Technical Support Document (TSD)
for the Proposed Supplemental Federal "Good Neighbor Plan" Requirements for the 2015 8-hour Ozone National Ambient Air Quality Standard

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Resource Adequacy and Reliability Analysis
Proposed Rule TSD

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Office of Air and Radiation
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This document supports the EPA's Proposed Supplemental Federal "Good Neighbor Plan" Requirements for the 2015 8-hour Ozone National Ambient Air Quality Standard and describes projected resource adequacy and reliability impacts of the proposed rule. As used here, the term resource adequacy is defined as the provision for adequate generating resources to meet projected load and generating reserve requirements in each power region[1], while reliability includes the ability to deliver the resources to the loads, such that the overall power grid remains stable. This document is meant to serve as a resource adequacy assessment of the impacts of the proposed rule and how projected outcomes under the proposed rule compare with projected baseline outcomes in the presence of the Inflation Reduction Act (IRA). The Federal Good Neighbor Plan as promulgated on March 15, 2023 (88 FR 36654; June 5, 2023) is also included in the baseline. Subsequent stays of the Good Neighbor Plan as to twelve states pending judicial review are not included, with the effect that the baseline reflects a more stringent regulatory scenario than is currently the case, making the projections more conservative and thus the conclusions regarding adequate resource adequacy even more robust.

The proposed rule establishes emissions-trading budgets for electric generating units (EGUs) in the five covered states. The stringency of these budgets is set through assuming the installation and/or optimization of various conventional nitrogen oxides (NO_X) emissions control technologies. Covered sources would therefore be able to comply with the rule with these technologies and are not required to reduce utilization or shift generation. Nonetheless, in light of the transition of the power sector toward less emitting generating resources, as highlighted by commenters on the Good Neighbor Plan, it is anticipated that EGU owners and operators may pursue alternative compliance strategies. Should those strategies involve the curtailment or retirement of existing generating resources, commenters have separately raised concerns that this could impact the reliability of the power grid.

While such potential impacts would not be a direct result of this proposal, or the Good Neighbor Plan, but rather of the compliance choices source owners and operators may pursue, we have analyzed whether the projected effects of this supplemental proposed rule would in this regard pose a risk to resource adequacy, a key planning metric that informs grid reliability. It is important to recognize that the proposed rule would provide the multiple flexibilities of the Good Neighbor Plan that preserve the ability of responsible authorities to maintain electric reliability.. The results presented in this document show that the projected impacts of the proposed rule on power system operations, under conditions preserving resource adequacy, are modest and manageable.

The results presented in this document further demonstrate, for the specific case illustrated in the Economic Impact Analysis (EIA), that the implementation of this rule can be achieved without undermining resource adequacy or reliability. The focus of the analysis is on comparing the illustrative proposed rule scenario from the EIA to a base case (absent the rule requirements) that is assumed to be adequate and reliable. In this framework, the emphasis is on the incremental changes in the power system that are projected to occur assuming the addition of the rule to baseline conditions and regulatory requirements in the 2025, 2028 and 2030 model run years. The EPA uses the Integrated Planning Model (IPM) to project likely future electricity market conditions with and without the proposed rule.[2]

[1] As analyzed in this document, power regions correspond to aggregates of IPM regions corresponding to NERC assessment areas.

[2] See proposed rule Economic Impact Analysis for more detail on the power sector impacts of the proposed rule.

IPM's least-cost dispatch solution is designed to ensure generation resource adequacy, either by using existing resources or through the construction of new resources. IPM addresses reliable delivery of generation resources for the delivery of electricity between the 78 IPM regions, based on current and planned transmission capacity, by setting limits to the ability to transfer power between regions using the bulk power transmission system. Within each model region, IPM assumes that adequate transmission capacity exists to deliver any resources located in, or transferred to, the region. This document focusses on key regional results important to management of the power system. For a more complete presentation of the projected power sector impacts of the proposed rule, see the Economic Impact Analysis.

