



Eastern Interconnection Planning Collaborative

State of the Eastern Interconnection

“A description of Eastern Interconnection Planning Collaborative activities and summary of results from studies and analyses on the collective transmission plans in the Eastern Interconnection.”

October 3, 2018



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Executive Summary

The Eastern Interconnection Planning Collaborative (“EIPC”) is pleased to present this “State of the Eastern Interconnection” report. The EIPC is a first-of-its-kind collaborative made up of the major transmission Planning Coordinators (previously referred to as Planning Authorities) responsible for the planning of the bulk power grid throughout the Eastern Interconnection. Given the size of the Eastern Interconnection (representing approximately 2/3rd of the United States and Canada) and the significant diversity within the Interconnection, the collaboration among the Planning Coordinators through this effort marks a significant milestone in the long history of industry collaboration and coordination.¹

EIPC Planning Coordinators make up a significant portion of the Eastern Interconnection Federal Energy Regulatory Commission (“FERC”) Order 1000 planning regions shown in Figure 1 below. The Eastern Interconnection Order 1000 planning regions include:

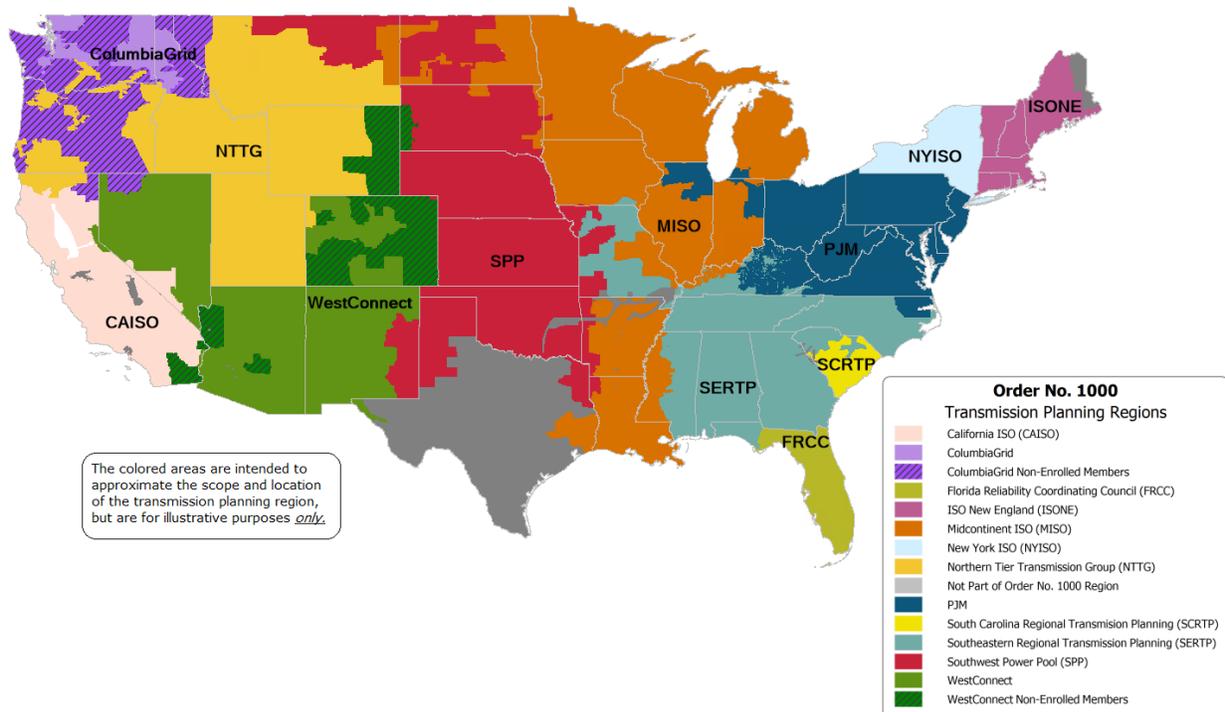
- Florida Reliability Coordinating Council (FRCC)
- ISO New England (ISO-NE)
- Midcontinent ISO (MISO)
- New York ISO (NYISO)
- PJM Interconnection (PJM)
- South Carolina Regional Transmission Planning (SCRTP)
- Southeast Regional Transmission Planning (SERTP)
- Southwest Power Pool (SPP)

