

De-Carbonization / DER Report for NYSRC Executive Committee Meeting 1/15/21

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The January 2021 edition of the De-Carbonization / Distributed Energy Resources (DER) Report highlights recently published documents by NERC, Joint Utilities, and IEEE-PES. In addition, the newsletter describes EPRI's Low Carbon Research Initiative. The topics in this newsletter are covered in the following order:

- NERC 2020 Long Term Reliability Assessment (LTRA) Report
- NERC IRTPF – Vestas Presentation on Dynamic Modeling
- NERC Monthly Newsletter – December Issue
- Joint Utilities - Distributed System Platform Stakeholder Webinar
- IEEE Power and Energy Magazine – DER Focus Special Edition
- EPRI Low-Carbon Resources Initiative

The NERC 2020 LTRA is the ERO's independent assessment and comprehensive report on the adequacy of planned BPS resources to meet electricity demand across North America over the next ten years. The report can be viewed [in its entirety](#), or as a [single page graphic summary](#). One key take-away is that nearly all parts of the Western Interconnection, ERCOT and MISO show levels of increased risk over the next five years. The report's key recommendations for the ERO and industry include:

- Enhancing the reliability assessment process by evaluating energy adequacy risks in seasonal reliability assessments.
- Developing design-basis fuel supply scenarios of normal and extreme events for use by planners and adopted as a component of the Reliability Standards.
- Increasing communication and outreach of resource adequacy risks with state and provincial policymakers.
- Modifying existing Reliability Standards to account for inverter-based resource performance and characteristics.
- Ensuring accurate and valid power flow and dynamics base case models, specifically addressing any model deficiencies associated with existing and newly interconnecting bulk power system connected inverter-based resources.
- Addressing aggregate DER data needs for transmission planning and operational studies.

A presentation by Vestas entitled "[Guidance for Dynamic Modeling](#)" was published on the NERC IRPTF [website](#). Vestas is looking to make the case for developing "User Written Models" (UDM) for their Wind Turbines to create more accurate and usable models vs. the generic models currently used by WECC. Advantages include:

1. Both the model and the product use the same code
2. Software parameters match product parameters
3. UDM provides more accurate results for low grid short circuit ratio conditions
4. UDM response is consistent across all software packages

However, Vestas acknowledges the disadvantages that the software is not open source, and not part of the IEEE standards.

The December issue of the NERC monthly Newsletter can be found [here](#). This wide-ranging and informative document covers the latest activities, standards development and products from the NERC committees and subgroups, as well as upcoming NERC and regional entity events. Topical areas include reliability, compliance, and risk management. Subscription Options for all NERC Publications can be found on this [webpage](#).

The latest Joint Utilities Distributed System Platform Stakeholder Webinar was held on December 10th. Here is the link to a downloadable Powerpoint [presentation](#), while the hour-long webinar can be watched [here](#) (email sign-in required). The webinar covers these topics:

- The Evolving Vision of the DSP
- Drivers for Renewables and CLCPA
- Electric Vehicle Make-Ready Program
- Smart Inverter Roadmap
- Ongoing Efforts with DPS Whitepapers on Strategic Use of Energy Related Data
- Updates to Hosting Capacity Maps and Functionality
- Ongoing Efforts with the NYISO in Response to FERC Order 2222

IEEE Power and Energy Magazine (IEEE PES Membership required) is a bimonthly publication that covers the latest technical and industry related topical interests at a friendlier and more understandable level than the typical Transactions or Standards publications. The [November / December Issue](#) is devoted to the topical area of distributed energy resources, including:

- Consumer-Led Transition: Australia’s World-Leading DER Integration Efforts.
- Autonomous Energy Grids: Controlling the Future Grid with Large Amounts of Distributed Energy Resources (From the National Renewable Energy Lab)
- Making Renewables Work: Operational Practices and Future Challenges for Renewable Energy as a Major Power Source in Kyushu, Japan
- Back in the Race – Achieving 100% Renewable Energy in the Canary Islands
- On Good Behavior: Inverter-Grid Protections for Integrating Distributed Photovoltaics
- Predictive Maintenance Practices for Operational Safety of Battery Energy Storage Systems

EPRI Low-Carbon Resources Initiative (LCRI): Developing and Demonstrating Technologies to Enable a Low-Carbon Future. The introductory page can be found [here](#).

