



ISO New England's 2024 Annual Work Plan (AWP)

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2024 Objectives and Highlights

Advancing a reliable clean-energy transition through innovation and collaboration



- **Anchor projects** require dedicated focus and a regional commitment to securing power system reliability while facilitating the integration of clean-energy and distributed-energy resources
 - **Resource Capacity Accreditation in the FCM** to continue developing a framework that will more appropriately accredit resource contributions to resource adequacy as resource mix transforms
 - **Assess Alternative FCM Commitment Horizons** to continue evaluating changing the FCA to a prompt auction that runs shortly before the capacity commitment period and/or restructuring the capacity commitment period from annual to seasonal (sub-annual) commitment periods
 - **Energy Adequacy Threshold Determination** to finalize reporting on results from the Probabilistic Energy Adequacy Tool (PEAT) and establish a Regional Energy Shortfall Threshold (REST) for the region to determine the level of reliability risk over next decade requiring regional solutions
 - **FERC Order No. 2023 (RM22-14) Implementation** to take actions needed to effectuate the rule's directives, some of which may fulfill generator interconnection-related NEPOOL priority requests
 - **Extended-Term Transmission Planning Phase 2** to develop Tariff changes allowing a process to move policy-related transmission investments forward and allocate the costs
 - **Day-Ahead Ancillary Services Initiative (DASI) Implementation** to develop the extensive software and business processes needed to support DASI implementation in 2025
 - **nGem Real-Time Market Clearing Engine** to develop the new real-time market clearing engine software and infrastructure that is foundational to supporting an exponentially complex system
- **Notable initiatives** target innovation, advance efficiency, and help manage risks across markets, planning, operations, and software structures

Effects of Shifting Priorities

The ISO strives to support regional reliability and decarbonization goals in a coordinated manner



- Plans may need to adjust over time to reflect emerging requests, regulations, trends, and risks
 - Increased or expanded stakeholder requests, regional policy interests, and new issues can affect project schedules of planned efforts
 - Upfront agreement on priority work, including NEPOOL and state priorities, are intended to keep listed projects and schedules on track
 - Unknown timing and topics of Federal Energy Regulatory Commission (FERC) actions (orders, notices of proposed rulemaking) and policy directives can shift priorities
 - For this cycle, scopes and schedules for some initiatives continue to evolve; more precise plans will be reflected in the Spring 2024 AWP Update
- Note that the AWP identifies key initiatives and not the full ISO workload; the ISO's annual budget incorporates the full volume of ISO work, including initiatives in the AWP as well as:
 - Work on smaller projects or projects nearing completion
 - Work to implement projects already through design, stakeholder, and regulatory phases
 - Work representing the ISO's extensive day-to-day operations related to running the grid, markets, IT infrastructure, and its organization

ANCHOR PROJECTS

Enhancements for the Current and Future Grid



Markets Anchor Projects

Scopes and schedules for these top regional priorities will be further defined in the Spring AWP Update



- **Resource Capacity Accreditation (RCA) in the Forward Capacity Market (FCM)**
 - This effort already underway seeks to implement new methodologies to quantify/accredit resources' capacity contributions to regional resource adequacy, which will be critical to reliability and market efficiency as the resource mix transforms
 - Plans for FERC filing and implementation timeframes will be communicated in Q3-Q4 2023
- **Assessing Alternative FCM Commitment Horizons (Prompt/Seasonal)**
 - Through Q2 2024, the ISO will continue discussing with stakeholders the following potential changes to the FCM
 - Replacing the current Forward Capacity Auction that has a three-year forward planning horizon with a prompt capacity auction (i.e., an auction with a short commitment horizon much closer to the capacity commitment period)
 - Restructuring the capacity commitment period from annual to seasonal (sub-annual) commitment periods
 - Design work would follow in 2024 once a path forward on scope and timing is determined; design and implementation require extensive efforts across ISO processes and systems, spanning several years

Operations Anchor Project

Identifying and addressing reliability risks from severe events as grid supply and demand transform is a primary priority for the ISO, NEPOOL, and the states