The EIPC has been engaged in a number of significant collaborative activities since its inception in 2009. Specifically, the EIPC has:

¹ Formed under an agreement by 20 planning coordinators (or planning authorities) EIPC membership includes: Associated Electric Cooperative, Inc.; Cube Hydro Carolinas; Duke Energy Carolinas; Duke Energy Florida; and Duke Energy Progress; Florida Power & Light Company; Georgia Transmission Corporation (An Electric Membership Corporation); ISO New England, Inc.; JEA; Louisville Gas and Electric Company and Kentucky Utilities Company; Midcontinent Independent Transmission System Operator, Inc.; Municipal Electric Authority of Georgia; New York Independent System Operator, Inc.; PJM Interconnection; PowerSouth Energy Cooperative; South Carolina Electric & Gas Company; South Carolina Public Service Authority; Southern Company Services Inc., as agent for Alabama Power Company, Georgia Power Company, Gulf Power Company, and Mississippi Power Company; Southwest Power Pool, Inc.; and the Tennessee Valley Authority.

- Produced “Roll-up Reports” that combine the individual plans of each of the major Planning Coordinators in the Eastern Interconnection to:
 - Verify that the individual plans work together to maintain bulk power system reliability throughout the Interconnection; and
 - Identify potential constraints resulting from interconnection-wide power flow interactions that provide feedback to inform and enhance regional plans.
- Utilized its Roll-up power-flow models to analyze various future scenarios of interest to states and other stakeholders.

Figure1: FERC Order No. 1000 Transmission Planning Regions



Source: <https://www.ferc.gov/industries/electric/indus-act/trans-plan.asp>

EIPC collaborative activities (continued)

- Worked in collaboration with the Eastern Interconnection States Planning Collaborative (EISPC) under a DOE grant, to study the feasibility and costs of a



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potential build out of the Eastern Interconnection transmission system under a wide variety of future scenarios and resource mixes as identified by stakeholders as well as an extensive investigation of the Gas-Electric System Interface.²

- Provided information, data and support regarding planning issues relevant to the Eastern Interconnection to various state and federal agencies (e.g. EISPC, DOE, and FERC).
- Provided input to DOE on its Annual Transmission Data Report.
- Provided input to DOE-NREL on the Eastern Renewable Integration Study and its use of an EIPC Roll-up case as the starting point for that study.

EIPC remains currently engaged in a number of interconnection-wide coordination efforts that include:

- Discussions with NERC to assume the role of Designated Entity to manage the Eastern Interconnection model building development performed by MMWG. (These discussions are currently on hold while leadership transitions at NERC and the Regional Entities are completed and their updated strategic plans are implemented.)
- Development of an interconnection-wide production cost model that may be suitable as a starting point for individual Planning Coordinators to update their respective models.
- Improvements of system models of the Eastern Interconnection as a basis of conducting analyses that examine the trends in future year frequency responses in support of the NERC Essential Reliability Services Working Group (ERSWG) and the NERC Long Term Reliability Assessment.

This report intends to serve as an informational tool for policymakers and regulators. This report provides objective information from those directly charged with the responsibility to plan a reliable, transmission grid in the Eastern Interconnection. It addresses the present and future state of transmission planning for bulk power grid reliability and the interregional coordination of those efforts. In this sense, the report provides a firm, factual basis that policymakers and regulators can use when considering questions such as:

- *Is the bulk power grid in the Eastern Interconnection being planned in a manner that adequately addresses bulk power reliability on a broad interconnection-wide basis?*

² The final reports from EIPC's work undertaken with the support of the US Department of Energy can be found at www.eipconline.org. EISPC is now called the National Council on Electricity Policy (NCEP).



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- *Is there coordination among the Planning Coordinators in the Eastern Interconnection to identify appropriate synergies and opportunities for more efficient or cost-effective interregional solutions?*
- *What EIPC activities and capabilities can be used to inform policymakers, regulators and other stakeholders as to the present and future state of the bulk power grid serving the Eastern Interconnection?*

EIPC analysis coordinates the local and regional compliance analyses of the individual Order 1000 Planning Coordinator regions. This report complements, but does not substitute for, those individual assessments of reliability. Because the Planning Coordinators are the entities actually responsible for developing plans for their respective regions, by definition the information utilized in the EIPC analyses is more granular than that which NERC employs to conduct its annual and seasonal assessments. In that sense, this report also complements, but is not a substitute for, regular NERC assessments published pursuant to Section 215 of the Federal Power Act and NERC's overall reliability assessment responsibilities.

