

Reliability Fundamentals: The Electric Reliability Mission & Culture of Reliability

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Orientation Agenda

1. The Electric Power System as Critical Infrastructure

The Bulk Power System underpins economic stability and public safety, making reliability a national priority.

2. Real-World Consequences of Failure

Reliability failures create cascading effects far beyond a single entity or region.

3. Section 215 and the Delegated Oversight Model

Congress established a framework in which industry and regulators share responsibility for reliability.

4. NERC, FERC, and Regional Entities

Oversight is distributed but aligned, with each organization playing a defined role in risk reduction.

5. Interdependence of the System

Small entities can create large impacts due to the interconnected nature of the grid.

6. Compliance Risk vs System Risk

Not all violations carry the same system impact; understanding this distinction is critical.

7. Culture of Reliability and Professional Expectations

Reliability depends on consistent behaviors, not just technical compliance.

The Grid — 20 Years of Reliability



Energy Policy Act of 2005

- Federal Power Act, Section 215 calls for mandatory enforceable standards
- FERC certifies an Electric Reliability Organization — the ERO (NERC)
- NERC may delegate authority to Regional Entities; e.g., WECC
- Industry develops standards, approved by FERC

H. R. 6

One Hundred Ninth Congress of the United States of America

AT THE FIRST SESSION

*Begun and held at the City of Washington on Tuesday,
the fourth day of January, two thousand and five*

An Act

To ensure jobs for our future with secure, affordable, and reliable energy.

*Be it enacted by the Senate and House of Representatives of
the United States of America in Congress assembled,*

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the “Energy Policy Act of 2005”.

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

Sec. 1. Short title; table of contents.

TITLE I—ENERGY EFFICIENCY

Subtitle A—Federal Programs

Sec. 101. Energy and water saving measures in congressional buildings.

Sec. 102. Energy management requirements.

Sec. 103. Energy use measurement and accountability.

Sec. 104. Procurement of energy efficient products.

Sec. 105. Energy savings performance contracts.

Sec. 106. Voluntary commitments to reduce industrial energy intensity.

Sec. 107. Advanced Building Efficiency Testbed.

Sec. 108. Increased use of recovered mineral component in federally funded projects

involving procurement of cement or concrete.

Sec. 109. Federal building performance standards.

Sec. 110. Daylight savings.

Sec. 111. Enhancing energy efficiency in management of Federal lands.

Subtitle B—Energy Assistance and State Programs

NERC Rules of Procedure and Delegation Agreement

- Rules of Procedure (ROP)
 - NERC's foundational governing document. It establishes the detailed processes, responsibilities, and rules by which NERC (as the FERC-certified Electric Reliability Organization or ERO) carries out its federal mandate under Section 215 of the Federal Power Act.
 - The “Rulebook” for Reliability
 - Affects Regional Entities (like WECC) and Registered Entities (like you).
- NERC's Delegation Agreement with WECC
 - This legal contract delegates federal authority from NERC to WECC as the Regional Entity for the Western Interconnection.
 - It enables WECC to carry out key electric grid reliability functions regionally.

Governance and Funding

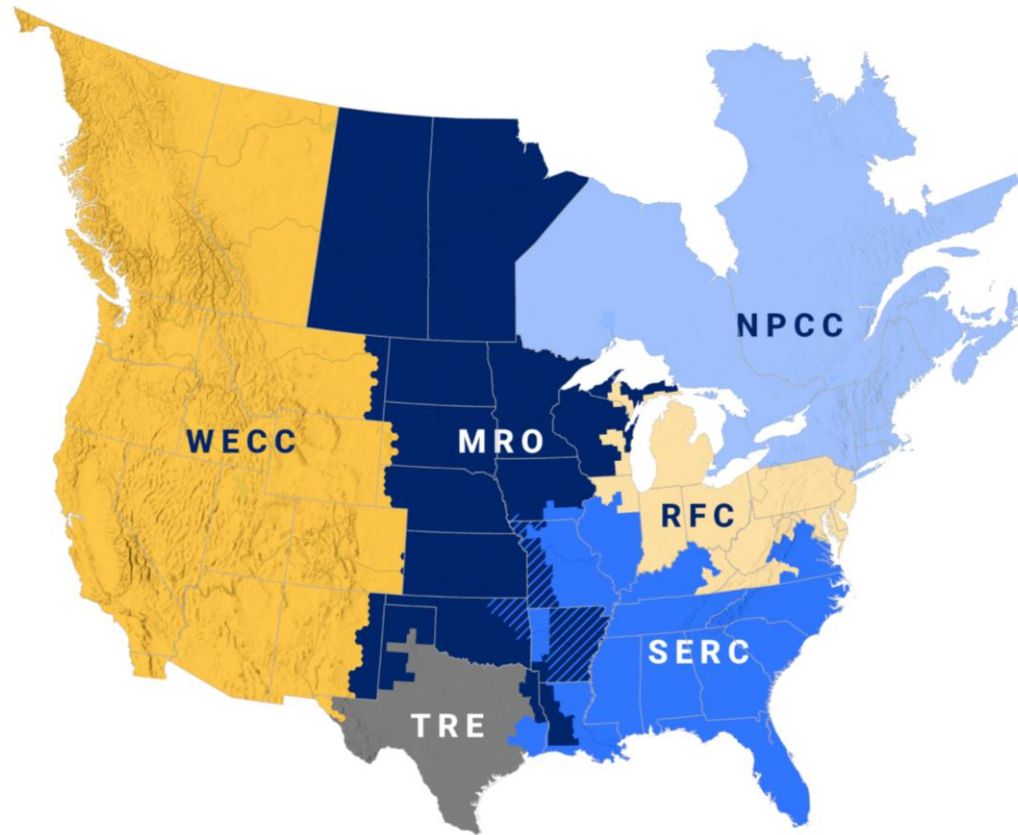
- WECC is a 501(c)(4) social welfare, non-profit corporation that exists to ensure a reliable Bulk Electric System in the Western Interconnection.
- WECC is funded by load-serving entity (LSE) assessments authorized by FERC under Section 215 of the Federal Power Act.
- [WECC's Bylaws](#)