Overview

This rule establishes NO_X emissions budgets requiring fossil fuel-fired power plants (EGUs) in five states to participate in an allowance-based ozone season (May 1 through September 30) trading program beginning in 2025. The EGUs covered by the FIPs and subject to the budget are fossil-fired EGUs with >25-megawatt (MW) capacity. For details on the derivation of these budgets, please see Section VII.A. of the preamble.

This TSD uses the same scenario and years of analysis contained in the EIA.[3] The scenarios include a base case, and the proposed rule scenario. For purposes of this resource adequacy and reliability assessment, estimates and projections are taken from those same scenarios and years as shown in the EIA (2025, 2028, and 2030).

Summary of Changes in Operational Capacity

Total operational capacity remains similar between the base and policy scenarios. The model is constrained to disallow any incremental retirements, retrofits or builds beyond those that occur in the base case in the 2023 model run year. This constraint is relaxed in all future model run years. Operational generating capacity[4] changes from the base case in 2025, 2028 and 2030 are summarized below:

Table 1. Operational Capacity Summary (2025, 2028, 2030)

Capacity (GW)	2025	2028	2030
Base Case Operational Capacity	1,191	1,220	1,277
Minus Retirements			

[3] See Chapter 3 of the EIA for additional details on the scenarios examined.
[4] Operational capacity is any existing, new or retrofitted capacity that is not retired.

Coal	0.0	0.0	0.0
Oil/Gas	0.0	0.0	0.0
NGCC	0.0	0.0	0.0
NGCT	0.0	0.0	0.0
Nuclear	0.0	0.0	0.0
Plus Additions			
NGCC	0.0	0.0	0.0
NGCT	0.0	0.0	0.0
Wind	0.0	0.0	0.0
Solar	0.0	0.0	0.0
Storage	0.0	0.0	0.0
Other	0.0	0.0	0.0
Policy Case Operational Capacity	1,191	1,220	1,277

Since the model must maintain adequate reserves in each region, projected retirements must be offset by reliance on existing baseline excess reserves, incremental builds, and the ability to shift transmission flows between regions in response to changing generation mix. The rule is not projected to result in any incremental coal retirements, nor any incremental SCR installations above baseline levels. EPA projects that certain affected EGUs in Arizona that would be subject to a budget reflecting installation of SCR beginning in 2027 will retire for economic reasons in the baseline.

Reserve Requirements

IPM uses a target reserve margin in each region[5] as the basis for determining how much capacity to keep operational in order to preserve resource adequacy. IPM retires capacity if it is no longer needed to provide energy for load or to provide capacity to meet reserve margin during the planning horizon of the projections. Since current regional reserves may be higher than the target reserve margin for a region, IPM may retire reserve capacity if it is not economic to use it to maintain adequate reserve margins. Existing resources may also be more expensive, compared to alternatives such as building new capacity or transferring capacity from another region. As a result, some of the plants that are projected to retire will not need to be replaced. Because some existing plants eventually retire in most regions, and IPM builds no more than what it needs to maintain a target reserve margin in each region, the actual reserve margins tend to approach the target reserve margins over time. For details on projected reserve margins under the base and policy scenario, please see Appendix A-3, B-3 and C-3.[6]

Changes in Retirements and New Capacity Additions under the Proposed Rule

The incremental retirements in the proposed rule case are shown above in Table 1 and are in addition to 106 GW of coal and 19 GW of oil/gas retirements already occurring in the base case through 2030.

[5] In IPM, reserve margins are used to represent the reliability standards that are in effect in each NERC region. Individual reserve margins for each NERC region are derived from reliability standards in NERC's electric reliability reports. The IPM regional reserve margins are imposed throughout the entire time horizon.

[6] See maps of IPM regions and NERC Assessment Regions, and the table of target and projected reserve margins in Appendix D. IPM regions are based on the regions NERC uses for regional assessments. These regions are used for the Appendix tables in this document.

By 2030, the proposed rule scenario as compared to the base case leads to similar levels of overall existing coal retirements and new capacity additions (shown regionally in Table A5, B5 and C5). These retirements and additions in the projections are the result of the model's optimization of economic planning for energy and capacity needs; they do not represent required outcomes for any individual units, which will be able to consider multiple compliance options in response to the proposed rule. In particular, new additions in a base case scenario that do not occur in the policy scenario projections might, in reality, be retained under a policy if local reliability conditions rendered this development the most appropriate choice. This proposed rule, just like the Good Neighbor Plan, does not prevent generation owners from shifting retirements and additions among specific sources to ensure reliability in such circumstances.