EIPC shares information among Planning Coordinators as the grid transforms to one with increased penetration of variable and distributed energy resources while at the same time many traditional generating resources face retirement risks. EIPC technical forums provide members the opportunity to share lessons learned from the integration of new and advanced technologies. EIPC continues to address system planning issues, which include: (1) the coordination of study data and models, (2) the development of procedures and conducting studies that quantify the frequency response of the Eastern Interconnection as the resource composition changes, and (3) the consideration of grid modernization issues.

Conclusions

The Eastern Interconnection grid is being planned in a coordinated manner facilitated in part by the work of EIPC. Studies done by EIPC support the following conclusions:

- The Eastern Interconnection is being successfully planned to meet reliability requirements;
- Coordination of planning is being conducted on an interconnection basis;
- The Roll-up analyses demonstrate that the respective Planning Coordinator transmission planning and interconnection processes, which explicitly include requirements for coordination, have yielded transmission plans that are well coordinated on a regional and interconnection-wide basis; and



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- Planning Coordinator regional transmission plans, including generator retirements and additions, will require continued study enhanced by broader interconnection-wide coordination to demonstrate that individual regional plans do not conflict with other regional plans.



Summary of EIPC Processes and Results

The Eastern Interconnection is being planned to meet all NERC reliability requirements both today and over a 10-15 year planning horizon.³ The individual Planning Coordinators utilize planning and coordination processes, with regional stakeholder input, to assess the performance of their systems; and to identify solutions that address reliability, economic, and public policy needs appearing over that planning horizon. These processes meet the individual Planning Coordinator transmission needs in a manner that is coordinated with both their immediate neighbors and within the broader footprint of the Eastern Interconnection.⁴

FERC-jurisdictional EIPC members must comply with the requirements of FERC Order 1000 that include:

- The sharing of information about the respective needs of each region and potential solutions to these needs
- The identification and joint evaluation of interregional transmission facilities that may be more efficient or cost-effective solutions to satisfy regional needs

Each pair of neighboring Order 1000 planning regions performs coordinated planning pursuant to the interregional coordination requirements and filings accepted by FERC for jurisdictional entities. Although FERC Order 1000 requires coordinated planning between neighboring systems, it does not require coordination of planning over a broader footprint. EIPC efforts provide an additional forum to complement interregional coordination of the combined plans of the regional Planning Coordinators from an interconnection-wide basis. While reliability requirements are achieved in the first instance at the regional level through regional processes, the work undertaken at EIPC confirms that the regional plans mesh properly into a combined plan for the interconnection.

³ NERC's traditional definition of "reliability" consists of two fundamental concepts – adequacy and operating reliability. Adequacy is the ability of the electric system to supply the aggregate electric power and energy requirements of the electricity consumers at all times, taking into account scheduled and reasonably expected unscheduled outages of system components. Operating Reliability is the ability of the electric system to withstand sudden disturbances such as electric short circuits or unanticipated loss of system components. <https://www.nerc.com/news/Documents/Understanding%20the%20Grid%20DEC12.pdf#search=reliability%20concepts> The historic NERC Operating Policies and Planning Standards were based on these concepts, and most of those policies and standards were translated into NERC's Reliability Standards.

⁴ Planning Coordinators were formerly called Planning Authorities.



The EIPC Roll-up process and reports demonstrate that the plans of any one region do not cause reliability concerns in neighboring regions.⁵ In the Roll-up process, EIPC does not repeat the work done by the Planning Coordinators on a regional basis. Rather it looks at the combined plans on an interconnection-wide basis. For example, the mix of resources to meet future power demand is changing as is the level and type of demand itself. EIPC considers these changes in the broader sense looking at the interconnection as a whole. Moreover, given policymakers recent focus on resilience of the grid, it is important that these fundamental ‘baseline’ facts be both recognized and understood at the regional and interconnection level.⁶ Although appropriate discussion and activity is centered on providing the grid with the resilience to meet potentially low probability but high impact events, it would be wrong to assume that discussion of a more resilient grid somehow implies that the grid does not meet current reliability standards, both today and in the future.