Board of Directors

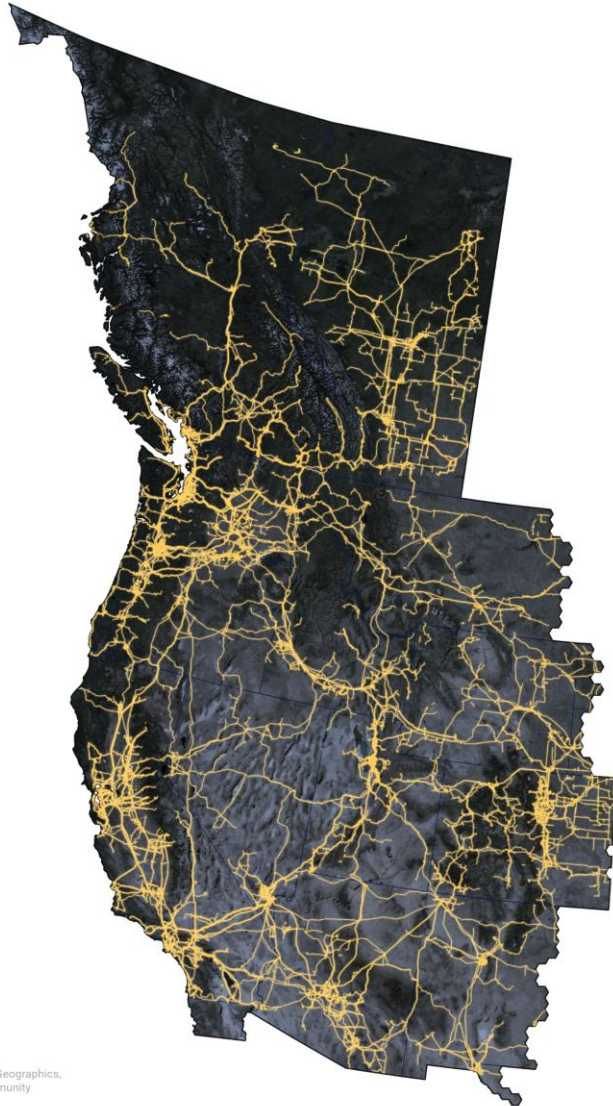
- WECC is governed by a nine-member, independent board of directors and the chief executive officer.
- The nine directors are independent of any registered entity in the Western Interconnection, either by employment or affiliation.
- The WECC board is elected by the WECC membership, and the directors are compensated for their time.



ERO Enterprise



Interconnection-wide View of Reliability



- The Western Interconnection is made up of about 156,000 miles of transmission lines.
- Long, high-voltage lines were built to connect remote generating resources with distant population centers, primarily along the West Coast.
- Due to unique geography, demography, and history, the Western interconnection is distinct from the other North American interconnections.
 - 88,000,000+ people
 - 1,800,000 square miles
 - 87% public or protected land

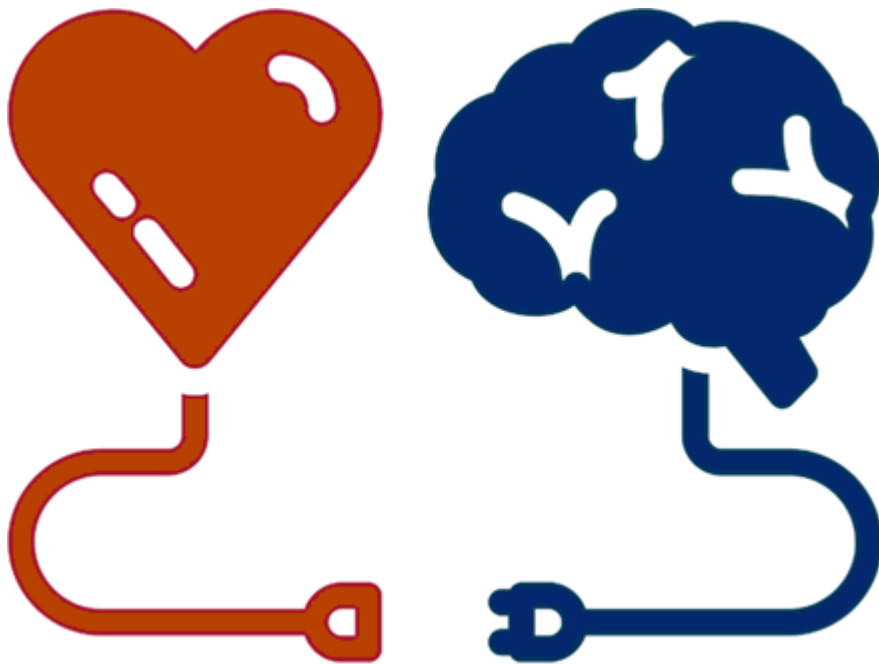
Our Stakeholders



Our “Why”

“Electricity is an integral part of the fabric of modern life.

WECC strengthens that fabric to preserve and improve society’s future.”



What happens when
the power goes out?



