NERC

2023 Long-Term Reliability Assessment

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LTRA Summary

- 10-year assessment of resource capacity and energy risks
- Uses industry's demand and generation forecasts and transmission projections
- Coordination and Review with Regions and Stakeholders
- Includes emerging issues that can impact future reliability





- Demand and Resources: Past...Present...Future
- Capacity and Energy Risk Assessment 2024-2032
- Changing Resource Mix
- Demand and Energy Trends
- Transmission Development Trends
- Emerging Risks
- Recommendations



Past...Present...Future



Demand

- Highest demand and energy growth rates in recent years
- Northeast and Southeast become winter peaking in late years
- New load behavior is changing daily load profile, challenges operational forecasting

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Generation On-Peak Capacity

Supply

- Total capacity growth of 34 GW over next 10 years (Tier 1 additions – retirements)
- Most additions are Solar (69 GW)
- Retirements: 83 GW through 2033
- New emissions regulations likely to prompt additional retirements RELIABILITY | RESILIENCE | SECURITY



Resource capacity and energy risks are assessed for Years $1 - 5^*$ in all assessment areas using the following criteria:



- Supply shortfall can occur in forecast conditions
 - Historical peak demand and resource performance
- Indicators
 - Reserve margins fall below RML
 - Loss of Load Expectation (LOLE) exceed 1-day-in-10 years
- Extreme conditions are also likely to result in shortfall

Elevated Risk

- Supply shortfalls are likely in extreme conditions only
 - Extreme high demand or abnormal low resource output
- Indicators
 - LOLE expected but less than 1day-in-10 years
 - Unserved energy expected
 - Supply risks found in studies of extreme conditions

*Resource adequacy trends are reported for years 6 - 10

2023 LTRA Findings



- Growing number of areas face capacity and energy risks in the next 10 years
 - Generator retirements expected before sufficient replacement resources will be in service
 - Energy risks identified in areas where future resource mix is not balanced between dispatchable and variable energy resources
- Higher demand forecasts, additional generator retirements, and changing resource mix contribute to expanding risk area

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Risk Area Summary 2024-2033



- Cryptocurrency mining is raising policy, market, operational, and planning issues in areas experiencing growth
- Growth in large industrial loads (data centers, smelters, manufacturing) can have implications for system reliability
 - Requires careful planning, operational coordination, and infrastructure
- Distribution transformer backlog and supply chain issues challenge storm restoration and response planning
- Planners have fewer blackstart resource options as current blackstart generators retire



The 2023 LTRA contains actionable recommendations to meet accelerating demand growth as grid transformation continues

- 1. Add new resources with needed reliability attributes, manage retirements, and make existing resources more dependable
- 2. Expand the transmission network to deliver supplies from new resources and locations to serve changing loads
- 3. Adapt BPS planning, operations, and resource procurement markets and processes for a more complex power system
- 4. Strengthen relationships among policymakers and reliability stakeholders



Questions and Answers



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