EIPC has demonstrated the ability to coordinate databases that can be used for broader studies of the Eastern Interconnection. The EIPC is currently in discussions with NERC to assume the role of the Eastern Interconnection Reliability Assessment Group in the creation of interconnection-wide models for use in such studies. In addition, work is underway to create a common production cost database and to conduct studies assessing trends in the frequency response characteristics of the Eastern Interconnection.

Introduction to Planning Requirements

FERC-jurisdictional EIPC members must comply with their respective Open Access Transmission Tariffs as filed with FERC. All EIPC members must comply with NERC standards that apply to Planning Coordinators. FERC emphasized the central importance of the regional planning processes, noting that interregional transmission coordination by neighbors should complement local and regional transmission planning processes, but not substitute for these processes.

⁵ See 2016 Roll-Up Report Executive Summary, pages iii to vii, at: <http://nebula.wsimg.com/8ba971d6d6c84ef3204cd5192c891550?AccessKeyId=E28DFA42F06A3AC21303&disposition=0&alloworigin=1>

⁶ “Resilience” of the grid represents a level of grid strength beyond reliability standards that are focused on the capability of the grid either withstanding high risk, low probability events or being capable of recovery and restoration as rapidly as possible in order to ensure continued service to customers.



Planning Coordinators design their individual transmission and resource plans to provide a reliable bulk power electric grid over the relevant planning period. For purposes of planning and consistent with Section 215 of the Federal Power Act and FERC regulations, reliability is defined as compliance with NERC standards. Although there are many applicable NERC standards, the key standards, which drive upgrades to the grid, include standards related to the modeling and analysis of the transmission grid, as well as standards that define the expected performance of the system when using those models to analyze the response to certain tests:⁷

- *MOD-031-2 — Demand and Energy Data*
- *MOD-032-1 — Data for Power System Modeling and Analysis*
- *MOD-033-1 — Steady-State and Dynamic System Model Validation*
- *FAC-010-3 — System Operating Limits Methodology for the Planning Horizon*
- *FAC-013-2 — Assessment of Transfer Capability for the Near-term Transmission Planning Horizon*
- *TPL-001-4 — Transmission System Planning Performance Requirements*
- *TPL-007-1 and TPL-007-2 — Transmission System Planned Performance for Geomagnetic Disturbance Events*

In addition, in certain specialized instances, the Planning Coordinators have the obligation to meet state and local standards (which may be more stringent than NERC standards) for the design and operation of the bulk electric system within their respective regions.

This report discusses how the Eastern Interconnection Planning Collaborative demonstrates coordinated planning beyond neighboring systems and encompassing the entire Eastern Interconnection.

Description of the Roll-Up

An active and robust process provides for planning the future grid to meet reliability requirements. Planning Coordinators develop models and perform studies for shorter time frames and for longer time frames through their own regional planning processes, which may be subject to approval by FERC (for jurisdictional transmission providers). The 'planning

⁷ A complete set of NERC Reliability Standards can be found at <http://www.nerc.com/pa/Stand/Reliability%20Standards%20Complete%20Set/RSCCompleteSet.pdf>.



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horizon' for purposes of planning in the Eastern Interconnection is generally set in five-year increments going out 10 or 15 years into the future. Planners consider system development of many factors that can change markedly over longer planning horizons, including customer demand, the future resource mix, and system topology. Coordination of models and studies with neighboring systems plays a key component of planning the system.

EIPC adds value by combining regional plans into a “Roll-Up” computer model that knits each region’s respective plans together into one large power-flow model of the system. Furthermore, the results from the Roll-Up case development, including any needed updates to underlying regional models and the results from interconnection analyses, provide information to the Planning Coordinators as feedback to their respective regional processes. The Roll-Up cases provide opportunities for conducting analyses that can be coordinated on an interconnection-wide basis.