- **Energy Adequacy Threshold Determination**

- After finalizing its operational impacts of extreme weather study results from the Probabilistic Energy Adequacy Tool (PEAT), including stakeholder-requested sensitivities, the ISO will present its proposed scope of work for developing a Regional Energy Shortfall Threshold (REST) by the end of 2023
- In Q1-2 2024, using PEAT results, the ISO plans to work with regional stakeholders to establish a REST that determines the acceptable level of reliability risk
- The ISO can then evaluate if meeting the REST requires development of specific regional solutions
 - Possible solutions could range from market designs to infrastructure investments to dynamic retail pricing and responsiveness by end-use consumers
- Further analysis of scope, timing, and feasibility of any such solutions would follow in 2024-2025 as needed

Planning Anchor Projects

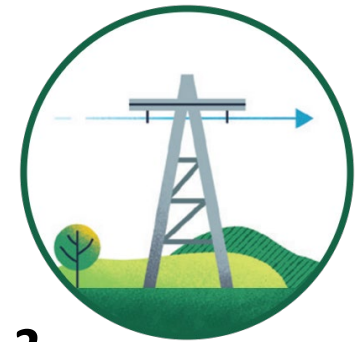
FERC compliance work takes priority in the AWP



- **FERC Order No. 2023 (RM22-14) Implementation:** Focused compliance efforts are underway in 2023, with work continuing into 2024 to fully implement the Final Rule's new interconnection paradigm. Some directives are anticipated to converge with NEPOOL's priority requests, including the following two requests related to Planning Procedures, which will be timed according to the Final Rule's implementation schedule.
 - **Assess Interconnection Standard for Charging of Electric Storage Resources (ESRs):** PP5-6 requires that ESRs are studied in charging mode at peak load conditions so that the system is assessed and protected for under that operating condition. NEPOOL members seek, and the states support, modifications to this requirement, which the ISO is addressing via Order No. 2023 compliance. In Q1 2024, the ISO will determine if additional assessments or changes are needed to align with the priority request.
 - **Improvements to the Proposed Plan Application (PPA) Process for TO-LED PPA Studies (including for Distributed Generation Interconnections):** Improvements to the PPA process and to PP 5-1 will be assessed and addressed in the context of compliance with Order No. 2023. Requests for improvements to the process for dealing with clerical errors in participant submissions also will be considered in that context. Requested efforts to formalize and structure the ISO's role in clustered DER interconnection studies would follow completion of Order compliance and implementation work, as the Final Rule focuses on processes for large generators, and those processes would be addressed first.

Planning Anchor Projects, cont'd

Providing longer-term transmission planning for a reliable, clean-energy future grid in response to the New England States' Energy Vision

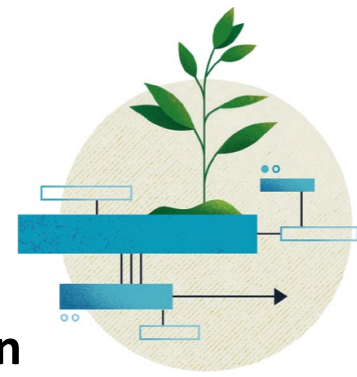


- **Extended-Term/Longer-Term Transmission Planning Phase 2**
 - In 2022, the ISO created a process under [Attachment K of the OATT](#), allowing the New England States to request planning analyses that may extend beyond the 10-year planning horizon, which would identify transmission investments in furtherance of state energy policy objectives
 - This second phase of Tariff changes would add a process to operationalize transmission investments resulting from the above analyses, and will include a cost-allocation mechanism for those transmission improvements (i.e., the process would enable conversion of longer-term public policy transmission studies, like the 2050 Transmission Study Solutions, into developable projects)
 - Stakeholder discussions on Phase 2 are expected to begin in Q4 2023, with a potential FERC filing in late Q1 or early Q2 2024
 - Following FERC approval of Phase 2 tariff changes, the ISO would be able to commence initiation of competitive solicitations resulting from [Longer-Term Transmission Studies](#)



Technology Anchor Projects

Overhauling market software and systems to manage an exponentially complex future grid



- **Day-Ahead Ancillary Services Initiative (DASI) Implementation**
 - A significant initiative throughout 2024, the ISO will develop the extensive software and business process changes needed to support DASI implementation in Q1 2025
 - DASI creates pricing incentives for specific energy and reserve capabilities needed for reliability as regional supply and demand transform
- **nGem Real-Time Market Clearing Engine**
 - Since 2020, in collaboration with MISO and PJM, the ISO has been working to replace its 20+ year old Market Management System (MMS) with the next Generation Electricity Management (nGEM) platform that is foundational to supporting a system with a growing number and type of grid assets, new and more complex market features, multiplying security threats, and advancing IT technologies
 - In 2023, the ISO completed the complex processes for customizing and implementing the day-ahead version of the new market clearing engine (MCE) software and infrastructure service
 - Work on the real-time MCE software and infrastructure will take place throughout 2024, with implementation targeted for Q2 2025



