Climate READi: Power

NASUCA 2025 Mid-Year Meeting

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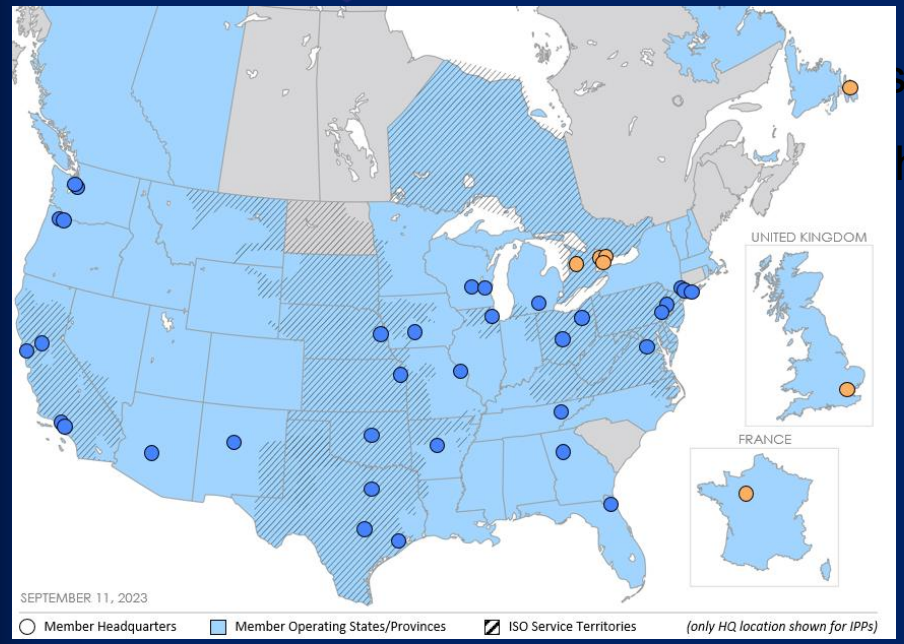
CLIMATE READi

RESILIENCE AND ADAPTATION INITIATIVE



42 member companies

100+ engaged external stakeholders

EPRI Climate Resilience and Adaptation Initiative (READi)

- **COMPREHENSIVE:** Develop a *Common Framework* addressing the entirety of the power system, planning through operations
- **CONSISTENT:** Provide an informed approach to climate risk assessment and strategic resilience planning that can be replicated
- **COLLABORATIVE:** Drive stakeholder alignment on adaptation strategies for efficient and effective investment