Past Roll-Up integration cases of the Eastern Interconnection have provided a starting point for additional transfer analysis and analysis of scenarios developed with stakeholder input. The most recent cases integrated models of the expansion plans for the Eastern Interconnection as proposed in 2015, rather than providing a single “blueprint” for expanding the system.⁸

EIPC performed simulations that demonstrated the underlying regional plans are well coordinated on a broad interconnection-wide basis. Neither the individual regional plans nor the EIPC “Roll Up” are based on a single resource expansion scenario for the future. Rather, each of the individual plans are tested among a variety of resource mixes, including generation retirements and new resource additions (as well as incorporating the impacts of distributed energy resources (DERs), demand response, and energy efficiency) in accordance with their regional processes. The EIPC Roll-up analyses have provided a further level of consistent testing for the combined plans and offers a platform to conduct a broad range of sensitivity analysis using various generation dispatches, power transfer scenarios, possible changes to the future resource mix, and the impact of major generation retirements. The analyses show how changes in one region may affect bulk power reliability in a neighboring region. For example, the Roll-up work includes regional transfer analysis, transmission contingency analysis, and reliability analysis (gap analysis) that examine cross-regional impacts resulting from the combined plans.

⁸ Stakeholders who have critical energy infrastructure information (CEII) clearance from the Federal Energy Regulatory Commission (FERC) can access the EIPC models and perform their own analyses. The EIPC procedure to access the EIPC models can be found at: <http://www.eipconline.com/eipc-documents.html>



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Nevertheless, transmission plans encompass longer-term planning horizons as significant new transmission can oftentimes take years to plan, site, and construct. Appendix B in the 2025 summer Roll-up report lists the new and upgraded facilities (161 kV and above) that were projected to be in-service by 2025 when the Roll-up case was created.⁹ While the list of future new and upgraded transmission facilities changes often, this list illustrates that a substantial number of projects continue to be planned and developed to meet the reliability and resiliency needs of the transmission system in the Eastern Interconnection.¹⁰

Appendix A of this report contains links to the current regional plans of the EIPC members.

Roll-Up Analysis Findings

Two complete Roll-Up studies were performed¹¹. The first study completed in 2014, covered the 2018 and 2023 timeframes. The second study completed in 2016, covered the 2025 summer and winter timeframes.¹² Together, these studies show the EIPC successfully developed power flow models and, more importantly, that the regional system plans across the Eastern Interconnection are well coordinated.

Highlights from the Roll-Up Report completed in 2016 illustrate the depth of the analysis supporting the following conclusions:

- The Eastern Interconnection is being successfully planned to meet reliability requirements;
- Coordination of planning is being conducted on an interconnection basis; and
- The EIPC analysis, itself, did not highlight apparent deficiencies which would require substantial alteration of plans or additional interregional transmission enhancements to address identified regional reliability concerns.

⁹ Appendix B from the 2025 Roll-up Report, dated March 24, 2016 can be found at:

<http://nebula.wsimg.com/2c1e098dcfedda75c8dc0f85b1a270c9?AccessKeyId=E28DFA42F06A3AC21303&disposition=0&alloworigin=1>

¹⁰ EIPC members identified over 5000 miles and 250 transmission projects within their Planning Coordinator footprints. This is Appendix B in the 2025 Roll-up report.

¹¹ A Roll-up case was created as part of the DOE study effort in 2010 and 2011. This report only refers to the studies done after that initial Roll-up work.

¹² As with all power-flow models, the 2025 summer peak and 2025 winter peak Roll-up integration cases represent the power system for a particular “snapshot” in time.



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The “Report for 2025 Summer and Winter Roll-Up Integration Cases” details the efforts of the EIPC to produce Eastern Interconnection Roll-up integration cases for 2025 summer (2025S) and 2025 winter (2025W) and summarizes the assessments performed on those cases.¹³

Although generation and transmission facilities planned through the regional planning processes to meet regional planning goals were included in the cases, additional sensitivity analyses were conducted to reflect potential variations in resource dispatch and the resultant changes in power transfer levels.

Using the two power flow cases developed through the Roll-up process, the EIPC performed two types of analyses to investigate how the combined plans would react. An interregional transmission “gap” analysis assessed the effects that transmission contingencies in one system could have on the power flows in other systems interconnection-wide rather than just regionally. A linear transfer analysis identified the amount of power which can be reasonably and reliably transferred between regions.