**A reliable and secure
Bulk Power System in the
Western Interconnection**



**To effectively and efficiently mitigate
risks to the reliability and security
of the Western Interconnection's
Bulk Power System**



WECC

**OUR LONG-
TERM STRATEGY**

**The independent voice of
Bulk Power System Reliability
in the Western Interconnection**

Bulk Power System vs. Bulk Electric System

- Bulk Power System — (A) facilities and control systems necessary for operating an interconnected electric energy transmission network (or any portion thereof); and (B) electric energy from generation facilities needed to maintain transmission system reliability. The term does not include facilities used in the local distribution of electric energy.
- Bulk Electric System — Unless modified by the lists shown below, all Transmission Elements operated at 100 kV or higher, and Real Power and Reactive Power resources connected at 100 kV or higher. This does not include facilities used in the local distribution of electric energy.
 - Inclusions and exclusions are specified in the definition.

Dynamic Change in the West

- The Western Interconnection is changing at a magnitude and pace that is unprecedented. These changes all threaten reliability and security:
 - Increasingly recurrent extreme natural events
 - Large-scale generator retirements to meet aggressive clean energy goals
 - Massive amounts of generators coming online that bring new technological and dispatchability challenges
 - Evolving and increasing cyber threats and physical threats
 - Risks and opportunities posed by artificial intelligence
 - Rapidly changing demand brought about by electrification
 - The proliferation of data centers and other technologies with their accompanying large loads

Annual Demand Forecasts

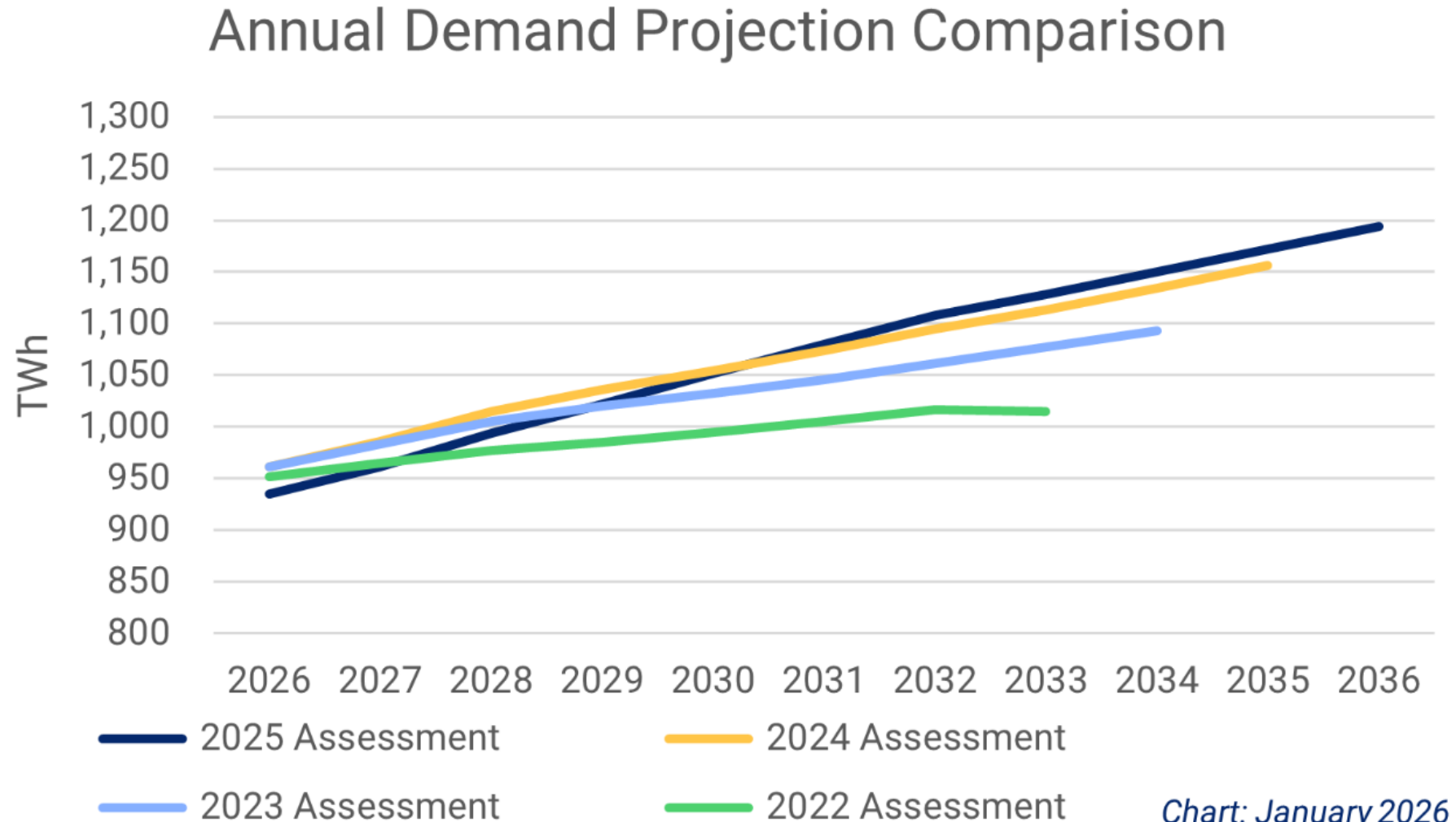
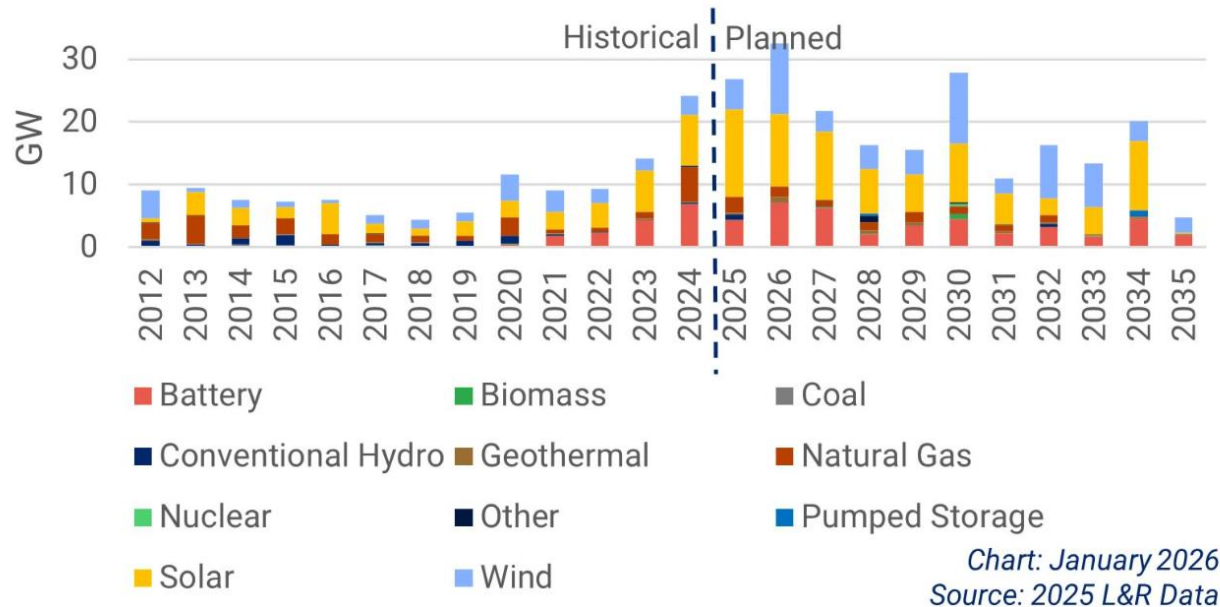