- Spring 2022 - Spring 2025
- All deliverables free to public

Deliverables: Common Framework Elements -> Guidance, References, & Tools

THE Climate READi: Power Framework

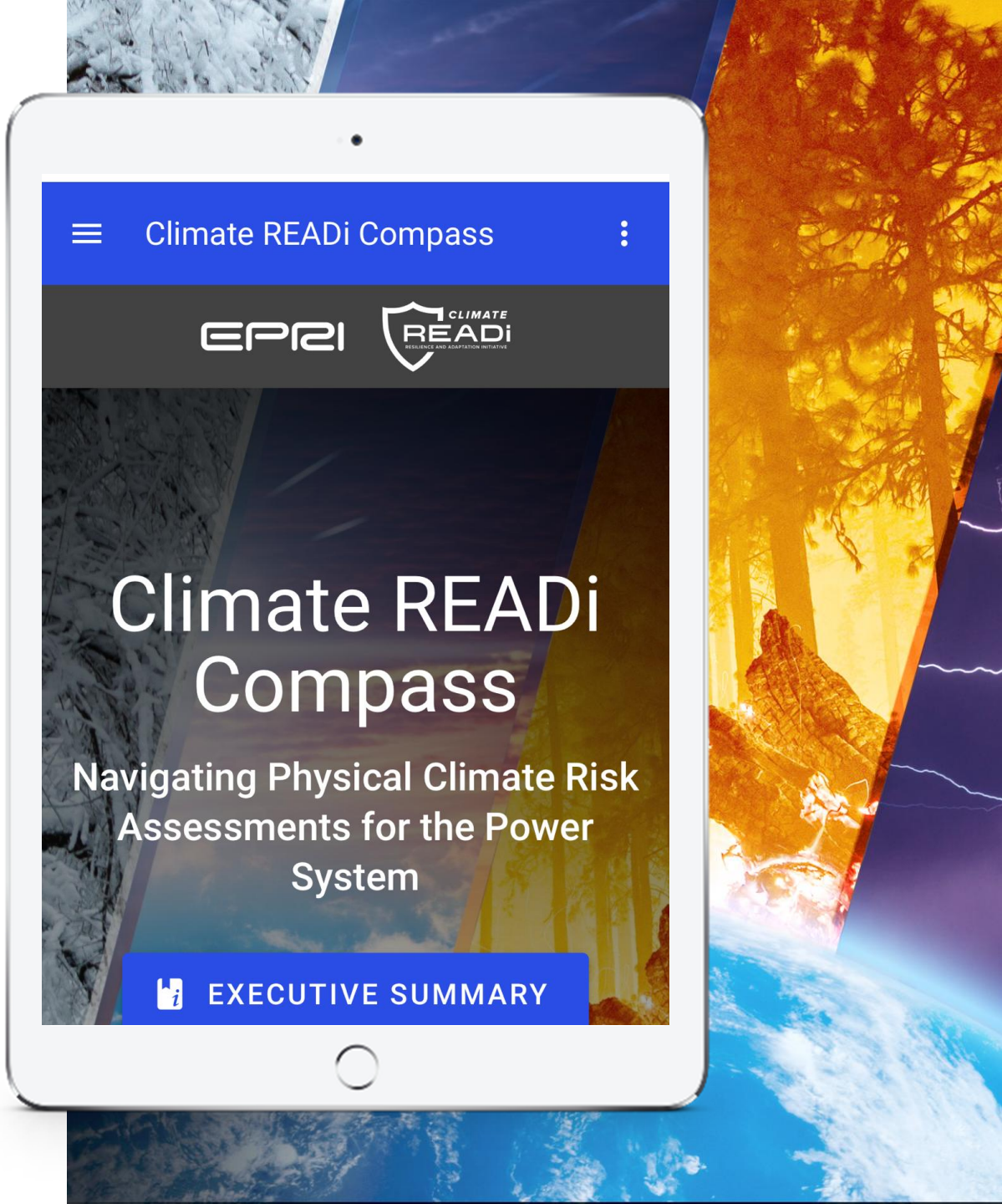
	READi	Climate Data	Asset Vulnerability	System Risk
Guidance	Climate READi Compass: Navigating Physical Climate Risk Assessments for the Power System	Climate Data Users Guide Climate Hazard and Exposure Assessment Guidance for Power System Applications	Asset Vulnerability and Response Assessment Guidance Climate Vulnerability Assessment Guidance for Nuclear Power Plant Fragility Curves for Quantifying Physical Climate Risk in the Electric Power Sector	Planning for Climate Resilience in the Power System: A Guide for Model Implementation Investing for Climate Resilience in the Power System: A Guide for Adaptation Prioritization and Decision-Making
References	Climate 101 Modules Case Studies and Story Maps	Approaches to Future Hourly Time Series for Climate-Resilient Power System Planning An Approach to Defining Temperature Extreme Events: A Threshold-based Probabilistic Approach to Defining Extreme Temperature Events Compound Hazards and the Power Sector in a Changing Climate Climate Data Gaps Assessment	Asset Vulnerability Literature Review Series	Developing a Climate Informed Modeling Framework for Power System Planning – A Synthetic Texas Case Study Practices for Representing Climate Impacts in Bulk Electric System Models Metrics to Evaluate Effectiveness of Resilience Strategy Deployment
Tools	Disclosing Physical Climate Risk: Inventory of Climate READi Resources to Support Reporting and Disclosure Activities	Climate Data Inventory Wildfire Tool Inventory and Evaluation	Climate-Related Vulnerabilities and Adaptations for Electric Power System Assets	Climate Risk Screening (RiSc) Tool

Climate READi Compass:

Navigating Physical Climate Risk Assessments for the Electric Power Sector

Compass provides practitioners with a single resource for navigating the Climate READi Framework and identifying the elements of the Framework best suited to their current implementation needs.

Access Compass here!