Gap Analysis

The gap analysis performed by EIPC represents a screening analysis. Its results serve to inform Planning Coordinators if there may be a potential need for further detailed analyses through their regional planning processes, which could indicate new system needs or deferrals of system upgrades in future planning cycles. The issues identified in the “gap” analysis should not be construed as indicating that the baseline topology of the 2025 Roll-up model needs improvements or that an identified concern is necessarily due to unanticipated interregional interaction. In some cases, the issues identified were known problems for which maturely developed solutions had not yet been represented in the base network models or which may be addressed through developed operating practices.

As summarized in the “Report for 2025 Summer and Winter Roll-Up Integration Cases”, results from the gap analysis indicated that several facilities could face thermal loading issues. After determining these potential “gaps” in the 2025 summer and the 2025 winter Roll-up cases, the Planning Coordinators identified conceptual upgrades to inform the future planning cycles of their respective regional planning processes.¹⁴ Section 4 of the report lists the issues identified

¹³ The full 2025 Summer and Winter Roll-Up Integration Case report can be found on the EIPC website at: <http://www.eipconline.com/non-doe-documents.html>.

¹⁴ Ibid, pages 48 through 80.



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by each Planning Coordinator together with high-level conceptual upgrades and the entities with which the Planning Coordinators will be coordinating on solutions in future planning cycles.¹⁵

Linear Transfer Analysis

The Linear Transfer Analysis illustrates transfer capabilities of the transmission grid as currently planned (based on the 2025 summer and the 2025 winter Roll-up cases) under a number of transfer patterns. EIPC grouped individual Planning Coordinators into relevant multi-regional groups based on geography and size of each Planning Coordinator as follows: the Florida peninsula, the Midwest and Northwest, New York and New England, PJM, the Southeast, and the Southwest. In each case, the Canadian provinces are grouped with the U.S. systems on an electrical interconnection-wide basis.

Table ES-1, taken from the 2025 Roll-up Report, shows how the various Planning Coordinators are grouped into Areas A through F.

**Table ES-1
Groupings of Planning Areas for Transfers**

A	B	C	D	E		F
FPL	MAPPCOR	New York ISO	PJM	Duke Energy Carolinas	SC	SPP
JEA	MISO	ISO New England		Duke Energy Progress	Southern Company	
Duke Energy Florida	ATC	Ontario IESO		LGE/KU	MEAG	
	ITC	NBSO		GTC	Alcoa Power Generating, Inc. ¹⁶	
	Entergy			Power South	TVA	
				SCEG	Electric Energy, Inc.	

Table ES-2 from the same report shows the Area to Area transfers simulated in this analysis.

¹⁵ Ibid, page 82.

¹⁶ Alcoa Power Generating was a Planning Coordinator at the time of the Roll-up study. Since that study was completed, a portion of Alcoa’s assets were sold to Cube Hydro Carolinas (CHC) and CHC succeeded Alcoa as an EIPC member.

**Table ES-2
Transfers Performed**

Source	Sink					
	A	B	C	D	E	F
A					Y	
B			Y	Y	Y	Y
C		Y		Y		
D		Y	Y		Y	
E	Y	Y		Y		Y
F		Y			Y	

Each transfer case simulated a hypothetical 5,000 MW transfer between the regions by creating a simulated generation deficiency in one area and generation excess in another. For each simulation, the location of the limiting transmission facility and the location of the contingency facility are identified such that these results are available to the Planning Coordinators as feedback into their regional processes and for further analyses. In some cases, the 5,000 MW transfer created no issues, indicating that the limit between the regions is greater than 5,000 MW.

Section 5 of the report shows the results of transfer simulations among these multi-regional groups for the 2025 Roll-up Cases.¹⁷ While the linear transfer study results identified limiting transmission facilities for key interregional contingencies, constraints should not be viewed as unresolved deficiencies. The Planning Coordinators use this information in their regional and interregional processes and conduct any required follow-up analyses.

Additionally, results from the 2025 Roll-up analyses are summarized in a presentation that was given to the EIPC stakeholder community.¹⁸ EIPC has routinely shared the results from its analyses with stakeholders in order to share its work and collect feedback on its efforts.

¹⁷ Ibid, page 85.