Reserve Transfers

In cases where it is economic to transfer reserves from a neighboring region, rather than supply reserves from within a region, IPM will transfer reserves, subject to summer and winter limits that are designed to ensure that these reserves can be transferred reliably. The transfer of reserves can occur, for example, if a region retires capacity that was used in the base case to meet reserve requirements, but a neighboring region has lower cost reserves that are not needed for its own reserve requirements. To examine these transfers, the EPA analyzed the change in net transfers from each region, where the net transfer for the base and policy cases is measured by the reserves sent to neighboring regions. In these cases, a positive value signifies the reserve capacity sent to other regions is larger than the reserve capacity received from other regions (sending and receiving regions can be different), while a negative value signifies that the capacity received is larger than the capacity sent. Thus, the value measures the degree to which resources in the region were reserved for use by other regions (positive value), or where the capacity to meet load in the region was served by resources in other regions (negative value). In each case these reserve transfers represent the use of the transmission system on a firm basis for at least a season.

To look at the projected impact of the policy case on transfers, the measure used was the change in the summer reserves sent in the policy case compared to the base case. To develop a relative measure of the impact of the policy, the change in reserves was measured as a percentage of load in the sending region. This percentage gives an indication of the significance of the policy for changes in the grid. In general, the percentage changes resulting from the proposed rule are below 1% and round to 0%. For details on projected transfers under the base and policy scenarios, please see Appendix A-6, B-6 and C-6.

Appendix A: Tables by IPM Region for Proposed Rule in 2025 (Note: All Results Cumulative through Projection Year)

A1. Projected Operational Capacity in GW (2025)

Region	All generation sources		Change	Coal Only		Change
	Base	Policy	from Base	Base	Policy	from Base
US	1,191	1,191	0	144	144	0

ERCOT	135	135	0	14	14	0
FRCC	62	62	0	2	2	0
MISO - South	43	43	0	6	6	0
MISO - North	48	48	0	10	10	0
MISO - Central	84	84	0	22	22	0
ISONE	40	40	0	0	0	0
NYISO	48	48	0	0	0	0
PJM	205	205	0	25	25	0
SERC	174	174	0	30	30	0
SPP	92	92	0	20	20	0
WECC - non CAISO	180	180	0	14	14	0
CAISO	81	81	0	0	0	0

A2. Summary of Summer Peak Loads and Reserve Capacity in GW (2025)

Region	Projected Reserve Margins			
	Peak Demand Base	Peak Demand Policy	Reserve Capacity Base	Reserve Capacity Policy
US	790	790	911	911
ERCOT	72	72	82	82
FRCC	48	48	57	57
MISO - South	35	35	41	41
MISO - North	26	26	30	30
MISO - Central	65	65	76	76
ISONE	25	25	30	30
NYISO	33	33	38	38
PJM	148	148	172	172
SERC	137	137	158	158
SPP	53	53	59	59
WECC - non CAISO	96	96	109	109
CAISO	51	51	58	58

A3. Summary of Target and Projected Reserve Margin % (2025)

Region	Target Reserve Margin	Base Case	Policy Case	Policy % Above Margin	Policy Change from Base
US	15%	15%	15%	0%	0%
ERCOT	14%	14%	14%	0%	0%

FRCC	19%	19%	19%	0%	0%
MISO - South	17%	17%	17%	0%	0%
MISO - North	17%	17%	17%	0%	0%
MISO - Central	17%	17%	17%	0%	0%
ISONE	18%	18%	18%	0%	0%
NYISO	15%	15%	15%	0%	0%
PJM	16%	16%	16%	0%	0%
SERC	15%	15%	15%	0%	0%
SPP	12%	12%	12%	0%	0%
WECC - non CAISO	14%	14%	14%	0%	0%
CAISO	14%	14%	14%	0%	0%