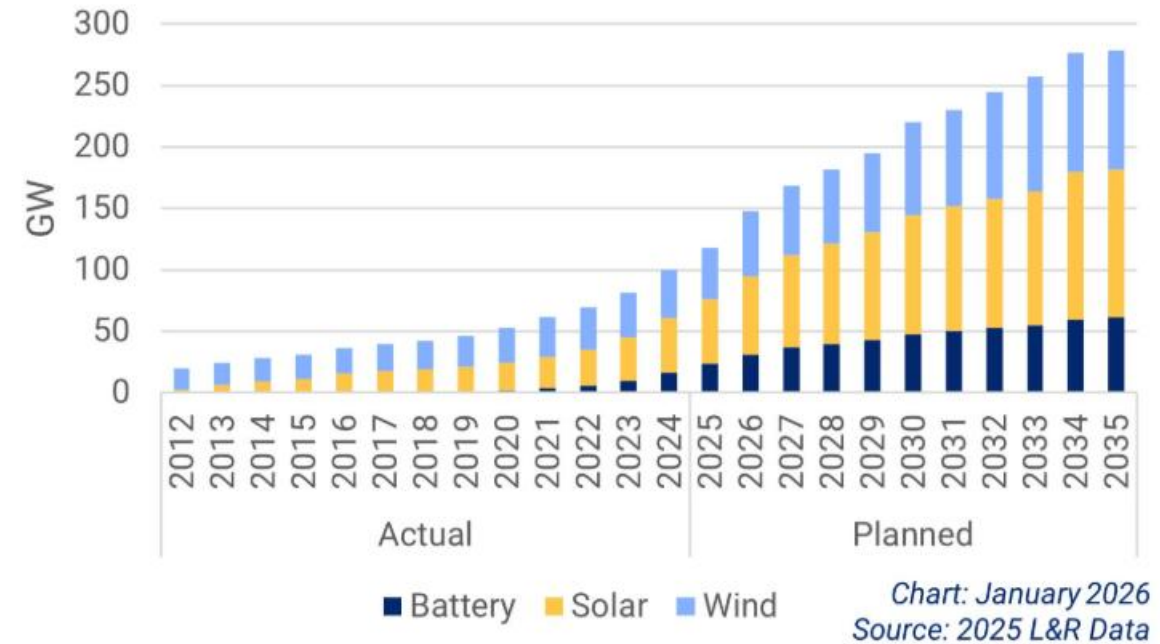
Chart: January 2026
Source: L&R Data

Planned Additions

Historical and Planned Resource Capacity Additions, 2012-2035

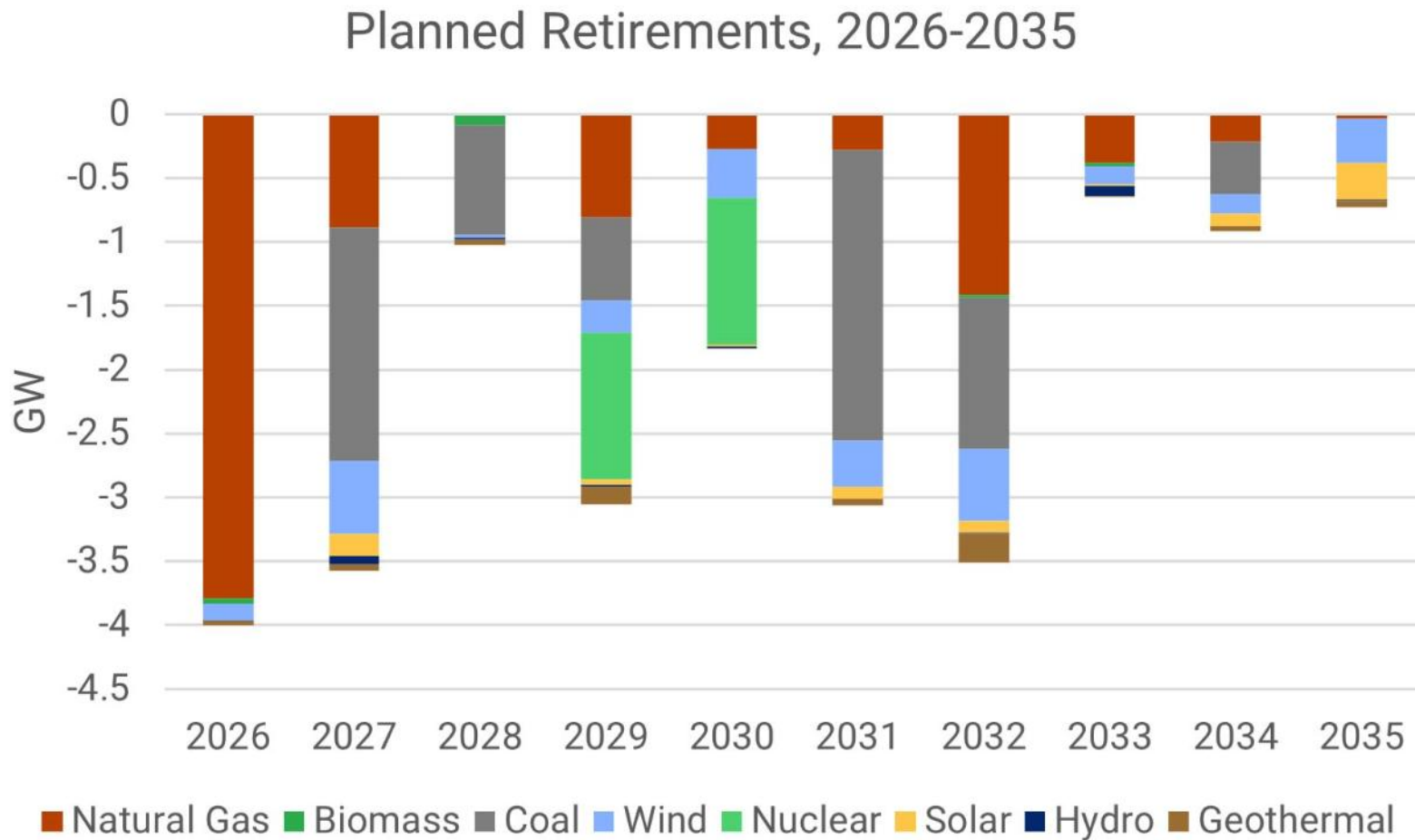


IBR Capacity, 2012-2035



- 177 GW from 2026 to 2035
