of capital, total transmission capitalization, and levelized carrying charge rate, including the recovery period. The recovery period shall be consistent with recovery periods allowed by FERC for comparable facilities.

(iii) Using the cost allocated to each RTO pursuant to Section 9.4.3.2.2 of the JOA, and the Coordinated System Plan model, including using the same simulation years, each RTO will evaluate the project using its internal criteria to determine if it qualifies as an economic transmission enhancement or expansion under the terms of the PJM RTEP and also qualifies as a market efficiency project under the terms of Attachment FF of the Midwest ISO OATT.

9.4.3.1.3 Interregional Public Policy Project Criteria:

Interregional Public Policy Projects must meet the following criteria:

- (i) be selected both in the MISO and PJM regional planning processes and be eligible for each region's cost allocation process; and
- (ii) by agreement of the JRPC, displace one or more regional projects addressing public policy in MISO or one or more public policy projects in PJM as defined in their respective tariffs and more efficiently or cost-effectively meet applicable public policy criteria than the displaced regional project(s).

Through their respective regional planning processes, PJM and MISO respectively will evaluate proposals to determine whether the proposed Interregional Public Policy Project(s) addresses public policy needs that are currently being addressed with public policy projects in its regional transmission planning process and, if so, which public policy projects in that regional transmission planning process could be displaced by the proposed Interregional Public Policy Project. The analysis of projects that are eligible to be displaced shall only include those projects that have not yet been approved by PJM's and MISO's respective Board and made part of the RTO's respective regional transmission plan.

9.4.3.2 Interregional Project Benefits and Shares:

The Coordinated System Plan shall designate the share of the Project Cost to be allocated to each RTO as set forth in the following subsections:

9.4.3.2.1 Cost Allocation for an Interregional Reliability Project:

The cost of an Interregional Reliability Project, selected in the regional transmission plans of both PJM and MISO, will be allocated as follows:

- (i) The share of the costs an Interregional Reliability Project allocated to a region will be determined by the ratio of the present value(s) of the

estimated costs of such region's displaced reliability projects as agreed to by the RTOs to the total of the present value(s) of the estimated costs of the displaced reliability projects in both regions that have selected the Interregional Reliability Project in their respective regional plans.

(ii) For purposes of this subsection, a displaced reliability project's estimated costs shall be determined by PJM and MISO in accordance with their respective procedures for defining project estimated costs. Notwithstanding the foregoing, both RTOs shall work to ensure that their cost estimates for displaced reliability projects are determined in a similar manner. The applicable discount rate(s) used for the MISO region shall be the discount rate proposed by the Transmission Owner that produces the cost estimate for the proposed project. The applicable discount rate(s) used for the PJM region shall be the discount rate included in the assumptions reviewed by the PJM Board of Managers each year for use in the economic planning process.

(iii) Costs allocated to each region shall be further allocated within each region pursuant to the cost allocation methodology contained in each region's respective regional transmission planning process.

9.4.3.2.2 Cost Allocation for an Interregional Market Efficiency Project:

For Interregional Market Efficiency Projects that meet all of the qualifications in Section 9.4.3.1.2, the applicable project costs shall be allocated to the respective RTOs in proportion to the net present value of the total benefits calculated for each RTO pursuant to Section 9.4.3.1.2.1(a).

9.4.3.2.3 Cost Allocation for an Interregional Public Policy Project:

The cost of an Interregional Public Policy Project, selected in the regional transmission plans of both PJM and MISO, will be allocated as follows:

(i) The share of the costs for an Interregional Public Policy Project allocated to a region will be determined by the ratio of the present value(s) of the estimated costs of such region's displaced public policy projects to the total of the present value(s) of the estimated costs of the displaced public policy projects in both regions that have selected the Interregional Public Policy Project in their respective regional plans.

(ii) For purposes of this subsection, a displaced regional public policy project's estimated costs shall be determined by PJM and MISO in accordance with their respective procedures for defining project estimated costs. Notwithstanding the foregoing, both RTOs shall work to ensure that their cost estimates for displaced public policy projects are determined in a similar manner. The applicable discount rate(s) used for the MISO

region shall be the discount rate developed by MISO for cost estimates for projects under review by the MISO Board of Directors. The applicable discount rate(s) used for the PJM region shall be the discount rate included in the assumptions reviewed by the PJM Board of Managers each year for use in the economic planning process.

(iii) Costs allocated to each region shall be further allocated within each region pursuant to the cost allocation methodology contained in each region's respective regional transmission planning process.

9.4.3.3 Determination of Interregional Cost Allocation Share Outside of Coordinated System Plan:

Either RTO may request that a project be tested against the interregional cost allocation criteria during the interim periods between periodic formal releases of the Coordinated System Plan. The RTOs will conduct reviews between the formal cycles on at least an annual basis. Such tests will be performed on the best available joint planning model, as determined by the JRPC.

The joint planning model will be a minimum 5-year horizon case, modeling peak summer conditions, and will be developed by February of each year. It will be based on the current RTEP basecase for PJM and the current MTEP basecase for the Midwest ISO. The basecase developed by each RTO will be based on documented procedures, which, in turn, will guide the development of the joint RTO planning model. Any disputes that arise will be resolved through the dispute resolution procedures documented in Article XIV. Each year the model will be updated by the RTOs to include changes to long term firm transmission service, load forecast, topology changes, generation additions/retirements and any other relevant system changes that may have occurred since the previous years' basecase development. The joint RTO planning model will be available to any member of PJM or the MISO.

9.4.3.4 Cost Recovery of Interregional Allocation Shares:

The cost recovery of any share of cost of an Interregional Project allocated to either RTO shall be recovered by each RTO according to the applicable tariff provisions of the RTO to which such cost recovery is allocated.

9.4.3.5 Transmission Owners Filing Rights:

Nothing in this Section 9.4 shall affect or limit any Transmission Owners filing rights under Section 205 of the Federal Power Act as set forth in the applicable Tariffs and applicable agreements.

9.4.3.6 Amendments:

The RTOs shall amend Article IX of this Agreement in accordance with the applicable tariffs and/or agreements.