A4. Policy Case Retired Capacity Incremental to Base Case in GW (2025)

Region	CC	Coal	CT	Nuclear	OG Steam	Total
US	0.0	0.0	0.0	0.0	0.0	0.0
ERCOT	0.0	0.0	0.0	0.0	0.0	0.0
FRCC	0.0	0.0	0.0	0.0	0.0	0.0
MISO - South	0.0	0.0	0.0	0.0	0.0	0.0
MISO - North	0.0	0.0	0.0	0.0	0.0	0.0
MISO - Central	0.0	0.0	0.0	0.0	0.0	0.0
ISONE	0.0	0.0	0.0	0.0	0.0	0.0
NYISO	0.0	0.0	0.0	0.0	0.0	0.0
PJM	0.0	0.0	0.0	0.0	0.0	0.0
SERC	0.0	0.0	0.0	0.0	0.0	0.0
SPP	0.0	0.0	0.0	0.0	0.0	0.0
WECC - non CAISO	0.0	0.0	0.0	0.0	0.0	0.0
CAISO	0.0	0.0	0.0	0.0	0.0	0.0

A5. New Capacity in Policy Case Incremental to Base Case in GW (2025)

Region	CC	CT	Wind	Solar	Storage	Other	Total
US	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ERCOT	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FRCC	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MISO - South	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MISO - North	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MISO - Central	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ISONE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NYISO	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PJM	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SERC	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPP	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WECC - non CAISO	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAISO	0.0	0.0	0.0	0.0	0.0	0.0	0.0

A6. Net Reserves Sent by NERC Assessment Region in GW (2025)

Region	Base	Policy	Change from Base to Policy	Change as a percent of summer peak
US	-0.2	-0.2	0.0	0%
ERCOT	0.0	0.0	0.0	0%
FRCC	0.0	0.0	0.0	0%
MISO - South	0.6	0.6	0.0	0%
MISO - North	-3.0	-3.0	0.0	0%
MISO - Central	-3.9	-3.9	0.0	0%
ISONE	0.0	0.0	0.0	0%
NYISO	0.3	0.3	0.0	0%
PJM	3.6	3.6	0.0	0%
SERC	1.5	1.5	0.0	0%
SPP	0.2	0.2	0.0	0%
WECC - non CAISO	7.7	7.7	0.0	0%
CAISO	-7.2	-7.2	0.0	0%

Appendix B: Tables by IPM Region for Proposed Rule in 2028 (Note: All Results Cumulative through Projection Year)

B1. Projected Operational Capacity in GW (2028)

Region	All generation sources		Change	Coal Only		Change
	Base	Policy	from Base	Base	Policy	from Base
US	1,220	1,220	0	130	130	0
ERCOT	137	137	0	13	13	0

FRCC	62	62	0	2	2	0
MISO - South	45	45	0	5	5	0
MISO - North	50	50	0	10	10	0
MISO - Central	86	86	0	20	20	0
ISONE	42	42	0	0	0	0
NYISO	48	48	0	0	0	0
PJM	211	211	0	23	23	0
SERC	179	179	0	26	26	0
SPP	92	92	0	19	19	0
WECC - non CAISO	185	185	0	13	13	0
CAISO	84	84	0	0	0	0

B2. Summary of Summer Peak Loads and Reserve Capacity in GW (2028)

Region	Projected Reserve Margins			
	Peak Demand Base	Peak Demand Policy	Reserve Capacity Base	Reserve Capacity Policy
US	802	802	924	924
ERCOT	73	73	83	83
FRCC	50	50	59	59
MISO - South	36	36	42	42
MISO - North	26	26	31	31
MISO - Central	66	66	78	78
ISONE	26	26	30	30
NYISO	33	33	38	38
PJM	149	149	173	173
SERC	140	140	161	161
SPP	53	53	60	60
WECC - non CAISO	99	99	112	112
CAISO	52	52	59	59

B3. Summary of Target and Projected Reserve Margin % (2028)