- 90% is inverter-based resources (battery, solar, wind)
- 70% are variable energy resources (solar and wind)

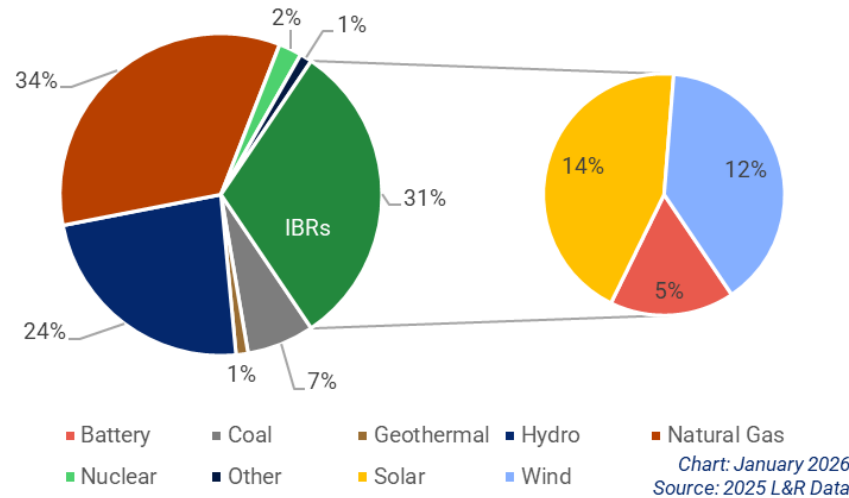
Planned Retirements



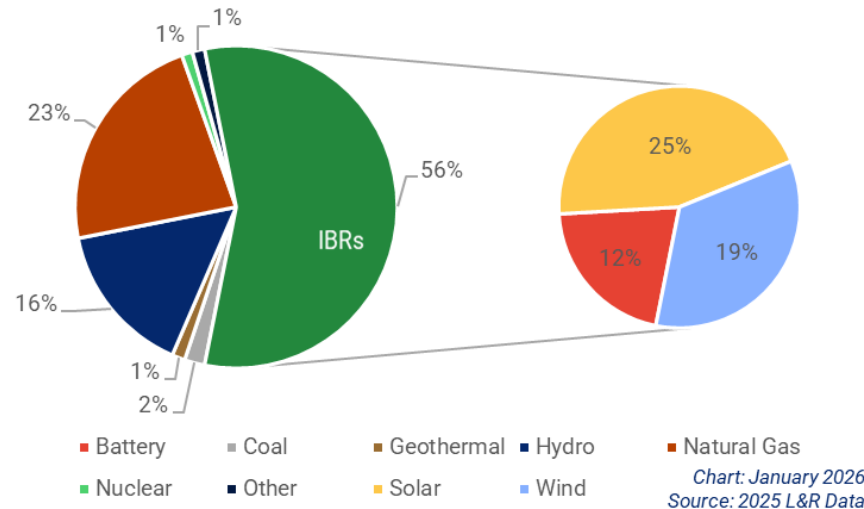
- 22 GW from 2026–2035
- 80% is natural gas, coal, or nuclear

