



# Updated 2021 Annual Work Plan

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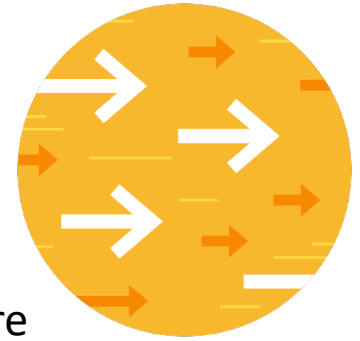
Vamsi Chadalavada

EXECUTIVE VICE PRESIDENT AND CHIEF OPERATING OFFICER



# 2021 Notable Highlights

*This update summarizes changes to the 2021 Annual Work Plan since its release in September 2020*



- The updated plan reflects the ISO's continued focus on innovation in support of the region's efforts to transition to a clean energy future while also working with the states and stakeholders to ensure that the power system is reliable throughout this transition; it includes:
  - Updates on the large-scale study commitments by the ISO that assess the future grid and the supporting tools it is developing
  - Addition of a project to address the Minimum Offer Price Rule
  - Addition of 2050 Transmission Study request from New England states
  - Updates on assessment of Resource Capacity Contributions to Resource Adequacy/ELCC
  - Addition of assessment related to operational impacts of extreme weather events
  - Addition of FERC Order No. 2222 Compliance
- The ISO will be able to perform the added work, remain dedicated to meeting its planning and operational commitments, and ensure business continuity during its pandemic posture; however, the organization is fully committed and new priorities would require further resource and budget considerations
- In Q3, the ISO begins full cycle again with *2022 Annual Work Plan*



# New England's Future Grid Initiative

*Updates on high-priority studies the ISO has committed to in 2021 that assess a reliable, clean-energy future grid*



- **Future Grid Reliability Study (FGRS) Phase 1** (NEPOOL initiated):  
For its 2021 Economic Study, the ISO is conducting a series of engineering and economic analyses that use stakeholder-defined scenarios to identify grid reliability challenges that could occur in the year 2040 in light of state energy policies; the ISO will issue a report in **Q1 2022**
  - A second phase that would assess revenue sufficiency and system security in a gap analysis is paused; results of and issues resolved through Phase 1 and other future-grid-related studies will be critical inputs to and create efficiencies in how the Phase 2 analyses may be shaped
- **Pathways to the Future Grid:** The ISO is evaluating the effectiveness and efficiency of two potential market frameworks in facilitating the evolution of New England's power grid that reflects state energy policies; the ISO will issue a report in **Q1 2022**
  - **Study 1** (NEPOOL/NESCOE initiated): Evaluate a forward clean-energy market
  - **Study 2** (ISO initiated): Evaluate net carbon pricing



# MOPR Proposal

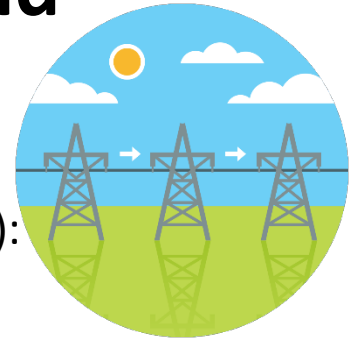
*Additional project to develop a proposal to address the removal of this capacity market component*



- The Minimum Offer Price Rule (MOPR) requires a minimum price for new resources entering the Forward Capacity Market (FCM)
- Significant concerns have been raised at both the regional and federal level that the application of the MOPR precludes resources sponsored by the states from clearing in the FCM
  - The FERC has identified this matter as a priority
- Elimination of the MOPR must be consistent with maintaining reliability, which is the primary goal of FCM; therefore, the ISO intends to develop a proposal with input from stakeholders to address the dual objectives of allowing sponsored resources to clear and maintaining competitive capacity pricing
- This will be a top initiative for the ISO, which is expected to ramp up in the second half of 2021
- The ISO anticipates the need to file a proposal by Q1 2022, which will require targeted efforts by the ISO and all stakeholders