Region	Target Reserve Margin	Base Case	Policy Case	Policy % Above Margin	Policy Change from Base
US	15%	15%	15%	0%	0%
ERCOT	14%	14%	14%	0%	0%
FRCC	19%	19%	19%	0%	0%

MISO - South	17%	17%	17%	0%	0%
MISO - North	17%	17%	17%	0%	0%
MISO - Central	17%	17%	17%	0%	0%
ISONE	18%	19%	19%	1%	0%
NYISO	15%	15%	15%	0%	0%
PJM	16%	16%	16%	0%	0%
SERC	15%	15%	15%	0%	0%
SPP	12%	12%	12%	0%	0%
WECC - non CAISO	14%	14%	14%	0%	0%
CAISO	14%	14%	14%	0%	0%

B4. Policy Case Retired Capacity Incremental to Base Case in GW (2028)

Region	CC	Coal	CT	Nuclear	OG Steam	Total
US	0.0	0.0	0.0	0.0	0.0	0.0
ERCOT	0.0	0.0	0.0	0.0	0.0	0.0
FRCC	0.0	0.0	0.0	0.0	0.0	0.0
MISO - South	0.0	0.0	0.0	0.0	0.0	0.0
MISO - North	0.0	0.0	0.0	0.0	0.0	0.0
MISO - Central	0.0	0.0	0.0	0.0	0.0	0.0
ISONE	0.0	0.0	0.0	0.0	0.0	0.0
NYISO	0.0	0.0	0.0	0.0	0.0	0.0
PJM	0.0	0.0	0.0	0.0	0.0	0.0
SERC	0.0	0.0	0.0	0.0	0.0	0.0
SPP	0.0	0.0	0.0	0.0	0.0	0.0
WECC - non CAISO	0.0	0.0	0.0	0.0	0.0	0.0
CAISO	0.0	0.0	0.0	0.0	0.0	0.0

B5. New Capacity in Policy Case Incremental to Base Case in GW (2028)

Region	CC	CT	Wind	Solar	Storage	Other	Total
US	0	0	0	0	0	0	0
ERCOT	0	0	0	0	0	0	0
FRCC	0	0	0	0	0	0	0
MISO - South	0	0	0	0	0	0	0
MISO - North	0	0	0	0	0	0	0
MISO - Central	0	0	0	0	0	0	0

ISONE	0	0	0	0	0	0	0
NYISO	0	0	0	0	0	0	0
PJM	0	0	0	0	0	0	0
SERC	0	0	0	0	0	0	0
SPP	0	0	0	0	0	0	0
WECC - non CAISO	0	0	0	0	0	0	0
CAISO	0	0	0	0	0	0	0

B6. Net Reserves Sent by NERC Assessment Region in GW (2028)

Region	Base	Policy	Change from Base to Policy	Change as a percent of summer peak
US	-2.1	-2.1	0.0	0%
ERCOT	0.7	0.7	0.0	0%
FRCC	-1.5	-1.5	0.0	0%
MISO - South	1.0	1.0	0.0	0%
MISO - North	-1.9	-1.9	0.0	0%
MISO - Central	-3.3	-3.3	0.0	0%
ISONE	0.0	0.0	0.0	0%
NYISO	0.3	0.3	0.0	0%
PJM	2.2	2.2	0.0	0%
SERC	2.6	2.6	0.0	0%
SPP	-0.4	-0.4	0.0	0%
WECC - non CAISO	5.0	5.0	0.0	0%
CAISO	-6.8	-6.8	0.0	0%

Appendix C: Tables by IPM Region for Proposed Rule in 2030 (Note: All Results Cumulative through Projection Year)

C1. Projected Operational Capacity in GW (2030)

Region	All generation sources		Change	Coal Only		Change
	Base	Policy	from Base	Base	Policy	from Base
US	1,277	1,277	0	97	97	0
ERCOT	141	141	0	8	8	0
FRCC	65	65	0	2	2	0

MISO - South	45	45	0	1	1	0
MISO - North	53	53	0	8	8	0
MISO - Central	93	93	0	12	12	0
ISONE	45	45	0	0	0	0
NYISO	48	48	0	0	0	0
PJM	218	218	0	19	19	0
SERC	183	183	0	21	21	0
SPP	96	96	0	15	15	0
WECC - non CAISO	192	192	0	10	10	0
CAISO	98	98	0	1	1	0