Resource Mix

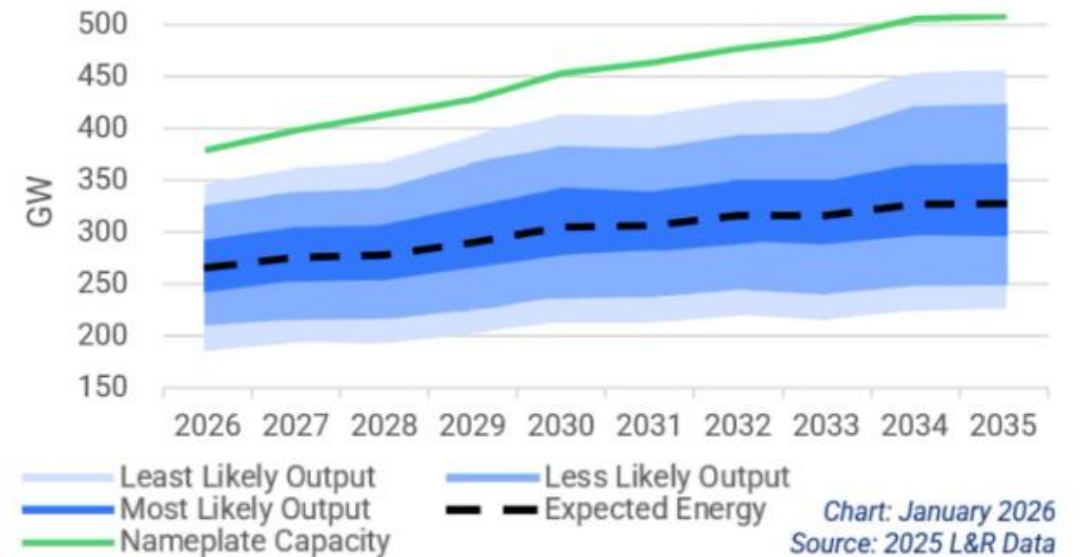
Year-end 2024



Projected Year-end 2035



Comparison of Nameplate Capacity to Available Energy



Our Long-term Strategy



Impact Area 1: Risk Mitigation

We are an organization aligned on risk reduction. Our holistic risk-based approach uses all the tools and skills available to deliver comprehensive risk mitigation strategies.



Impact Area 2: Partnership

We are sought after as a partner to address the risks that pose the great threats to reliability. We identify concerns, facilitate resolutions with input and assistance from diverse and often conflicting stakeholder perspectives, and focus on resources and risks that pose the greatest threats to reliability and security.



Impact Area 3: Perspective

Our insights, analyses, and outreach drive industry action. We are renowned for providing clear and actionable communications supported by data and rigorous analysis.



Impact Area 4: Independence

Our resource-and-technology-neutral, interconnection-wide perspective is respected and trusted to assure decision-makers that they have an independent partner to rely on.

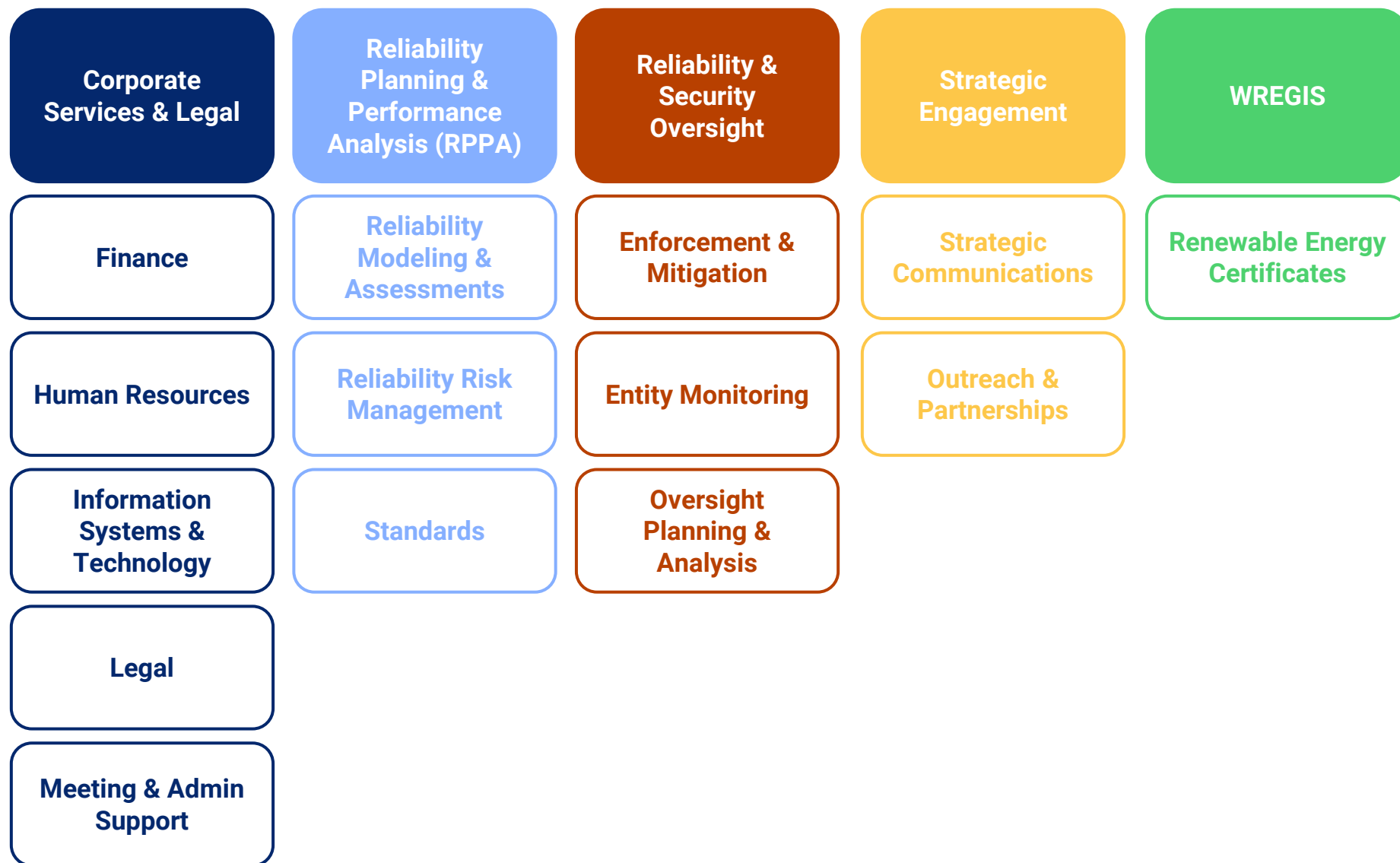


Impact Area 5: People

Our highly skilled and engaged employees are champions for reliability.