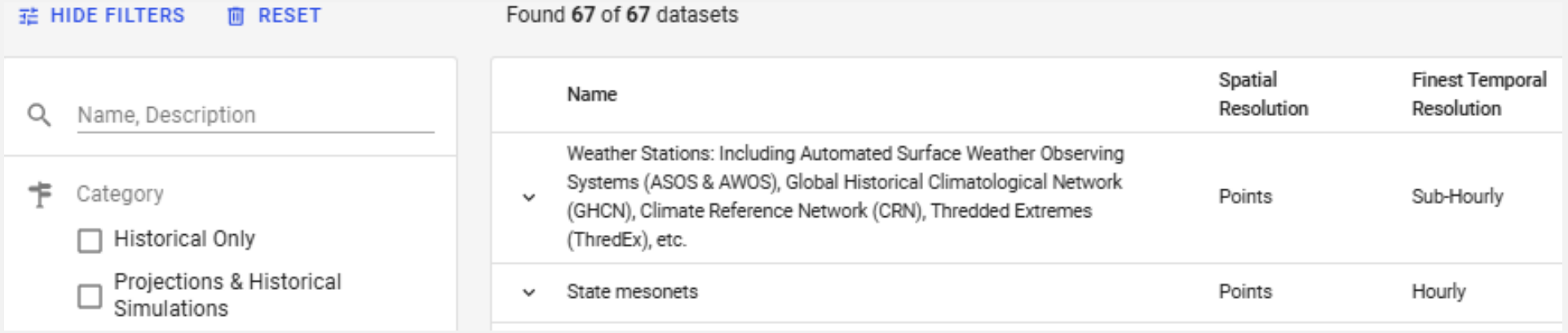


Climate data are foundational inputs for physical climate risk assessment

1 Discover changes in relevant climate hazards

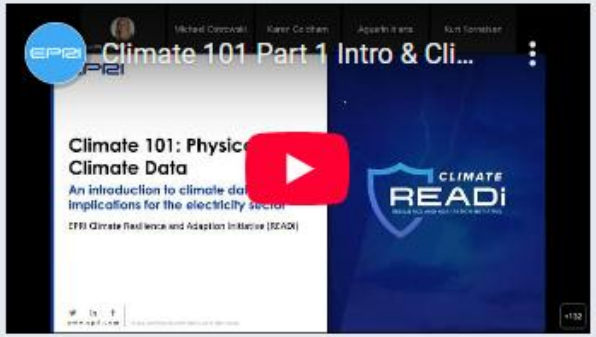
2 Identify suitable climate data. Justify data choices.