NOTABLE INITIATIVES

Other Major Initiatives Identified for 2024

Notable Markets Initiatives

Improving services and incentives for a reliable future grid



- **Storage Modeling Market Enhancements**

- The ISO is evaluating opportunities to more efficiently integrate energy storage resources into the energy and ancillary service markets. Stakeholder discussions of proposed day-ahead market enhancements are expected to begin in mid-2024.

- **Day-Ahead and Real-Time Energy Shortage Pricing Assessment**

- The ISO has been evaluating how a load-shed event is treated in the energy and ancillary services market pricing software and whether enhancements may be needed to signal appropriate day-ahead and real-time prices in the event of an energy shortage. The ISO expects to present concepts to stakeholders in 2024.

- **Flexible Response Services (formerly “Replacement Energy Reserves”) Assessment**

- In 2024, the ISO will evaluate the system’s needs for flexible response capabilities to address greater operational uncertainties with an increasingly weather-dependent resource mix. This evaluation is expected to consider new, longer-duration reserve products (in the Day-Ahead and Real-Time markets) as potential market-based solutions to these flexibility needs. Stakeholder discussions are targeted to begin in 2025.

Notable Markets Initiatives, cont'd

Work on these FCM-related initiatives will be further refined in the 2024 Spring AWP Update as needed



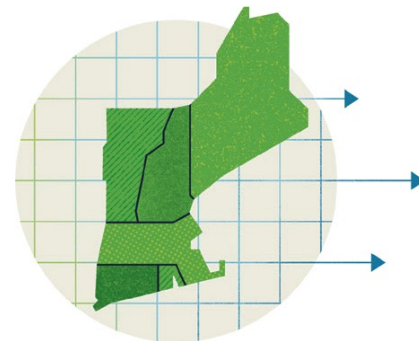
- **Contingent Work on FCM-Related Initiatives**

- Work may be needed in 2024 to conform or extend certain FCM initiatives underway or planned for 2023 that are potentially affected by FCM Prompt/Seasonal considerations and/or an FCA 19 delay, including:

- FCM Retirement Reforms: Bid Flexibility
- FCM Retirement Reforms: Return to Service
- FCM Financial Assurance Policy/Entry-Related Improvement
- FCM Net CONE Updates Supporting MOPR Reforms for FCA 19
- Order No. 2222 Participation of DER Aggregations for FCA 19

Notable Planning Initiatives

Assessments related to interconnection with neighbors



- **Evaluate Tie Benefits and HQICCs**

- As requested by NEPOOL, beginning in Q4 2023 and extending into Q4 2024, the ISO is conducting and reporting on a broad evaluation of the reliability inputs for tie benefits, in which the ISO will evaluate past performance and modeling of tie benefits and expected short- to mid-term future performance
- Any market or contract changes that may be identified as a result of this evaluation would need to be discussed and scoped separately after the evaluation
- This effort is distinct from the ISO’s current proposal under RCA to incorporate summer and winter components in its accounting for tie benefits in the FCM

- **Evaluate Single Source Contingency Limit Increase**

- In 2023, the ISO initiated a study request with PJM and NYISO to determine if the current 1,200 MW single source contingency (loss of source) limit is still appropriate, if a higher number can be supported by the current transmission infrastructure, and what potential ISO-NE/NYISO/PJM upgrades, including estimated cost, would be necessary to support a 2,000 MW minimum loss of source limit
- An inter-regional study would align with NEPOOL’s request and state support for such analyses and is anticipated to take approximately two years to complete once underway; beginning in 2024, the ISO will provide updates to stakeholders throughout the study process
- Moving forward with upgrades identified from the study would be a separately-scoped, subsequent initiative

Notable Planning Initiatives

Assessing the future of the regional power system in light of state energy and environmental laws