¹⁸ Results from the 2025 Roll-up analysis can also be found in presentation format on the EIPC website at: <http://nebula.wsimg.com/e35ca2085c349fb10e214fb2c6832d3b?AccessKeyId=E28DFA42F06A3AC21303&disposition=0&alloworigin=1>.



Observations and Conclusions

- The Roll-up analyses demonstrate that the respective Planning Coordinator transmission planning and interconnection processes, which explicitly include requirements for coordination, have yielded transmission plans that are well coordinated on a regional and interconnection-wide basis.
- As documented in the NERC 2017 Long-Term Reliability Assessment, load growth has substantially declined and in some cases is negligible or even negative. As a result, the results of the Roll-up cases are not expected to change substantially in the near future.¹⁹
- Planning Coordinator regional transmission plans, including generator retirements and additions, continue to be studied and assessed with affected systems as required on an ongoing basis. As such, one can reasonably expect the broader interconnection-wide coordination would produce the same results and demonstrate the individual regional plans do not conflict with the other regional plans. However, over time, aggregate changes can have cumulative influence and should be studied in subsequent roll-up analyses on an as needed basis.
- The roll-up analyses should not be construed as indicating that an identified concern is necessarily due to unanticipated interregional interaction. In some cases, known problems are identified for which solutions are being developed or which are or will be addressed through operating practices at the regional level.

EIPC Support of State and Federal Agencies

EIPC has supported state and federal agencies with relevant and technically sound information from results of its studies. In the past, EIPC worked with the Eastern Interconnection States' Planning Council (EISPC) on the DOE Interconnection Studies Grant (DE-OE0000343). EISPC members included regulatory representatives from the 39 states of the Eastern Interconnection, the District of Columbia, and the City of New Orleans. While the EISPC published reports on their work under a companion grant to the one given to EIPC, the EIPC reports included input from the EISPC. The EISPC provided a leadership role on the stakeholder steering committee established as part of the grant.

¹⁹https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_12132017_Final.pdf#search=2017%20LTRA



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A portion of the DOE Interconnection Studies Grant included an analysis of the interface between the natural gas delivery system and the electric transmission system. This portion of the grant was known as the Gas-Electric System Interface Study. Following completion of the study, EIPC met with representatives of the DOE and FERC to convey the results of the study. FERC and NERC staff has followed up with EIPC since the completion of the Gas-Electric System Interface Study to better understand the scope of the study and its results.

Following the roll-up study of projected 2018 and 2023 summer conditions, EIPC worked with EISPC to define and conduct an analysis of a “Heat Wave and Drought” scenario based on the 2023 roll-up case. That work was an amendment to the initial roll-up case development and testing. The scenario was chosen following a broad solicitation for input from EIPC stakeholders. The EISPC submitted the Heat Wave and Drought scenario in order to identify impacted facilities in the event of severe conditions beyond those normally considered in planning studies. Starting from an updated 2023 base case, the scenario was structured with a goal of answering the question: “What constraints arise when large amounts of power are transferred to areas of need during times of extremely high temperatures and drought conditions?” Results of the Heat Wave and Drought scenario analysis can be found on the EIPC website.²⁰

Finally, EIPC continues to coordinate with state representatives through the newly revived National Council on Electricity Policy (NCEP), which functions under the NARUC umbrella.

EIPC Support to DOE

EIPC continues to support DOE as a resource for information, feedback, and analyses from the Planning Coordinators in the Eastern Interconnection. EIPC has regularly provided input to the DOE Annual Transmission Data Report, including providing data for the report and feedback on its content. EIPC comments supplement the comments provided by EIPC members individually from the perspective of their region.

EIPC has also provided input to DOE’s periodic Congestion Studies, and has reviewed and provided comments on DOE’s Regional Transmission Planning Report. In each case, EIPC serves as a single point of contact for most planning coordinators in the Eastern Interconnection.

²⁰<http://nebula.wsimg.com/0ca33e3fbfd7be8f37880ebaaa7146e2?AccessKeyId=E28DFA42F06A3AC21303&disposition=0&alloworigin=1>



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Following the DOE Interconnection Studies Grant, EIPC worked with NREL to provide input and guidance on the transmission models used for the Eastern Renewable Generation Integration Study (ERGIS). The ERGIS work used the EIPC roll-up case developed as part of the DOE Interconnection Studies Grant and modified to represent a high penetration of renewable generation, primarily wind generation.