Program Areas



Program Areas

Reliability
Planning &
Performance
Analysis (RPPA)

Reliability
Modeling &
Assessments

Reliability Risk
Management

Standards



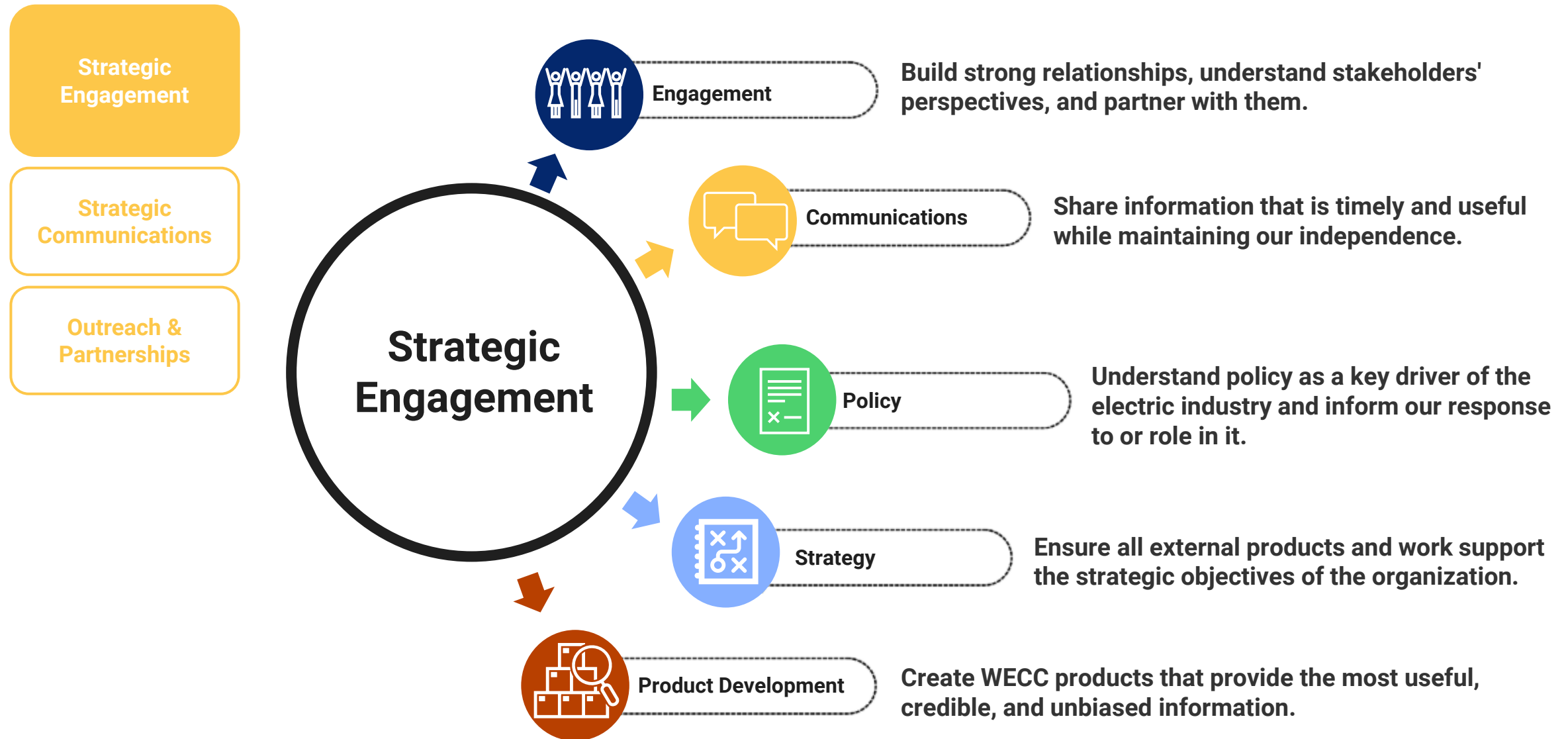
Risk Management



Program Areas



Program Areas



Program Areas

WREGIS

Renewable Energy
Certificates

Western Renewable Energy Generation Information System (WREGIS)