C2. Summary of Summer Peak Loads and Reserve Capacity in GW (2030)

Region	Projected Reserve Margins			
	Peak Demand Base	Peak Demand Policy	Reserve Capacity Base	Reserve Capacity Policy
US	818	818	942	942
ERCOT	74	74	84	84
FRCC	51	51	60	60
MISO - South	37	37	43	43
MISO - North	27	27	31	31
MISO - Central	67	67	78	78
ISONE	27	27	31	31
NYISO	33	33	38	38
PJM	152	152	176	176
SERC	143	143	164	164
SPP	54	54	61	61
WECC - non CAISO	102	102	116	116
CAISO	53	53	60	60

C3. Summary of Target and Projected Reserve Margin % (2030)

Region	Target Reserve Margin	Base Case	Policy Case	Policy % Above Margin	Policy Change from Base
US	15%	15%	15%	0%	0%
ERCOT	14%	14%	14%	0%	0%
FRCC	19%	19%	19%	0%	0%
MISO - South	17%	17%	17%	0%	0%

MISO - North	17%	17%	17%	0%	0%
MISO - Central	17%	17%	17%	0%	0%
ISONE	18%	18%	18%	0%	0%
NYISO	15%	15%	15%	0%	0%
PJM	16%	16%	16%	0%	0%
SERC	15%	15%	15%	0%	0%
SPP	12%	12%	12%	0%	0%
WECC - non CAISO	14%	14%	14%	0%	0%
CAISO	14%	14%	14%	0%	0%

C4. Policy Case Retired Capacity Incremental to Base Case in GW (2030)

Region	CC	Coal	CT	Nuclear	OG Steam	Total
US	0.0	0.0	0.0	0.0	0.0	0.0
ERCOT	0.0	0.0	0.0	0.0	0.0	0.0
FRCC	0.0	0.0	0.0	0.0	0.0	0.0
MISO - South	0.0	0.0	0.0	0.0	0.0	0.0
MISO - North	0.0	0.0	0.0	0.0	0.0	0.0
MISO - Central	0.0	0.0	0.0	0.0	0.0	0.0
ISONE	0.0	0.0	0.0	0.0	0.0	0.0
NYISO	0.0	0.0	0.0	0.0	0.0	0.0
PJM	0.0	0.0	0.0	0.0	0.0	0.0
SERC	0.0	0.0	0.0	0.0	0.0	0.0
SPP	0.0	0.0	0.0	0.0	0.0	0.0
WECC - non CAISO	0.0	0.0	0.0	0.0	0.0	0.0
CAISO	0.0	0.0	0.0	0.0	0.0	0.0

C5. New Capacity in Policy Case Incremental to Base Case in GW (2030)

Region	CC	CT	Wind	Solar	Storage	Other	Total
US	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ERCOT	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FRCC	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MISO - South	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MISO - North	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MISO - Central	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ISONE	0.0	0.0	0.0	0.0	0.0	0.0	0.0