- **Economic Planning for the Clean Energy Transition (EPCET) Pilot Study**

- The ISO is performing a trial run of its Economic Study Process Improvement changes to Attachment K by testing modeling changes and new economic planning software through the EPCET initiative
- Remaining reliability and market study work from the [New England's Future Grid Initiative](#) (both Pathways to the Future Grid and Future Grid Reliability Study (FGRS) Phase 2), which have reflected priorities by NEPOOL and the states, will be completed via the EPCET policy scenario in this initiative
- EPCET analysis and stakeholder discussions have been taking place throughout 2023 and are expected to continue into Q1 2024, with a summary report planned for issue in Q2 2024

Notable Planning Initiatives

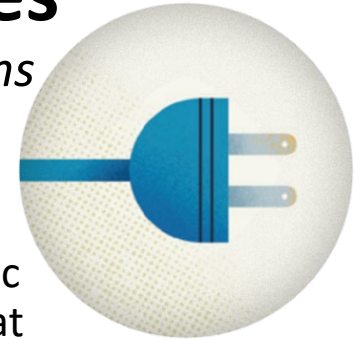
Thoughtful, well-planned transmission investment is critical to achieving a clean, reliable, and affordable regional grid



- **Transmission Asset Condition Process Improvements and Sizing for the Clean Energy Transition**
 - The New England’s States and Transmission Owners (TOs) have been discussing improvements to the transmission asset condition processes to enhance the information, criteria, and cost estimates submitted by transmission owners
 - Successively, they seek to consider how future sizing needs can be incorporated into transmission project processes
 - Pending the outcome of those discussions, the ISO will proceed with an initiative to help implement improvements to the asset condition process in support of state and TO efforts
 - This work would pair with the ISO’s efforts with the states and stakeholders to develop a regional approach ensuring that transmission projects—including asset condition projects—are sized for the future given the anticipated transition of the system over the life of the asset

Notable Technology & Security Initiatives

Implementing sophisticated technologies and security applications to support the clean-energy transition and mitigate risks