# Transmission Planning for the Future Grid

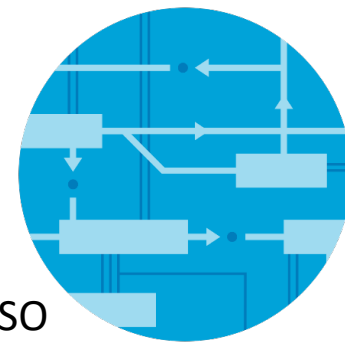
*Updates on high-priority studies the ISO has committed to in 2021 that assess a reliable, clean-energy future grid*



- **Transmission Planning for the Clean-Energy Transition** (ISO initiated): The ISO seeks to update the assumptions used in its transmission planning studies to reflect future-grid trends
  - In **Q1-3**, the ISO will complete a pilot study via PAC process to test a variety of assumptions for 2030 (typical 10-year planning horizon); in **Q3**, based on study results and input from the PAC, the ISO will select the updated assumptions to use going forward in its planning studies (e.g., Needs Assessments)
- **New: 2050 Transmission Study** (Initiated via New England States' Energy Vision): The ISO will conduct a high-level transmission study for the year 2050 that informs the region of the amount and type of transmission infrastructure needed to cost-effectively incorporate clean-energy and distributed-energy resources and to meet energy policy goals, including economywide decarbonization
  - The study looks well beyond the ISO's 10-year requirement for transmission planning to meet reliability needs so states can prepare in the nearer term for that future outlook
  - It is not a plan to build specific projects unless states choose to move forward
  - The states and the ISO are actively discussing their request; the ISO anticipates sharing the scope, assumptions, and inputs at the PAC before beginning the study
  - Discussions are targeted to start in Q3 regarding potential tariff changes that would allow the ISO to routinely perform this type of long-range transmission planning

# Models and Tools to Support Future Grid Studies

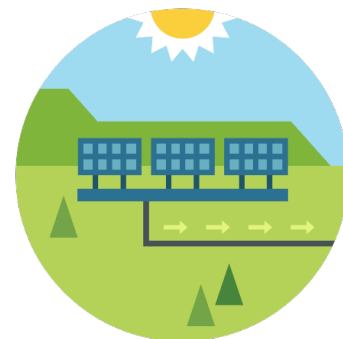
*Updates include project description and timeframes*



- Models, simulators, and other tools that are adaptive to new technologies and changes are needed to support future-grid studies under evolving conditions
- **Inverter-Based Resource Integration and Modeling Assessment:** The ISO has begun a multi-year project (2021-2023) to assess and adopt advanced, innovative analysis techniques that capture the unique performance characteristics of inverter-based resources (e.g., solar and wind), critical to studies beyond the 10-year horizon
  - By the end of 2021, the ISO expects to deliver a report that evaluates options for and recommends deployment of Electromagnetic Transient power system software and analytical methods that will enable efficient and reliable integration and modeling of rapidly-evolving inverter-based resources
- **Day-Ahead Market Simulator Development:** This is the first step in a multi-year project (2021-2023) to develop an Integrated Market Simulator of the ISO's energy markets that consolidates the capabilities of multiple tools into one simulator; the new platform will produce highly accurate, timely long-term market simulation results through which the ISO can better compare and contrast future energy market designs, impacts of evolving resource mixes, market operations risks, and other important outcomes and impacts
  - The ISO anticipates completing the development of the day-ahead market simulator in 2021

# Resource Capacity Contributions to Resource Adequacy

*Work-scope emerging from the previously listed “Evaluate Impacts of Shifting Peak Loads”*