The Low-Carbon Resources Initiative (LCRI) is a joint effort between EPRI and the Gas Technology Institute (GTI). The initiative focuses on a variety of low-carbon electric generation technologies and low-carbon chemical energy carriers, such as clean hydrogen, bioenergy, and renewable natural gas, that can enable affordable pathways to economy-wide decarbonization. The publicly available material below includes 3 presentations and a series of seven Technical Workshop sessions (90 minutes duration), each with multiple speakers in various areas of LCRI:

The three links below lead to publicly available reports for the LCRI initiative program (email required):

- LCRI: Enabling the Pathway to Economy-Wide Decarbonization [Link](#)
- Low-Carbon Resources Initiative: Advancing Technologies that Enable a Low-Carbon Future [Link](#)
- Technology Insights Brief: Hydrogen-Capable Gas Turbines for Deep Decarbonization [Link](#)

In addition, EPRI and GTI have created a series of publicly available LCRI Technical Workshops that cover the latest developments in low-carbon resource production, storage and delivery, and end-user areas, looking to achieve the goal of economy-wide decarbonization by 2050. Descriptions and links for the individual speakers and their presentations can be found on this [page](#). In addition, links to the videos for each of the topical sessions are provided below.

Uncovering New Pathways to Lower Carbon: Beyond 2030

[Link](#)

This short introduction to Decarbonization presents the case that aggressive investment in research, development, and demonstration could lead to affordable options to accelerate an intelligent transformation toward a cleaner, reliable, and affordable energy future beyond 2030.

Session 1: Pathways to Decarbonization and Low Carbon Resource Initiative

[Link](#)

This session will focus on how decarbonization goals could be realized by 2050 and what it would take to achieve specific targets. The possible roles of future energy systems and transitioning today's systems to future scenarios will be explored.

Session 2: Valuing Low Carbon Resources, and Stakeholder Needs and Valuation

[Link](#)

This session will explore the historical ways energy systems have been valued and the new challenges that may emerge during transitions to economy-wide decarbonization.

Session 3: Industrial Use of Low Carbon Resources

[Link](#)

This session explores decarbonization from the perspectives of various industry segments with opinions taken directly from industry leaders on plans to address emissions reductions.

Session 4: Electrolytic Fuels, Technology and Performance

[Link](#)

Global economies may soon depend on the production of low-carbon fuels, such as hydrogen, that are derived from technologies not currently available at the cost or scale needed to support wide adoption. This webinar focuses on the current state of technologies and discuss potential innovations that could change the way low-carbon resources are produced.

Session 5: Decarbonizing Fossil-Derived Resources

[Link](#)

As future energy scenarios are developed, economic and policy models point to ongoing transitions in carbon-containing fuels. Carbon capture at emissions sources and direct air capture could be deployed under various decarbonization pathways. This session will focus on technologies that enable fossil fuels to support the transition to a low-carbon future.

Session 6: Renewable Fuels

[Link](#)

Thermochemical and biochemical production pathways could be used to produce low carbon energy carriers. Biomass feedstock sources and conversion processes will be explored, and potential end uses for alternative fuels will be discussed.

Session 7: Low-Carbon Resource Delivery & Storage

[Link](#)

Production and use of alternative energy carriers and fuels will rely on affordable and reliable delivery and storage infrastructure. This session will highlight potential opportunities to transition existing infrastructure as well as areas where new infrastructure and technology may be needed to support low-carbon energy resource adoption