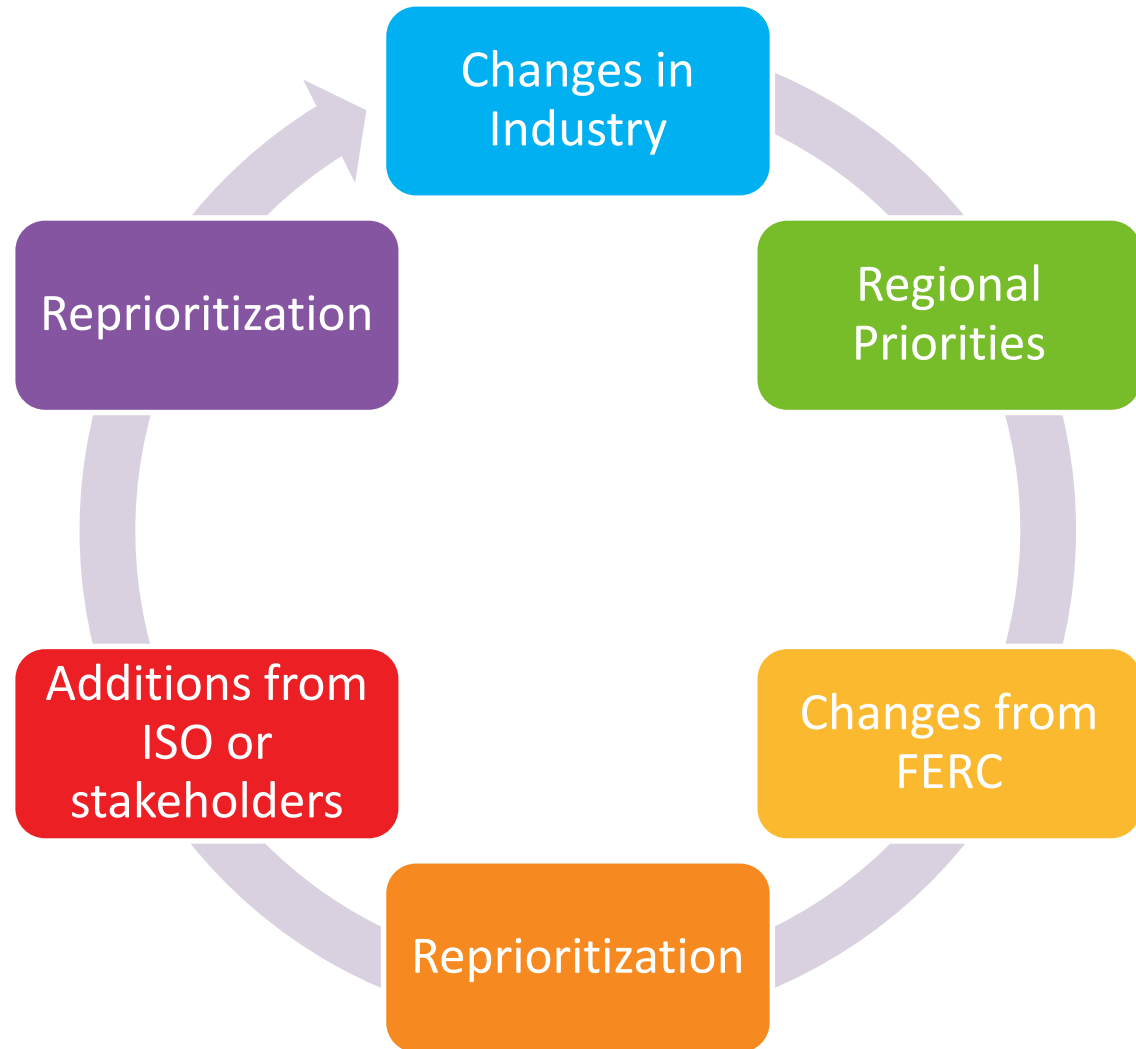


- **Inverter-Based Resource (IBR) Integration & Modeling:** In 2024, the ISO will complete the development of an inter-departmental electromagnetic transient (EMT) model management process for all computer models that represent how each inverter-based resource interacts with the grid, and optimize software programs and hardware used to run computer simulations based on those models
- **Synchrophasor Enhancements for Future Grid:** In Q4 2024, the ISO is implementing synchrophasor improvements to better understand the performance of IBRs and distributed energy resources during system events and monitor their dynamic behaviors in real-time; this work includes enhancing the Oscillation Source Location tool; enhancing Phasor Measurement Unit (PMU) situational awareness displays in the control room; streamlining PMU support and maintenance processes; and developing a roadmap to secure the synchrophasor systems for mission critical operations
- **Cloud Computing:** The ISO is implementing cloud infrastructure to reduce reliance on energy-heavy data centers, make system deployment more efficient as resource numbers increase, and enable faster computing performance as resource data grows
- **Cyber Security:** The ISO is implementing a portfolio of projects, including modernized identity management and protection systems, phase 2 updates to the CIP Electronic Security Perimeter, and other improved detection and response capabilities

