BREAKOUT SESSION 1

Connecting **data centres** to Queensland's transmission network

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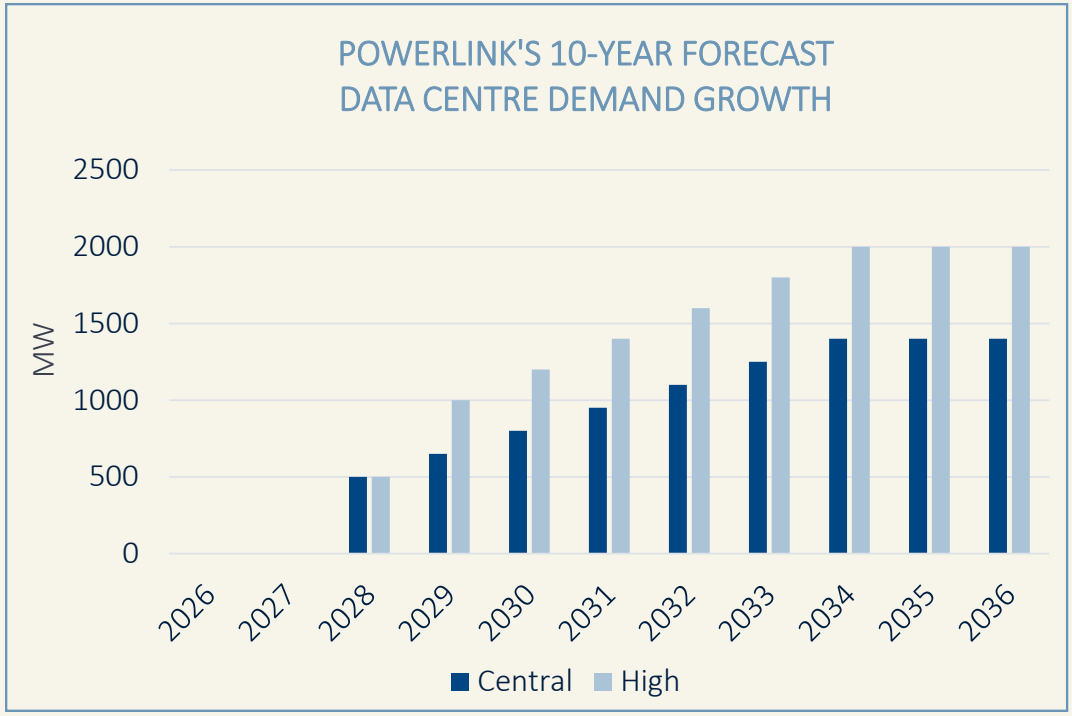
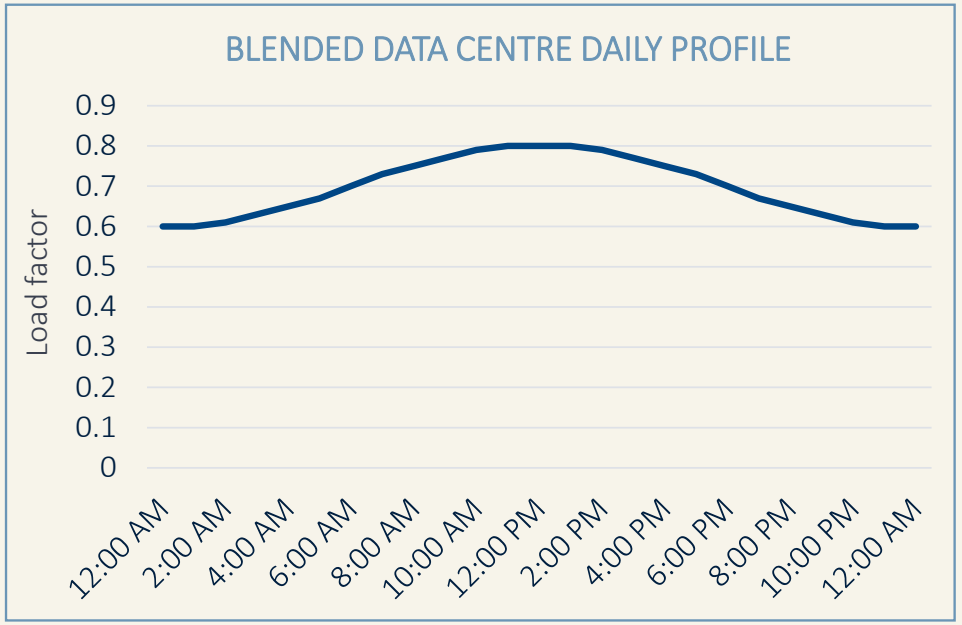
Load forecast

