

Transmission Planning Improvement Task Force (TPITF)
ITP Model Development
Strawman Proposal

Background

The Transmission Planning Improvement Task Force (TPITF) is responsible for developing recommendations that will produce more progressive, forward-thinking, regional planning processes that are more responsive to the continued growth of SPP’s transmission system, markets, challenges, and opportunities presented by changing federal and state energy and environmental regulations, and NERC compliance requirements.

The TPITF is proposing the consolidation of the ITPNT, ITP10, and TPL Steady State assessments into an 18-month ITP process that will produce an annual report including project recommendations.

Purpose

This strawman proposal was developed to provide a framework around which working groups can focus their discussion on the development of reliability and economic model sets for the consolidated ITP process. These models sets will also serve as the basis for Generation and Transmission Service studies as well as future ad-hoc studies.

Current Models

<u>Description</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 5</u>	<u>Year 10</u>	<u>Total</u>
<u>2016 ITPNT Reliability</u>	----	<u>Scenario 0: ITPNT 2017 SP & WP</u> <u>Scenario 5: ITPNT 2017 SP & WP</u> <u>CBA: ITPNT 2017 SP & WP</u>	<u>Scenario 0: ITPNT 2020 SP & WP</u> <u>Scenario 5: ITPNT 2020 SP & WP</u> <u>CBA: ITPNT 2020 SP & WP</u> <u>Scenario 0, 5, & CBA (off-peak): ITPNT 2020 L</u>	----	<u>15</u>
<u>ITP10 Economic</u>	----	----	<u>Futures (1/2/3): 8760 hrs</u>	<u>Futures (1/2/3): 8760 hrs</u>	<u>6</u>
<u>ITP10 Reliability</u>	----	----	<u>DC/AC Future (1/2/3): S & L</u>	<u>DC/AC Future (1/2/3): S & L</u>	<u>12</u>
<u>TPL - 2015 Steady State Assessment</u>	<u>R2.1.1 Y-1 Peak: MDWG 2016 S (base) & ITPNT 2016 SP5 (sensitivity)</u> <u>R2.1.2 Y-1 Off-Peak: MDWG 2016 L (base) & ITPNT 2016 L5 (sensitivity)</u>	----	<u>R2.1.1 Y-5 Peak: MDWG 2020S (base) & ITPNT 2020 SP5 (sensitivity)</u>	<u>R2.2.1 Y-10 Peak: MDWG 2025 S (base)</u>	<u>0</u>

Reliability

The model sets currently used for the 2016 ITPNT consist of the following:

Description	Scenario-0	Scenario-5	CBA
Year 2 peak	ITPNT 2017SP ITPNT 2017WP	ITPNT 2017SP ITPNT 2017WP	ITPNT 2017SP ITPNT 2017WP
Year 5 peak	ITPNT 2020SP ITPNT 2020WP	ITPNT 2020SP ITPNT 2020WP	ITPNT 2020SP ITPNT 2020WP
Year 5 off-peak	ITPNT 2020L	ITPNT 2020L	ITPNT 2020L

Economic

Description	Year-5	Year-10
Economic: Futures 1/2/3	8760 hrs	8760 hrs
DC/AC: Futures 1/2/3	Summer Light Load	Summer Light Load

TPL – 2015 TPL Steady State Assessment

Requirement	Description	Base-Case	Sensitivity-Case
R2.1.1	Year 1 Peak	MDWG 2016S	ITPNT 2016SP5
R2.1.1	Year 5 Peak	MDWG 2020S	ITPNT 2020SP5
R2.1.2	Year 1 Off-Peak	MDWG 2016L	ITPNT 2016L5
R2.2.1	Year 10 Peak	MDWG 2025S	N/A

Proposed Models

The TPITF is proposing the development of reliability, compliance, and economic models for Years 2, 5, and 10. Descriptions of the various model sets are as follows.