3 Generate climate data for other Framework activities



Access the Climate Data Inventory

Introduction and Module 1 - Climate Data Overview



View the event or Download Video

Module 2 - Climate Models, Emissions Scenarios, and Projection Data

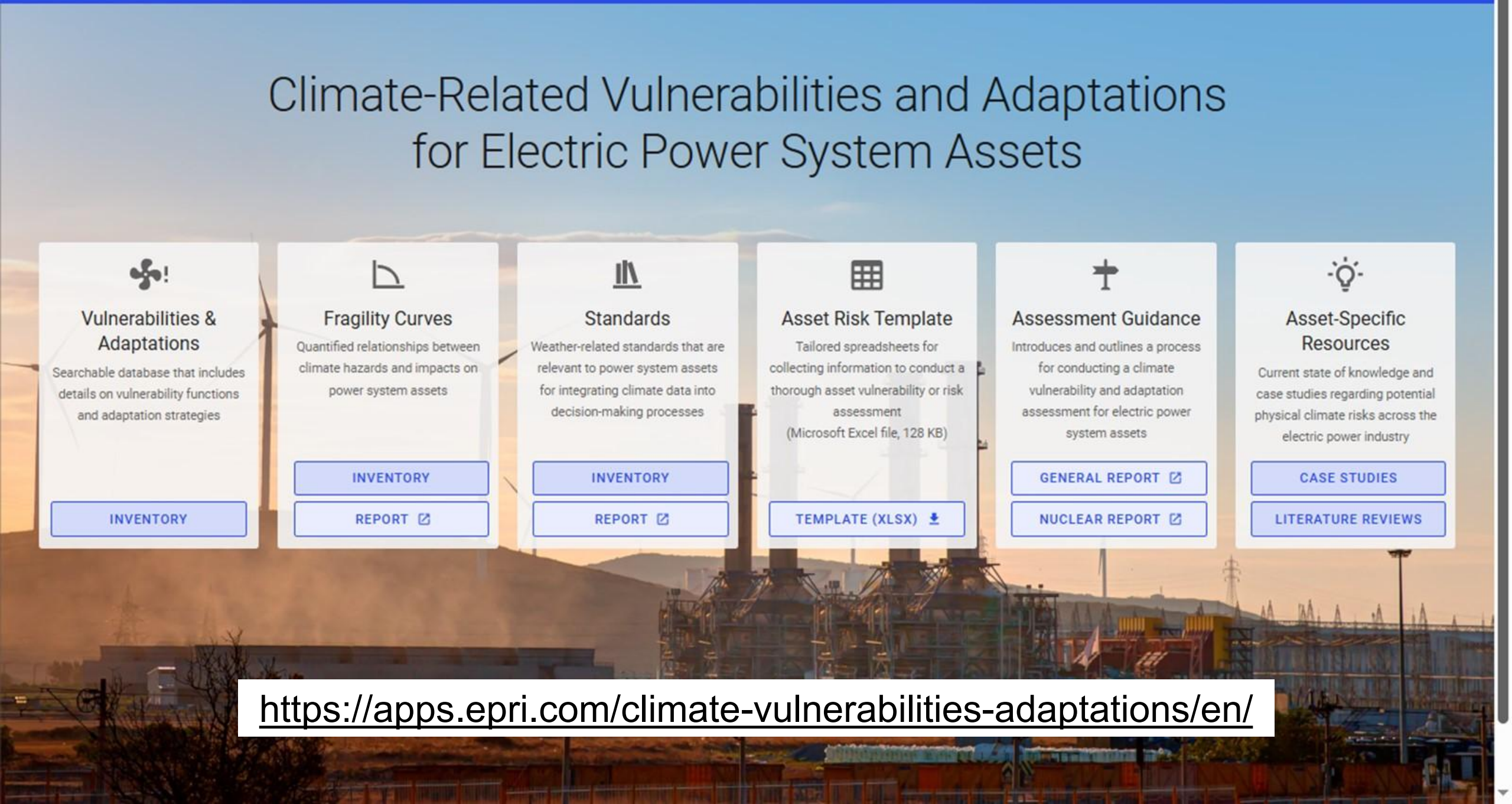
View the event or Download Video

Module 3 - Trends and Understanding of Extreme Events

View the event or Download Video

Access the Climate 101 Tutorials

Climate-Related Vulnerabilities and Adaptations for Electric Power System Assets



Vulnerabilities & Adaptations

Searchable database that includes details on vulnerability functions and adaptation strategies

INVENTORY

Fragility Curves

Quantified relationships between climate hazards and impacts on power system assets

INVENTORY

REPORT

Standards

Weather-related standards that are relevant to power system assets for integrating climate data into decision-making processes

INVENTORY

REPORT

Asset Risk Template

Tailored spreadsheets for collecting information to conduct a thorough asset vulnerability or risk assessment
(Microsoft Excel file, 128 KB)

TEMPLATE (XLSX)

Assessment Guidance

Introduces and outlines a process for conducting a climate vulnerability and adaptation assessment for electric power system assets

GENERAL REPORT

NUCLEAR REPORT

Asset-Specific Resources

Current state of knowledge and case studies regarding potential physical climate risks across the electric power industry

CASE STUDIES

LITERATURE REVIEWS

https://apps.epri.com/climate-vulnerabilities-adaptations/en/

Cost and Benefits of Proactive Climate Adaptation in the Electric Sector

- Outlines and quantifies the benefits of proactively implementing climate adaptation strategies
- Explores costs of recent disasters and recovery, and comparisons to proactive hardening costs

Proactive adaptation of US transmission and distribution assets reduces future costs by 50%
(Fant et al.)