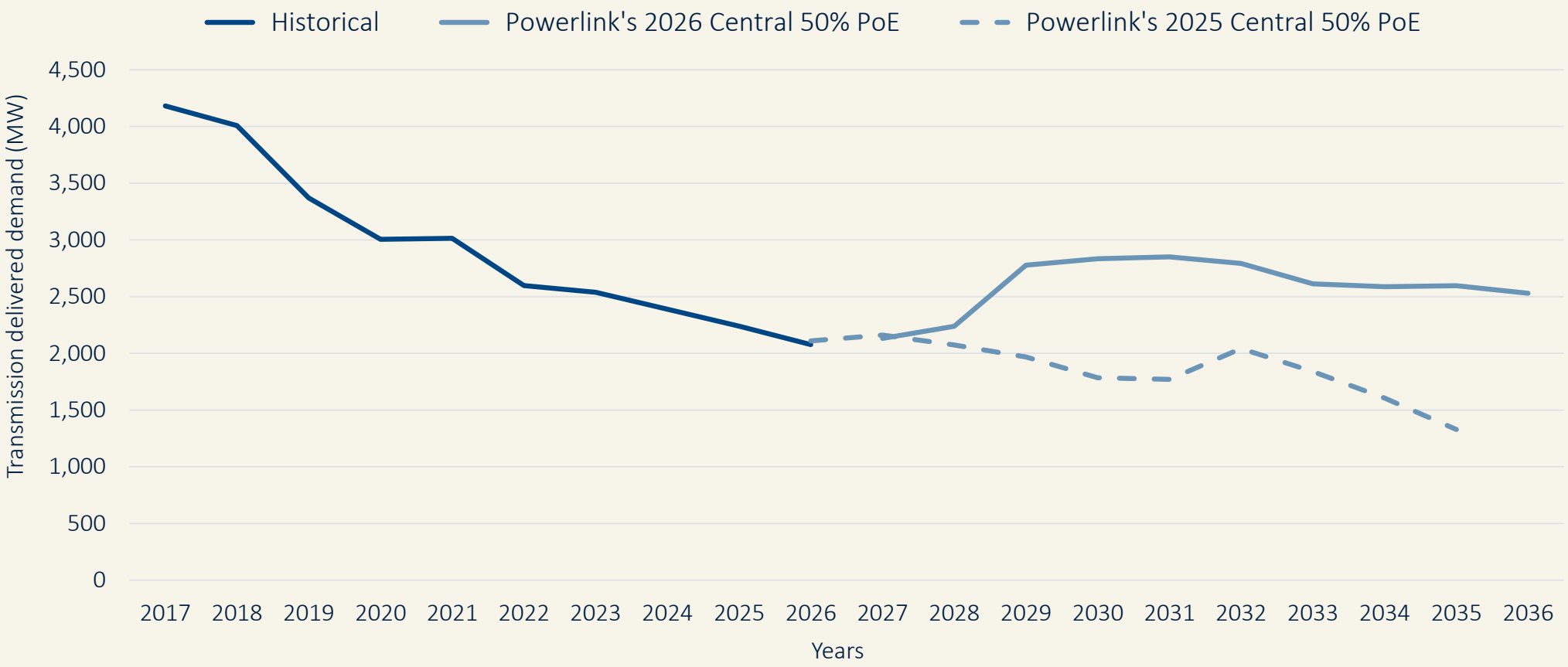
The 2026 TAPR assumes 1,400MW of data centre load in the central scenario and 2,000MW in the high scenario.