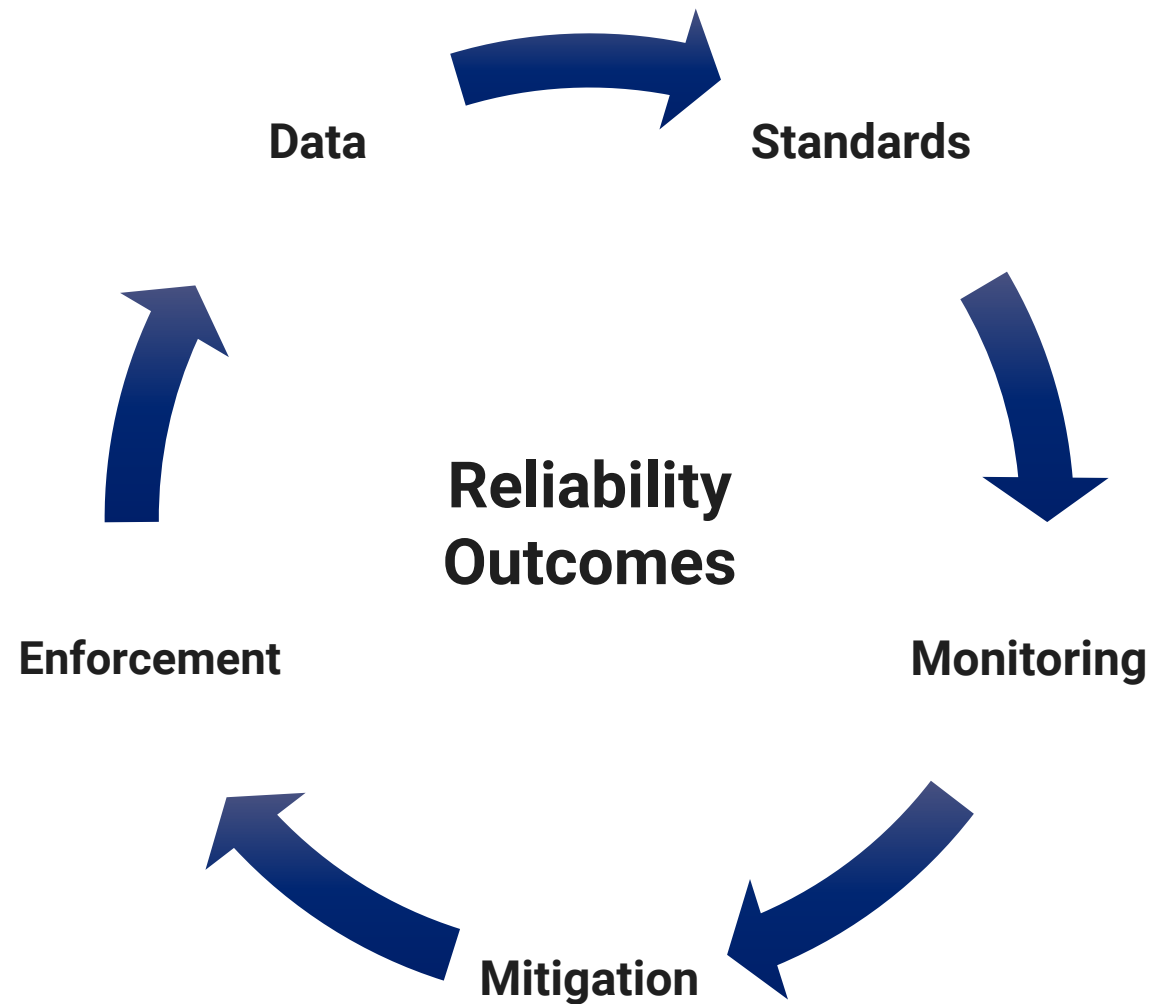
- Issues and tracks Renewable Energy Certificates (REC) used to verify compliance with regulatory and voluntary markets by—
 - Remaining policy-neutral
 - Using independent, verifiable, and reliable data
 - Protecting against double-counting to increase credibility and consumer confidence
 - Facilitating voluntary market participation with commercial trading of WREGIS certificates

Compliance Risk vs. System Risk

- **Compliance Risk**
 - Non-adherence to required standards governing operations driven by a known risk
- **System Risk**
 - The possibility that the failure of a single device, company, or event could cascade, create instability or collapse of the bulk power system



The Reliability Ecosystem



When Compliance Risk Becomes System Risk

- **Compliance Risk**

- Neglecting to evaluate and install cybersecurity patches for critical cyber-assets within strict 35-day timelines
- Neglecting to perform a vegetation inspection of 100% of its applicable lines

- **System Risk**

- Most successful cybersecurity breaches and attacks exploit known, unpatched vulnerabilities. Applying patches drastically reduces your system's attack surface.
- When a tree grows into a transmission line, it creates a severe fire hazard, a public safety risk, and potential power outages.

Welcome to a Relationship with WECC!

- Context — a new relationship
- WECC wants you to be successful.
- Clarity is kindness
 - Clear about what you can expect from WECC
 - Clear about what WECC expects of you



Strong Culture of Reliability

- Reducing risks to reliability is most important to WECC.
- WECC fosters a strong culture of reliability.
- What is a strong culture of reliability?
 - Encompasses risk reduction and compliance with Reliability Standards
 - Deeply engrained in thoughts, behaviors, and actions
 - Goes beyond adhering to rules
 - Proactive, values-driven mindset
 - Demonstrable



Weak Culture of Reliability

- Lacking:
 - A flagrant disregard
 - Little attempt to meet Reliability Standards; bare minimum not met
- Weaker:
 - Meets the letter of the requirements while ignoring the spirit behind them
 - Focuses on meeting the bare minimum to avoid penalties
 - “Check-the box” mentality

Strong	Weaker	Lacking
Do what's right by reliability	Do what I must for reliability	Do little for reliability
Proactive	Reactive	Little reliability focus
Reliable and without violations	No violations	Reliability and compliance is not worth much time/investment
Achieve reliability excellence	Avoid trouble	Largely ignore

Interactions with WECC – What You Can Expect

- Reliability Standards are developed for issues critical for reliability.
- WECC Oversight is responsible for verifying that Registered Entities are doing right by reliability.
- Expect WECC to be interested in your organization's culture of reliability, a big part of which is compliance with requirements.
- Compliance with requirements is one component of your reliability program that provides demonstrable evidence of a bigger reliability goal and culture.
- Evidence of a weak culture of reliability prompts WECC to dig deeper.



Reliability Resources

Resources

- WECC website: wecc.org
- System Performance Data Portal
- Annual State of the Interconnection Report
- Annual Western Assessment of Resource Adequacy
- Wildfire Dashboard
- Weekly Wildfire Update



www.wecc.org | 801-582-0353



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