Description	Year 2	Year 5	Year 10	Total Model Sets
Reliability: CBA	One Future Coincident Peak On/Off-Peak (2)	Up to Three Futures Coincident Peak On/Off-Peak (6)	Up to Three Futures Coincident Peak On/Off-Peak (6)	14
Reliability: Base Scenario	Summer Winter Light Load Non-coincident Peak (3)	Summer Winter Light Load Non-coincident Peak (3)	Summer Winter Light Load Non-coincident Peak On-Peak (3)	9
Reliability: Alternate Scenario	Summer Winter Light Load (3)	Summer Winter Light Load (3)	---	6
Economic	One Future Coincident Peak 8760 (1)	Up to Three Futures Coincident Peak 8760 (3)	Up to Three Futures Coincident Peak 8760 (3)	7
TPL: Powerflow	---	---	Summer Winter Light Load Non-coincident Peak On-Peak (3)	<u>30</u>

Reliability

Regional and Sub-Regional Planning (ITP Models)

At least one (1) scenario powerflow model will be required in order to meet the reliability planning requirements for the SPP region. This scenario model will be developed as an indicative representation of how entities within SPP responsible for serving network load would serve network load utilizing firm resources only. This scenario model would consist of non-coincident peak load forecasts, assumed firm transmission service usage levels, and expected conventional and renewable resource output levels. A second scenario model, to be determined by the TPITF, could be developed as an alternative assumption for how network load within the SPP would be served with firm resources and firm transactions only.

In addition to the scenario powerflow model(s), CBA powerflow models will be developed. The CBA powerflow models will be developed as an indicative representation of how entities within SPP responsible for serving network load would serve network load in the SPP Integrated Marketplace. This CBA model would consist of coincident peak load forecasts for the SPP region and the security constrained commitment and dispatch of both firm and non-firm generating resources derived from economic planning models. Interchange between SPP and Tier 1 would be determined based on price differentials that may include hurdle rates as developed with the existing economic process. TPL assessments will not be conducted on CBA powerflow models because they do not include firm generation resources and firm transmission service as required by the standards.

TPL

The Year 2, 5, and 10 scenario model sets utilized for regional and sub-regional reliability planning would be utilized as the base model sets for TPL assessments. However, a sensitivity case is required in addition to the base case model for TPL compliance. The sensitivity case may vary any assumption(s) of the scenario model sets utilized for regional and sub-regional reliability planning for the TPL compliance assessment. Justification for the selected sensitivity case will be required for compliance.

TPL requirements for Short Circuit and Stability have not yet been addressed by the TPITF. Once addressed, additional models may need to be developed.

Transmission Service

The Year 2, 5, and 10 scenario model sets utilized for regional and sub-regional reliability planning would be utilized as the base model(s) for transmission service studies. However, these base model(s) will be adjusted as necessary to execute the study of aggregate transmission service requests consistent with the tariff provisions and business practices that govern the process.

The base model set will not include the consolidated balancing authority (CBA) model, but instead only the base scenario(s) in which each entity's firm resources and transactions are dispatched to serve each entity's network load. As a result, upgrades resulting from the transmission service process should represent those necessary to support the firm transmission service requests that were added to the base model for study; also ensuring transmission facilities are not approved to support non-firm market transactions. This should also maintain consistency between the firm system capacity utilized to honor the transmission service and the firm system capacity that may be utilized as ARRs and ultimately TCRs in the TCR market.

Generator Interconnection

The Year 2, 5, and 10 scenario model sets utilized for regional and sub-regional reliability planning will be utilized as the base model sets for generator interconnection studies. However, the base model set will be adjusted as necessary to execute the study of generator interconnection service requests consistent with the tariff provisions and business practices that govern the process.

Economic

Economic models will be developed to identify and assess solutions to the public policy and economic needs of the SPP system. Economic models will be developed for three (3) study years (Years 2, 5, and 10). One (1) economic model will be developed for the reference case future in Year 2. It is assumed that multiple future cases are not necessary for Year 2 due to the limited uncertainty in policy or other factors impacting the system that could be implemented in such a short time frame. One (1) economic model will be developed for the reference case future in Year 5 plus up to an additional two (2) economic models for two (2) incremental futures. One (1) economic model will be developed for the reference case future in Year 10 plus up to an additional two (2) economic models for two (2) incremental futures as well. As a result, up to seven (7) total economic models will be developed to support economic assessments.

Working Group Considerations

As working groups discuss the proposed models, consideration is asked to be given to:

- Use of coincident versus non-coincident peaks for CBA powerflow models - TWG
- DC tie modeling - TWG
- Intermittent generation dispatch modeling – ESWG/TWG
- Firm transmission service accounting – TWG
- CBA topology rules for Year 2 and 5 – TWG/ESWG
- Potential need for TSS shoulder case for Year 10

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