- In 2021, the ISO is assessing possible modifications to the methodologies used to attribute resource contributions to resource adequacy
  - This work supports a reliable, clean-energy transition by seeking to identify methodologies that more appropriately credit resource contributions to resource adequacy as the resource mix evolves over time (e.g., as renewable generation and energy storage resources become more prevalent)
  - It is critical to both system planning and sound market design that the methodologies reflect the reliability capabilities of all resources and how those capabilities contribute differently to resource adequacy
  - This work will also consider how **Effective Load Carrying Capability (ELCC)** techniques could be used in quantifying resource contributions to regional resource adequacy
- The ISO will begin discussing the scope of this work with stakeholders in Q2 2021
  - Once these analyses are more fully developed, the ISO plans to discuss the findings with stakeholders, allowing for a more informed discussion regarding next steps, including possible market design modifications, which would extend into 2022

# FERC Order No. 2222: Participation of DER Aggregations in Wholesale Markets

*New major project for 2021 that will allow more integrated participation by DERs in wholesale markets*



- FERC issued Order No. 2222 on September 17, 2020, which requires ISOs/RTOs to allow distributed energy resources (DERs) to provide all wholesale services that they are technically capable of providing through an aggregation of resources
- The ISO is dedicating significant resources to this important initiative in 2021 and beyond to create a responsive market design, develop the compliance proposal through an extensive and comprehensive stakeholder process, and implement changes in ISO systems
- The compliance filing of proposed tariff revisions is due July 19, 2021; the ISO, like other RTOs, has requested an extension until February 2, 2022





# Operational Impacts of Extreme Weather and Contingency Events



*New initiative will consider how to study New England's reliability risks from severe weather events*

- The 2021 events in Texas have caused the ISO to further evaluate whether the region is adequately assessing and preparing for its low-probability, high-impact reliability risks
- The ISO plans to initiate a process in Q3 or Q4 for discussing approaches to modeling tail risks related to extreme weather events and contingencies
- This process will:
  - Initially focus on understanding the modeling approaches to quantify such risks
  - Subsequently focus on understanding if and how the region should protect against the risks

# Energy Security Initiative (ESI)

## *Updates on next steps*



- The ISO's planned work in 2021 to advance energy security improvements was contingent on FERC's response to the ISO's ESI filing, which FERC rejected on October 30, 2020
- The ISO understands FERC's rejection of ESI was a result of several concerns, compounded by the region's inability to discuss and address these concerns under the restrictions of a Section 206 order
  - Primary concerns: (a) lack of clear continuing evidence of fuel-based reliability risks (esp. in the Impact Analysis); (b) high potential total costs, relative to the benefits; (c) absence of a mitigation proposal and analysis; and (d) absence of a forward procurement component
- Consequently, ESI is on hold and discussion is needed on how best to reconsider it
  - ESI's other potential benefits (e.g., price formation, incorporating reliability requirements into markets, etc.) were not properly before the commission in this 206 proceeding
  - Some of the elements of ESI could be reformulated in the context of improved price formation, but the ISO suggests that the timing and scope correlate to the re-evaluation of the energy security risks discussed on the previous slide
- Beyond ESI, the ISO will continue to engage with stakeholders on how best to improve the ancillary services market design
  - New products and services in the evolving power system may be needed to address reliability needs as varied as inertia, ramping, load following, or duration capability



Markets Related

- Pathways to the Future Grid Studies: FCEM and Net Carbon Pricing

- MOPR Proposal

- FERC Order No. 2222 Compliance

- Resource Capacity Contributions to Resource Adequacy (Peak-Hour Assessments)

- Submission of FTRs for Clearing

- Future Grid Reliability Study Phase 1 (2021 Economic Study)

- 2050 Transmission Study

- Transmission Planning for the Clean-Energy Transition

- Order 1000 Lessons Learned

- 2021 Regional System Plan

- Operational Impacts of Extreme Weather and Contingency Events

- Forecasting Enhancements

- Continuing Business

- nGEM Day-Ahead Market Clearing Engine Implementation

- Cybersecurity Projects

- Application and Database Enhancements

- IT Infrastructure Enhancements



Operations/Planning



Capital Project Priorities