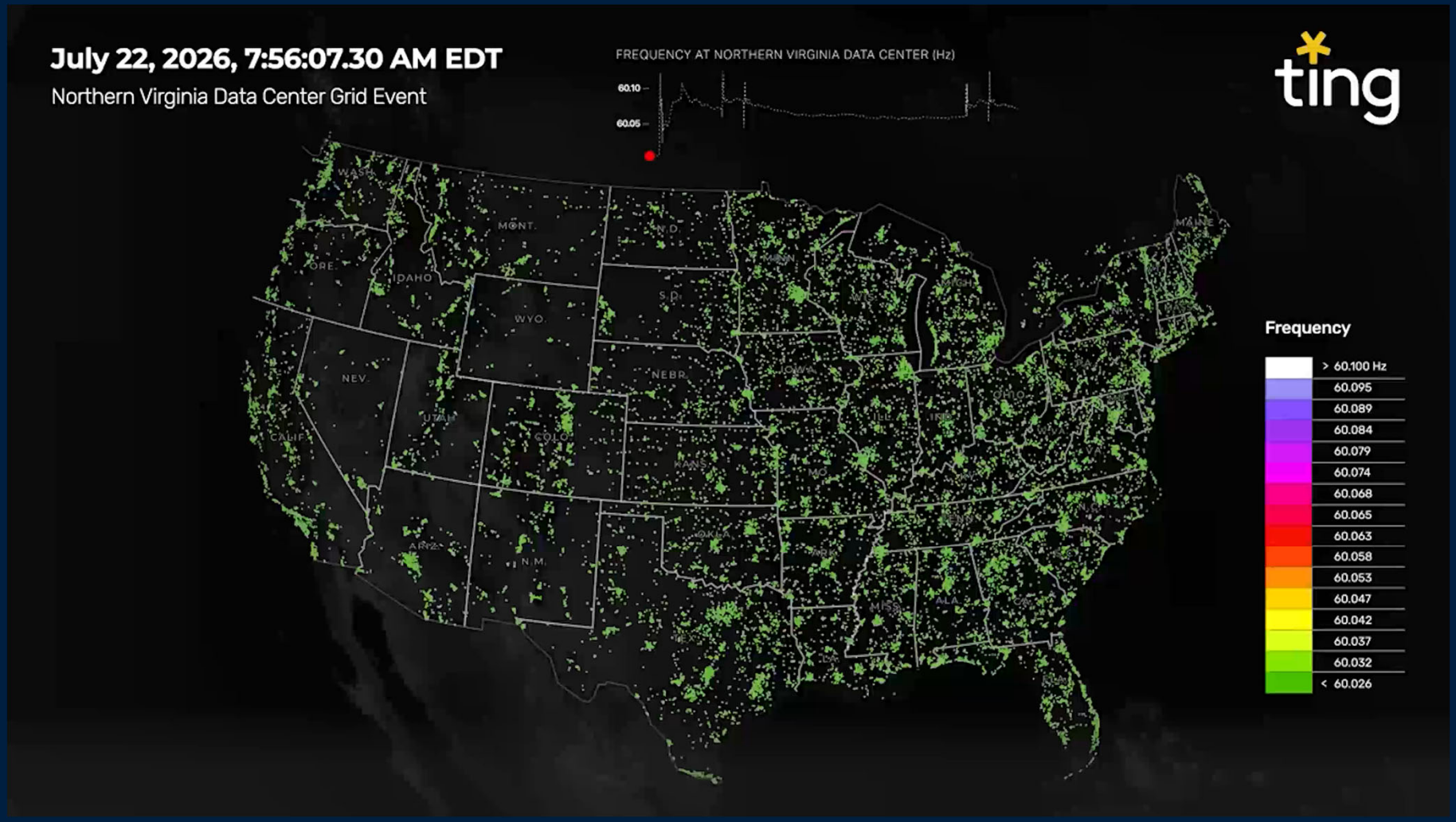




Data-centre demand profiles vary according to their underlying workloads. As the forecast future mix is not yet confirmed, the forecast assumes a representative combination of AI training, AI inference and cloud computing to capture a plausible daily operating profile.

Benefits of load on minimum demand




July 22, 2026, 7:56:07.30 AM EDT
Northern Virginia Data Center Grid Event
FREQUENCY AT NORTHERN VIRGINIA DATA CENTER (Hz)
60.10
60.05
ting
Frequency
> 60.100 Hz
60.095
60.089
60.084
60.079
60.074
60.068
60.065
60.063
60.058
60.053
60.047
60.042
60.037
60.032
< 60.026

Connecting in the National Electricity Market



1. Engage with **the community early**
2. Engage with **technical advisors** who have done connections before; planning, system strength, market modelling
3. Engage with our **connections team early**