Savings of $1 billion per company with proactive adaptation just for hurricane-related costs over 20 years
(McKinsey & Co)

Investments in more resilient infrastructure for low- and middle-income countries bring $4 in benefit for every $1 invested
(World Bank)

Without proactive adaptation, damage costs to Canadian transmission and distribution assets will increase by $2.4 billion per year by 2050
(Canadian Climate Institute)

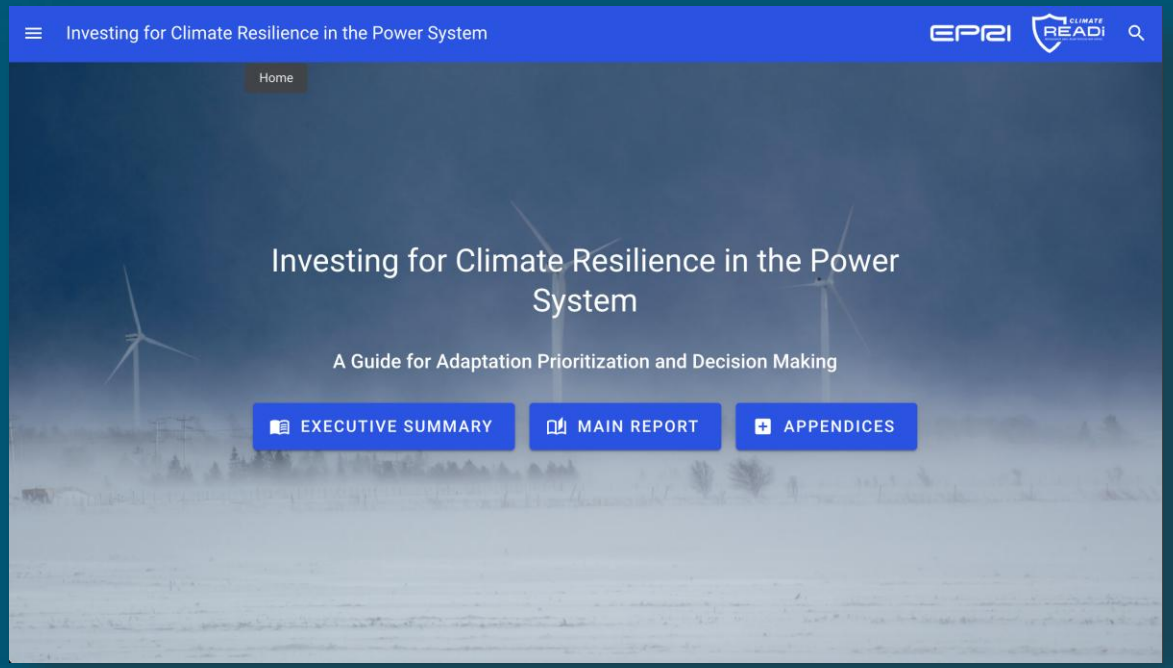
Proactive adaptation of road infrastructure reduces costs by 98.8%. For rail infrastructure, 92.7%
(Neumann et al.)

Proactive adaptation is consistently less expensive than respond & repair

Two Primary Guidance Documents: Modeling and Investment

Planning for Climate Resilience in the Power System: A Guide for Model Implementation

Investing for Climate Resilience in the Power System: A Guide for Adaptation Prioritization and Decision-Making



Investment Guidance available here

Modeling Guidance available here

Additionally, 12 deliverables developed in support of the guidance documents. Available now or later this year here

Story Maps and Case Studies

Interactive deliverables illustrating physical climate risks to the power system, with new releases planned through 2025

Access all story maps here.

Evaluating Local Climate Change Impacts

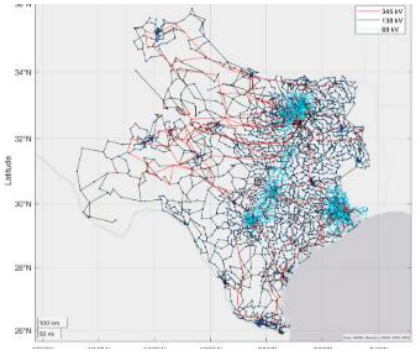
Outlines a six-stage process to help utilities assess climate risks using region-specific data and steps like collaboration, hazard scoping, and results analysis.

Projected future hurricane-related power outages

Developed by EPRI and PNNL, this story map combines synthetic storm tracks and outage predictions to show how hurricane-related outages may change across Gulf and Atlantic coast counties under future climate conditions.

Climate-Driven Variability in Wind and Solar Co-Generation

This story map analyzes decades of wind and solar data at 1,723 U.S. sites to reveal seasonal and interannual variability, resource complementarity, and implications for net-load and storage needs.



Climate-Informed Power System Modeling: Texas Case Study

This story map presents key results from testing a climate-informed power system modeling framework using a synthetic Texas grid to support resilience planning.

Coming soon – Hydropower, Nuclear, Distribution System, and More