

## **Electrifying Aotearoa Today's innovation, tomorrow's system**

# **Paper Themes and Context**

### **'Electrifying Aotearoa: Today's innovation, tomorrow's system'.**

Our nation's electric future is one of decarbonisation, deregulation, digitalisation and decentralisation – all of which are critical to achieving net zero emissions by 2050.

The pace and scale of change required is unprecedented bringing a wealth of new opportunities and challenges to overcome.

Join us as we work to grow and share our collective knowledge by presenting at EEA2025!

We are seeking presentations from all you forward thinkers, industry experts, futurists, problem solvers and curious minds to help build our knowledge on the challenges and opportunities we face as we transition to a low carbon economy.

Presentation themes could include:

#### **1. Advancing Renewable Integration**

- Overcoming technical challenges in grid integration.
- Scaling up distributed energy resources (DERs).

#### **2. Demand Flexibility and Consumer Empowerment**

- Harnessing consumer behaviour for demand-side management.
- Optimizing smart energy devices for grid and consumer value.

#### **3. Resilience in the Face of Climate Events**

- Improving network preparedness.
- Innovations in system hardening and restoration.

#### **4. Low Voltage Networks and Smart Grids**

- Challenges of managing high-DER penetration.
- Digital twins for LV networks: Use cases and opportunities.

#### **5. Big Data and Digital Transformation**

- Data-driven network planning and asset management.
- Unlocking value through AI and machine learning.

#### **6. Distributed System Operations (DSOs)**

- Transitioning to a DSO model: Roles and responsibilities.
- Enabling flexible connections for generation and load.

## **7. Electrification of Aotearoa Together**

- Collaborations to accelerate electrification efforts.
- Engaging communities for an equitable transition.

## **8. Asset Management and Infrastructure Planning**

- Future-proofing assets for grid modernisation.
- Innovations in lifecycle cost management.

## **9. Environmental and Social Sustainability**

- Reducing environmental impact while increasing grid capacity.
- Enhancing social acceptance of energy infrastructure.

## **10. Regulatory and Market Innovations**

- Adapting market structures to enable flexible services.
- Regulatory reforms for DER and demand-side participation.

## **11. Cybersecurity and Energy System Reliability**

- Addressing cybersecurity threats in a digitised grid.
- Ensuring reliability amidst growing complexity.

## **12. Connecting Generation and Load to the Grid**

- Streamlining connection processes for renewable projects.
- Best practices in stakeholder collaboration and engagement.

## **13. Innovation in the Electricity Industry**

- Emerging technologies transforming the energy landscape.
- Case studies on successful innovation adoption.

## **14. Public Safety and Grid Operations**

- Strategies for managing risks to public safety.
- Balancing operational demands with safety standards.

## **15. Future Workforce and Capability Building**

- Preparing the workforce for a transforming energy sector.
- Diversity and inclusion as enablers of innovation.

## **16. Collaboration for Sector-Wide Challenges**

- Co-innovation for shared industry goals.
- Lessons from international partnerships and pilots.

## **17. Energy Storage and Grid Reliability**

- The evolving role of battery storage in system stability.

- Maximising value from utility-scale and behind-the-meter storage.
- Innovative storage solutions for firming renewables.
- The economics of storage: Stacking value streams and market participation.

#### **18. Extending the Life of Legacy Assets in the Energy Transition**

- Strategies for repurposing aging infrastructure for modern grid needs.
- Managing aging transformers, substations, and lines in a decarbonized world.
- Condition monitoring, predictive maintenance, and life-extension techniques.
- Regulatory and financial considerations for asset refurbishment vs. replacement.

#### **19. Building the Industry Leaders of Tomorrow: Workforce, Skills, and Leadership**

- Developing the next generation of engineers, technicians, and industry leaders.
- Addressing skills shortages in trades and engineering.
- Upskilling for the energy transition: New capabilities as the country fully electrifies.
- Leadership development: Building diverse, adaptive, and future-ready teams.
- Retaining talent and fostering innovation in a changing electricity sector.

#### **20. Electrifying Industry and Agriculture**

- Overcoming barriers to industrial electrification and process heat transition.
- Opportunities for electrification in agriculture: irrigation, processing, and on-farm energy use.
- Integrating renewables, demand flexibility, and storage in industrial and agricultural settings.
- Policy, market, and technology enablers for large-scale electrification.