Location, location, location

As a transmission network service provider in the National Electricity Market, **Powerlink is required to operate under an open access regime**.

This means any generator that meets the necessary technical requirements can connect into the transmission network.





From a network perspective



Connect in the right location

- ✓ Connect close to existing generation and where new generation is also connecting
- ✓ Prioritise strong access to generation and multiple transmission pathways
- ✓ Capacity is scenario-dependent and requires detailed power-system modelling



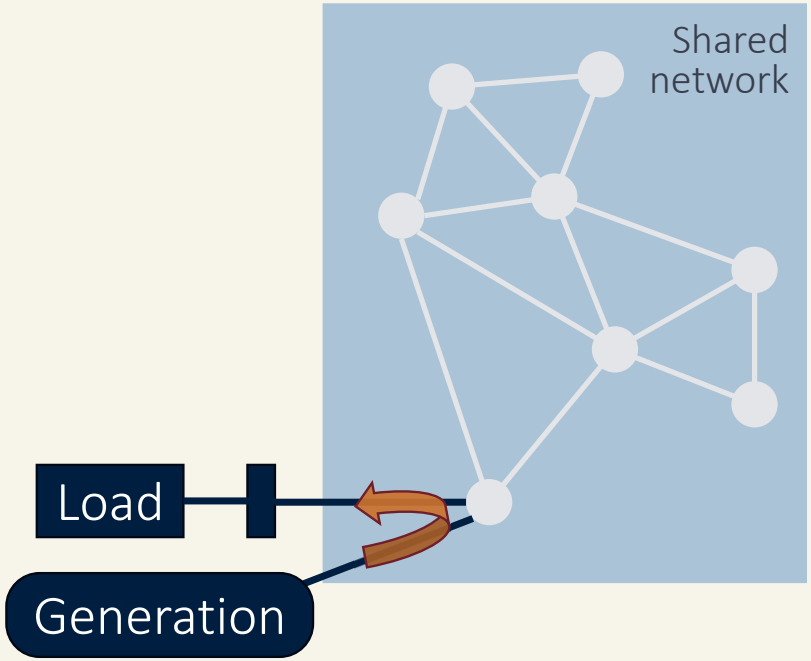
Match voltage to scale

- ✓ >300MW: Powerlink generally prefers connection at 275kV
- ✓ <300MW: 132kV or 110kV may be suitable; <100MW may suit the distribution network
- ✓ Select for long-term growth, not just the lowest initial connection cost