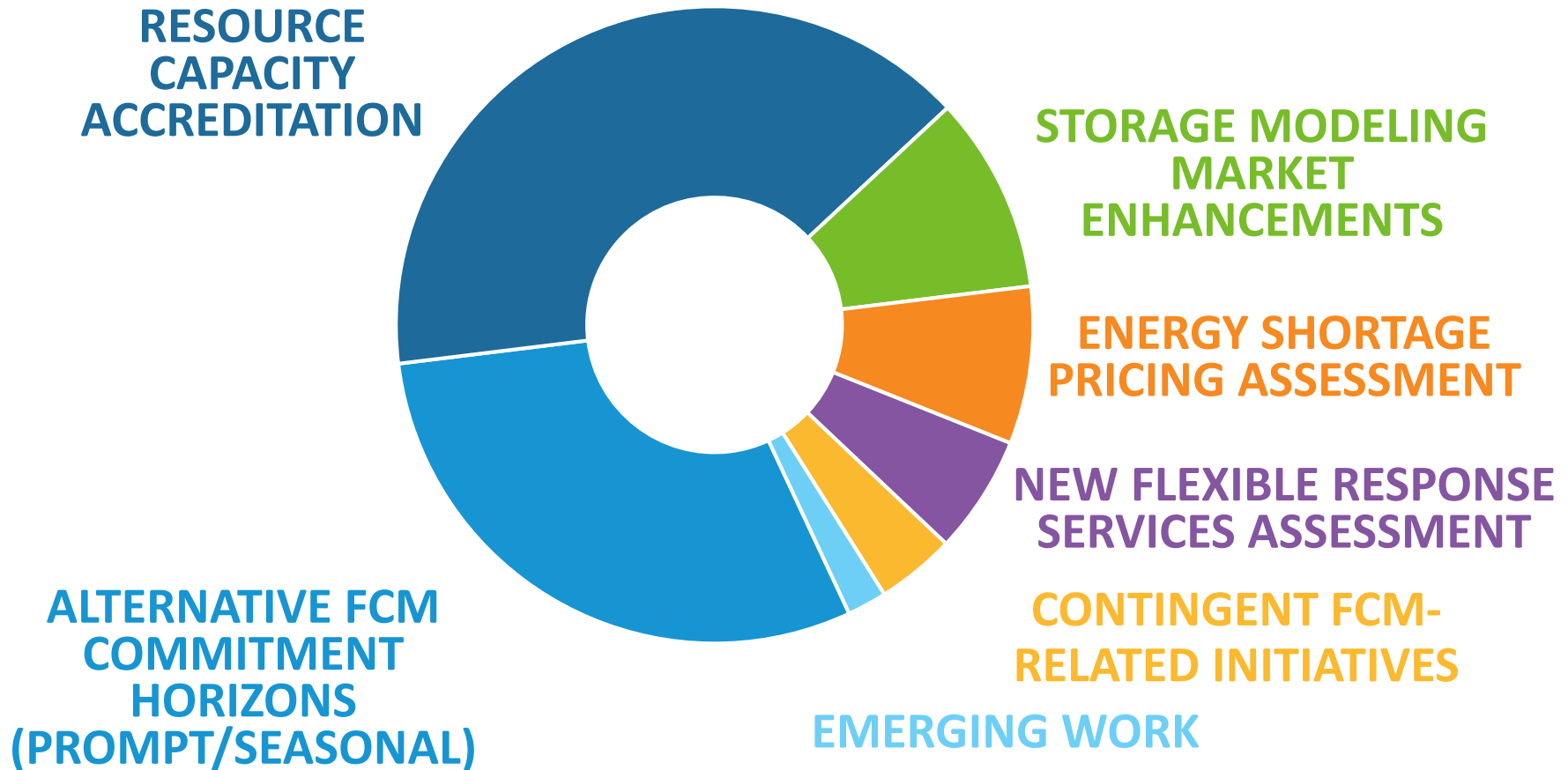
WORK PLAN PRIORITIZATION

Prioritization Process

- The ISO adjusts its priorities as needed to best maintain reliable operations, robustly plan for a changing grid, and ensure competitive wholesale markets
- Planned projects are impacted as scopes shift or new projects emerge



Markets-Related Priorities Include:



Planning/Operations Priorities Include:

OTHER INITIATIVES

- Implement Probabilistic Energy Adequacy Tool into ISO processes
- Annual Economic Study and process improvements
- Provide technical support to states for DOE RFPs re Interregional Transmission Planning for Offshore Wind
- SATOA implementation
- Update to PP7 to support of Order 881, Ambient Adjusted Line Ratings implementation in 2025
- Assess possible solutions for legacy distributed energy resources (DERs) tripping

**FERC ORDER NO. 2023
IMPLEMENTATION**

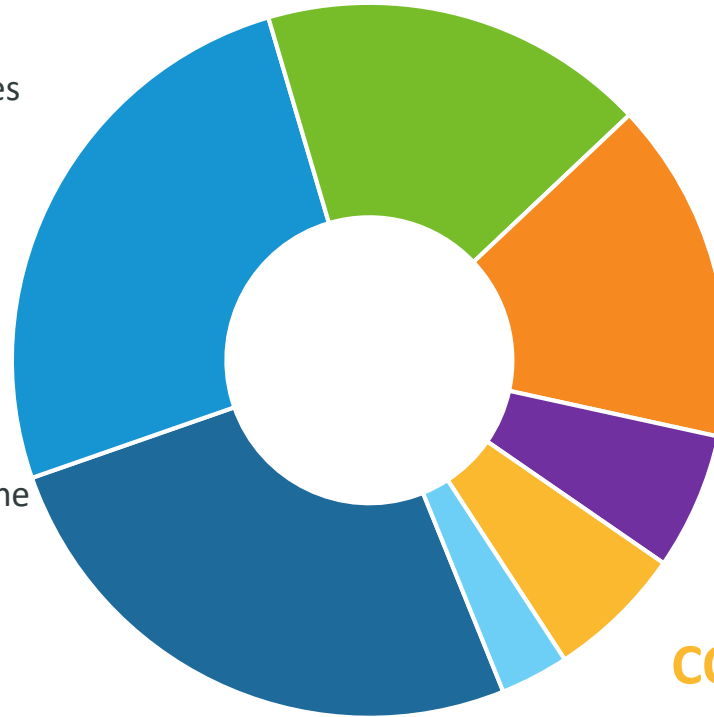
**TRANSMISSION
PLANNING: LONGER-
TERM PHASE 2, ASSET
CONDITION PROCESS
IMPROVEMENTS, SIZING
CONSIDERATIONS**