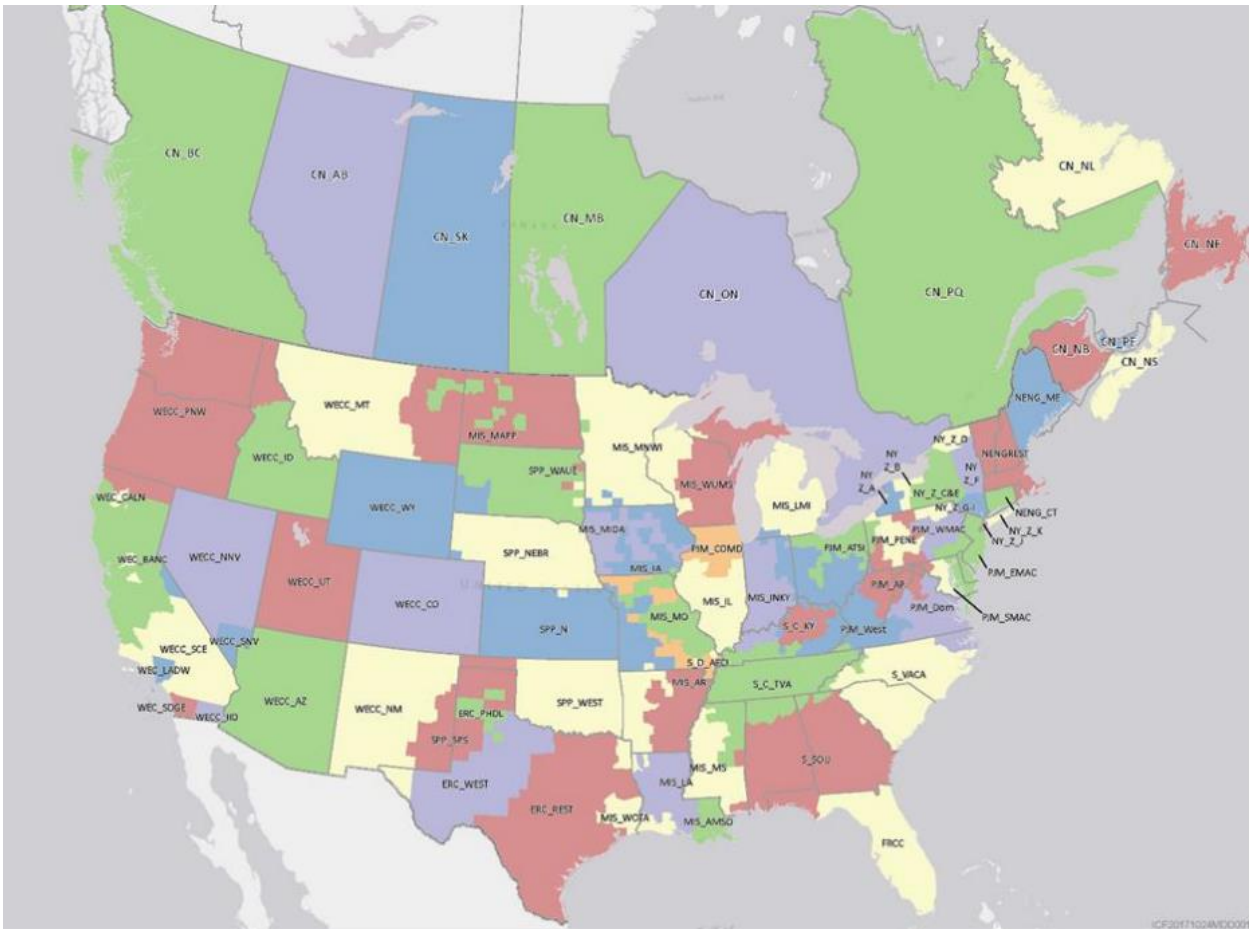
NYISO	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PJM	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SERC	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPP	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WECC - non CAISO	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAISO	0.0	0.0	0.0	0.0	0.0	0.0	0.0

C6. Net Reserves Sent by NERC Assessment Region in GW (2030)

Region	Base	Policy	Change from Base to Policy	Change as a percent of summer peak
US	-0.1	-0.1	0.0	0%
ERCOT	-1.0	-1.0	0.0	0%
FRCC	0.0	0.0	0.0	0%
MISO - South	-0.1	-0.1	0.0	0%
MISO - North	-2.2	-2.2	0.0	0%
MISO - Central	0.1	0.1	0.0	0%
ISONE	-0.2	-0.2	0.0	0%
NYISO	0.2	0.2	0.0	0%
PJM	-0.7	-0.7	0.0	0%
SERC	1.2	1.2	0.0	0%
SPP	2.0	2.0	0.0	0%
WECC - non CAISO	4.9	4.9	0.0	0%
CAISO	-4.5	-4.5	0.0	0%

Appendix D: Maps

IPM v6 Map



D2: NERC Assessment Areas in Long Term Reliability Assessment.

Source: NERC 2022 Long-Term Reliability Assessment