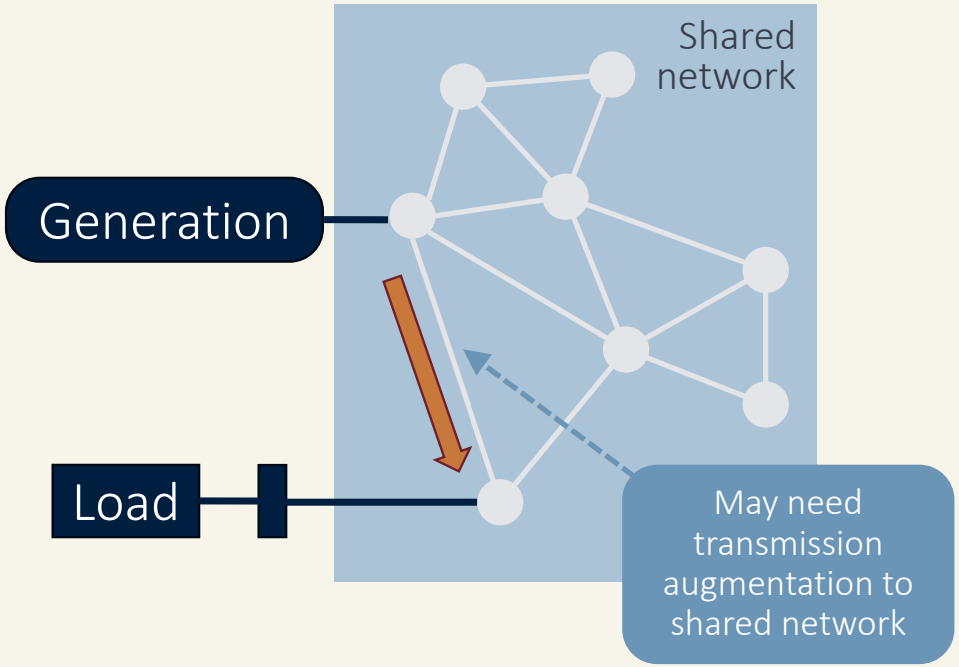
Engage early so the site, voltage and connection configuration are assessed together, before they become fixed project constraints

Load close to generation

CASE 1
Data centre close to local generation



CASE 2
Data centre supplied by remote generation



Load close to generation has many benefits

- Alleviates congestion
- Reduces shared network costs
- Speed of connection
- Less social and environmental impacts
- Easier to get easements the less properties impacted

Network configuration



Define reliability early

- ✓ What level of reliability is required?
- ✓ Large loads require multiple feeders and feeder bays. 430MW is generally the maximum load allowable to be lost in a single contingency.

Engage early so the site, voltage and connection configuration are assessed together, before they become fixed project constraints

Load connection process

EARLY ENGAGEMENT > CONNECTION ENQUIRY > CONNECTION APPLICATION

1 Follow the Chapter 5.3 process

Progress from early engagement and Connection Enquiry to a complete Connection Application and Offer to Connect.

2 Develop the technical evidence

Provide Customer Performance Standards, validated plant models and power-system studies demonstrating compliance.

3 Apply Powerlink's IBL requirements

The technical requirements for Inverter-Based Load connections set Powerlink's current technical performance, modelling and evidence expectations and will incorporate new access standard requirements.

4 Improving NEM access standards – Package 2

AEMC Package 2 rule change strengthened Chapter 5.3 standards for large inverter-based loads. Developers need to meet new design standards.

Design with the new NEM access standards – Package 2 in mind

Connection with a grid-forming BESS

GRID → GRID-FORMING BESS → DATA CENTRE

A BESS positioned electrically in front of the data centre can strengthen the connection while adding operational flexibility.



1 Strengthens the grid interface

Grid-forming capability can provide system strength and may simplify the connection analysis.

2 Smooths load movements

The BESS can manage or limit ramp rates, reducing the impact of rapid demand changes.