Finally, EIPC continues to provide input to the current DOE Grid Modernization projects being conducted by the National Labs. EIPC is extensively involved in the East-West Grid Ties project, with representatives from SPP and MISO playing an integral role on those projects. EIPC is monitoring and participating on the Stakeholder Advisory Committee for the Grid Valuation project and is represented on the stakeholder team conducting a case study of the newly developed valuation process.

Future EIPC Activities

EIPC continues to engage in collaborative activities that will enhance the transmission planning and coordination activities among the Planning Coordinators in the Eastern Interconnection. The EIPC continues its work on periodic interregional transmission gap analysis and linear transfer analysis as it had in prior Roll-up studies, and to expand its collaborative coordination into additional areas where that coordination will further benefit the entire Eastern Interconnection. The planned efforts will leverage the earlier work undertaken by EIPC on roll-up case development and analyses. Specifically, the EIPC has plans for the following:

- Complete a gap and transfer analysis of a future case drawn from the Multi-Region Modeling Working Group (MMWG) library of Eastern Interconnection power flow cases. This analysis will follow the same process and approach as used in past Roll-up studies, but will start from a case developed by MMWG rather than through a separate EIPC process. This approach will provide results similar to the Roll-up efforts that can be used by the Planning Coordinators in their regional processes, demonstrate a level of resiliency of the system to certain stressors, and provide insights into the MMWG model building process.
- EIPC plans on continuing discussions with NERC to explore the potential for EIPC stepping into the role of the Designated Entity described in standard MOD-032.²¹

²¹ The appropriateness and timing of these discussions depends on the NERC and Regional Entity leadership, which is currently in transition.



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- EIPC believes it can become the group to manage the MMWG in its work to compile power flow and dynamics cases that are made available to meet the industry's needs for baseline projections of the Eastern Interconnection transmission grid development.
- Complete development of an EIPC Eastern Interconnection-wide production cost database associated with the 2025 Roll-up cases.
 - Complete development of a power flow and associated dynamics case required to perform analyses of the frequency response of the Eastern Interconnection during a period when there is a low amount of generation inertia. This case will be used to perform analyses to determine future trends on Measures 1, 2, and 4 established by the NERC Essential Reliability Services Task Force, in the face of changing resource patterns with lower system inertia (e.g. increased wind and solar resources).²² This analysis is also needed to provide input to NERC's Long Term Reliability Assessment.

These combined efforts of the EIPC Planning Coordinators provide an interconnection-wide view and overall coordination necessary to ensure that the planning process is coordinated across all regions of the Eastern Interconnection. Additionally, these efforts will allow EIPC to stand ready to provide relevant, timely, and technically sound information on issues impacting the interconnection as a whole.

²² <https://www.nerc.com/comm/Other/essntlrlbltysrvctskfrcDL/ERSTF%20Framework%20Report%20-%20Final.pdf>. Measures 1, 2, and 4 gauge the speed and manner with which the frequency on an interconnected system declines following the loss of a generation resource.



Appendix A: Current Regional Plans of the EIPC Members

1. Associated Electric Cooperative, Inc. – <http://www.southeasternrtp.com/docs/general/2017/2017-Regional-Transmission-Plan-and-Input-Assumptions.pdf>
2. Cube Hydro Carolinas – <http://www.oasis.oati.com/YAD/index.html>
3. Duke Energy Carolinas – <http://www.southeasternrtp.com/docs/general/2017/2017-Regional-Transmission-Plan-and-Input-Assumptions.pdf>
4. Duke Energy Florida – <https://www.frcc.com/AboutUs/Shared%20Documents/FRCC%202018-2020%20Strategic%20Plan%20BOD%20approved%202.22.18.pdf>
5. Duke Energy Progress – <http://www.southeasternrtp.com/docs/general/2017/2017-Regional-Transmission-Plan-and-Input-Assumptions.pdf>
6. Florida Power & Light Company – <https://www.frcc.com/AboutUs/Shared%20Documents/FRCC%202018-2020%20Strategic%20Plan%20BOD%20approved%202.22.18.pdf>
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