**TIE BENEFITS
ASSESSMENT**

**SINGLE SOURCE
CONTINGENCY LIMIT
ASSESSMENT**

EPCET

**ENERGY ADEQUACY
THRESHOLD
DETERMINATION**



Capital Project Priorities Include:

APPLICATION AND DATABASE ENHANCEMENTS

- Software development for FERC Order No. 881 Ambient Adjusted Line Ratings implementation in 2025
- Software design for FERC Order No. 2222
- Energy Management System Short-term Load Forecast Replacement
- Enterprise Software Upgrades
- IT Asset Workflow Integration and Updates

DASI IMPLEMENTATION

nGEM MARKET CLEARING ENGINE

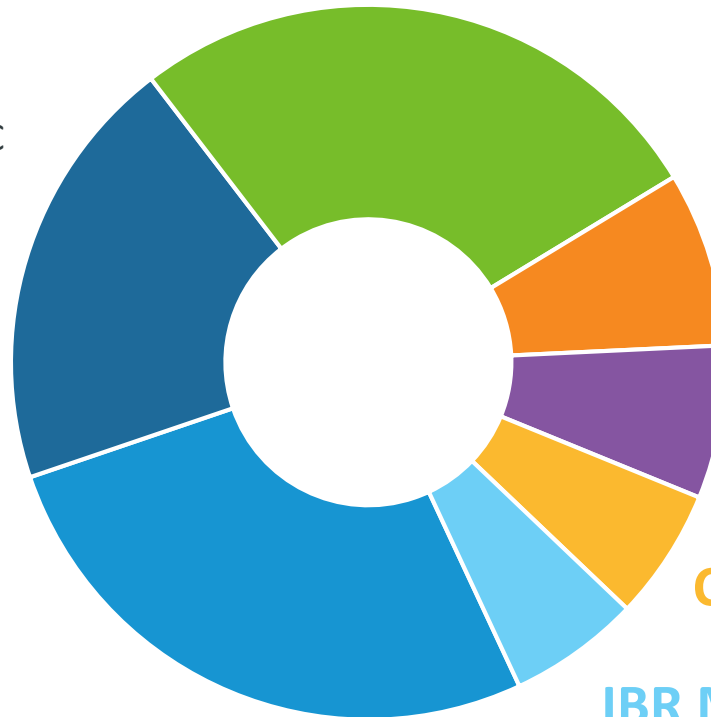
IT INFRASTRUCTURE ENHANCEMENTS




- Enterprise core network refresh
- Expansion of immutable enterprise storage capabilities
- Control room communication enhancements
- Continuation of Windows and Linux Operating System Updates

CYBER SECURITY

CLOUD COMPUTING

IBR MODELING & SYNCHROPHASOR IMPROVEMENTS



2024 AWP	Q1	Q2	Q3	Q4
 Markets Related	Resource Capacity Accreditation			
	Alternative FCM Commitment Horizons			
	Storage Modeling Market Enhancements			
	Energy Shortage Pricing Assessment			
	Flexible Response Services Assessment			
	Contingent FCM-Related Initiatives			
 Operations & Planning	Energy Adequacy			
	FERC Order No. 2023 Implementation			
	Longer-Term Trans. Planning Phase 2			
	Tie Benefits & HQICCs Assessment			
	EPCET			
	Single Source Contingency Limit Assessment			
	Transmission Asset Condition Process Improvement/Sizing Considerations			
	Other Initiatives & Continuing Business			
 Capital Priorities	DASI Implementation			
	nGEM Market Clearing Engine			
	Inverter-Based Resource Modeling & Synchrophasor Improvements			
	Cloud Computing & Cyber Security			