# Scenario 1

**Scenario Title:** Inter-Regional Capabilities and Constraints during Winter Conditions

**Scenario Submitted by:** Example Scenario 1

**Study Case:** 2018 Winter Peak

General Description and Premise

This scenario would assess the Eastern Interconnection's ability to transfer large amounts of power among regions of interest during winter peak conditions. The 2018 model year would incorporate the generation retirements and other system changes associated with the implementation of the EPA MATS rules. Flow patterns for winter conditions are anticipated to be substantially different than summer peak modeling. In addition, winter operations are growing in complexity as gas-fired generation, renewables, and demand-side options continue to increase as percentage of the overall generation mix. Many factors come in to play during winter conditions. Gas pipeline capacity is more constrained during winter than summer conditions. Wind resources generally have higher capacity factors while solar resources have shorter production hours. Load profiles are different and may impact the availability of demand-side options. Facility ratings are typically higher, enabling flow patterns that may not be feasible at other times. This scenario would provide both an assessment of inter-regional capabilities and constraints for 2018 winter conditions, and also would provide suitable modeling to enable independent analysis by transmission planners and other industry analysts.

In this scenario, the EIPC SSMLFWG planners would develop guidance and conform the modeling of the 26 planning areas in the eastern interconnection into appropriate roll-up modeling to perform inter-regional assessments for winter peak conditions. The EIPC SSMLFWG would then assess the ability of the system to move power among specific regions of interest during winter peak conditions and identify associated transmission constraints. The results of the analysis may identify potential constraints between regions during winter peak conditions which might impact the ability to transfer desired amounts of renewable or gas generation between regions. The results may also provide insight into the ability to access neighboring regions for assistance during severe winter conditions. In addition to the EIPC SSMLFWG analysis conducted through the scenario, the modeling will be available to planners and other interested parties to conduct independent analyses of specific winter conditions and resource scenarios.

Questions to be Answered Based on Power Flow Analysis

1. What constraints arise when renewables, gas generation, etc are transferred during winter conditions?

Modeling Parameters

- Create a 2018 roll-up winter peak steady state load-flow model building from the PAs current load forecasts, resource expansion plans, and transmission expansion plans.
- Perform 5000 MW regional transfers on the 2018 winter peak model.
- Transfers will be based upon the PAs defined in Table 1 below (Participation in the area is based upon PAs that are parties to the EIPC):

| A | B | C | D | E | F |
|---|---|---|---|---|---|
| FPL | MAPPCOR | NYISO | PJM | DEC | SPP |
| JEA | MISO | ISONE | | DEP | |
| DEF | ATC | IESO | | LGE/KU | |
| | | NB | | GTC | |
| | | | | PS | |
| | | | | SCEG | |
| | | | | SC | |
| | | | | SOCO | |
| | | | | MEAG | |
| | | | | ALOCA | |
| | | | | TVA | |
| | | | | EEI | |

**TABLE 1**[1]

- Transfers will be based upon the definitions in Table 1 and performed based upon the transfer scenarios listed below (Participation in the transfer is based upon PAs that are parties to the EIPC):
  - Icy Midwest warm Southeast. Transfer from E to B.
  - Icy Northeast warm South. Transfer from E and F to C and D.
  - Icy North. Transfer from E and F to B, C & D.

Resource Modifications

- Transfers will be modeled as uniform generation to load shift between areas of interest.
- Transfer sources will include available generation, including off-line units, honoring machine operating limits.
- Transfer sinks will be allocated amongst the sink on a load ratio share.

[1] Transfers may be modified as interest dictates.

## Scenario 2

**Scenario Title:** Inter-Regional Capabilities and Constraints during Spring Peak Conditions

**Scenario Submitted by:** Example Scenario 2

**Study Case:** 2018 Spring Peak

General Description and Premise

This scenario would assess the Eastern Interconnection's ability to transfer large amounts of power among regions of interest during spring peak conditions. The 2018 model year would incorporate the generation retirements and other system changes associated with the implementation of the EPA MATS rules. Flow patterns for spring conditions are anticipated to be substantially different than summer and winter peak modeling. In addition, spring operations are growing in complexity as gas-fired generation, renewables, and demand-side options continue to increase as percentage of the overall generation mix. Many factors come in to play during spring conditions. Generation resources are more likely to be off-line due to lower loads and due to maintenance outages. Wind resources generally have higher capacity factors while solar resources have shorter production hours than summer but higher than winter. This scenario would provide both an assessment of inter-regional capabilities and constraints for 2018 spring conditions, and also would provide suitable modeling to enable independent analysis by transmission planners and other industry analysts.

In this scenario, the EIPC SSMLFWG planners would develop guidance and conform the modeling of the 26 planning areas in the eastern interconnection into appropriate roll-up modeling to perform inter-regional assessments for spring peak conditions. The EIPC SSMLFWG would then assess the ability of the system to move power among specific regions of interest during spring peak conditions and identify associated transmission constraints. The results of the analysis may identify potential constraints between regions during spring peak conditions which might impact the ability to transfer desired amounts of renewable or gas generation between regions. The results may also provide insight into the ability to access neighboring regions for assistance during periods of significant resource outages during spring conditions. In addition to the EIPC SSMLFWG analysis conducted through the scenario, the modeling will be available to planners and other interested parties to conduct independent analyses of specific spring conditions and resource scenarios.

Questions to be Answered Based on Power Flow Analysis

1. What constraints arise when renewables, gas generation, etc are transferred during spring conditions?

Modeling Parameters

- Create a 2018 roll-up spring peak steady state load-flow model building from PAs current load forecasts, resource expansion plans, and transmission expansion plans.
- Perform 5000 MW regional transfers on the 2018 spring peak model.
- Transfers will be based upon the PAs defined in Table 1 from scenario 1.
- Transfers will be based upon the definitions in Table 1 and performed based upon the transfer scenarios listed below (Participation in the transfer is based upon PAs that are parties to the EIPC):
  - Windy Midwest warm Southeast. Transfer from B to E.
  - Windy Southwest warm Northeast. Transfers from F to C and D.
  - Windy Midwest and Southwest warm Southeast and Northeast. Transfer from B and F to C, D, and E.

Resource Modifications

- Transfers will be modeled as uniform generation to generation shift between areas of interest.
- Transfer sources will include available generation, including off-line units, honoring machine operating limits.
- Transfer sinks should be on-line generation, excluding nuclear plants.