A grid-forming BESS can shift the data centre from a passive large load to a more controllable and grid-supportive connection

Flexible load

Prepare for proposed reform

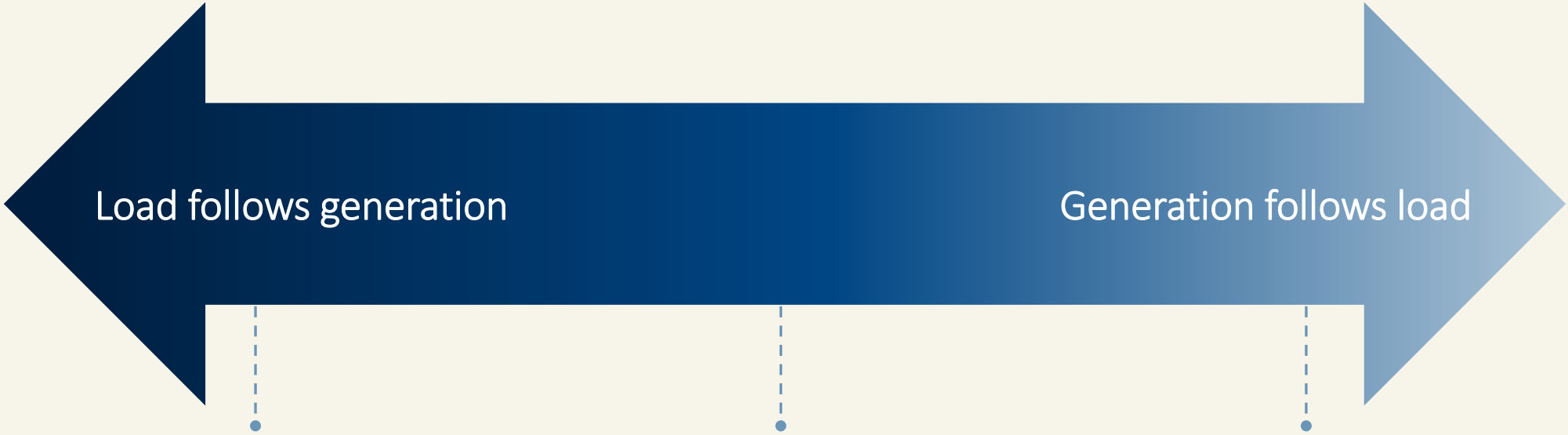
- ✓ A pending AEMC rule change proposes a clearer connection pathway for large loads offering demand flexibility.
- ✓ Proponents may identify proposed flexibility at Connection Enquiry, including its nature, magnitude and intended operation.
- ✓ Flexibility will need to be observable, enforceable and sufficiently reliable.

Use the network efficiently

- ✓ Demand reduction following a transmission fault can improve utilisation of existing transmission infrastructure.
- ✓ Clear operating limits, triggers and response times are needed for flexibility to be relied upon.
- ✓ Flexibility may reduce the scale or timing of augmentation required for the connection.
- ✓ Curtailment capability should be incorporated into the facility design from the outset.

Define credible flexibility early so it can support the connection assessment and emerging regulatory arrangements

Benefit of flexible loads - generation



Fully Flexible
1:1 renewables

Moderate Flexibility
~3 x supplied by variable renewables and batteries

Fully Firmed
1:1 firmed generation

Powering data centres
A guide to Queensland grid integration

Powerlink has published a technical guide for data centre customers that includes information on:

- ✓ transmission network considerations
- ✓ connection pathways and requirements
- ✓ generation, storage and firming considerations
- ✓ substation and connection infrastructure requirements
- ✓ reliability and network capability considerations
- ✓ staging opportunities for future growth.

The technical guide is part of our **2026 Transmission Annual Planning Report** and is intended to support earlier and more informed development decisions by providing greater transparency on the transmission factors that influence connection outcomes.

Key takeaways



Location, location, location



We encourage proponents to engage early



Social licence is critical

Interactive session



What are the most important considerations for data centre transmission connections in Queensland?


Questions


PLEASE RETURN TO HALL A+B
Thank you

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