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Integrated System Plan

Stakeholder Webinar
11 Feb 2020

- Our set up
- Ground rules
 - Please submit your questions via todays Sli.do
 - Grab your mobile device and head to www.sli.do and enter our event code # ISP
 - It's important to us to hear from you, so we'd like you to ask your own questions if you feel able.
 - Please include your name with your question and when appropriate we'll unmute you so you can ask it.
 - We'd like to hear from as many people as possible today, so it's important that you keep your questions short and direct.

Today



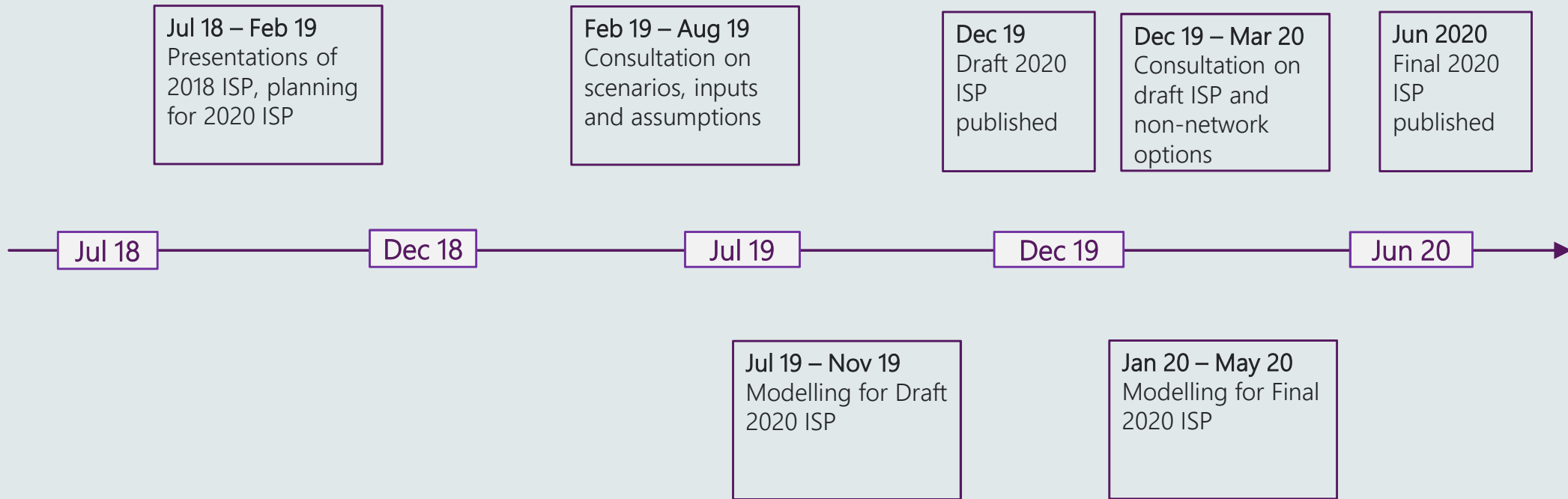
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Welcome

Natasha Sinclair
Principal Analyst / ISP Stakeholder Engagement



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Consultation close dates:

- Draft 2020 ISP :21 February 2020
- Non-network options for QNI medium/VNI west: 13 March 2020

Our timeline



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- Provide an opportunity to ask questions and improve your understanding of the ISP process and outcomes
- Involve participants in the ISP process by requesting feedback and input to prioritisation of scope for the Final 2020 ISP

Objectives of today



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Introducing the ISP

5mins

Process

Strategic outcomes

Meet the modellers

60mins

Resource Outlook

REZ, Renewable Integration & Network

Prioritisation

15mins

Final Q&A

20mins

Wrap up

Agenda



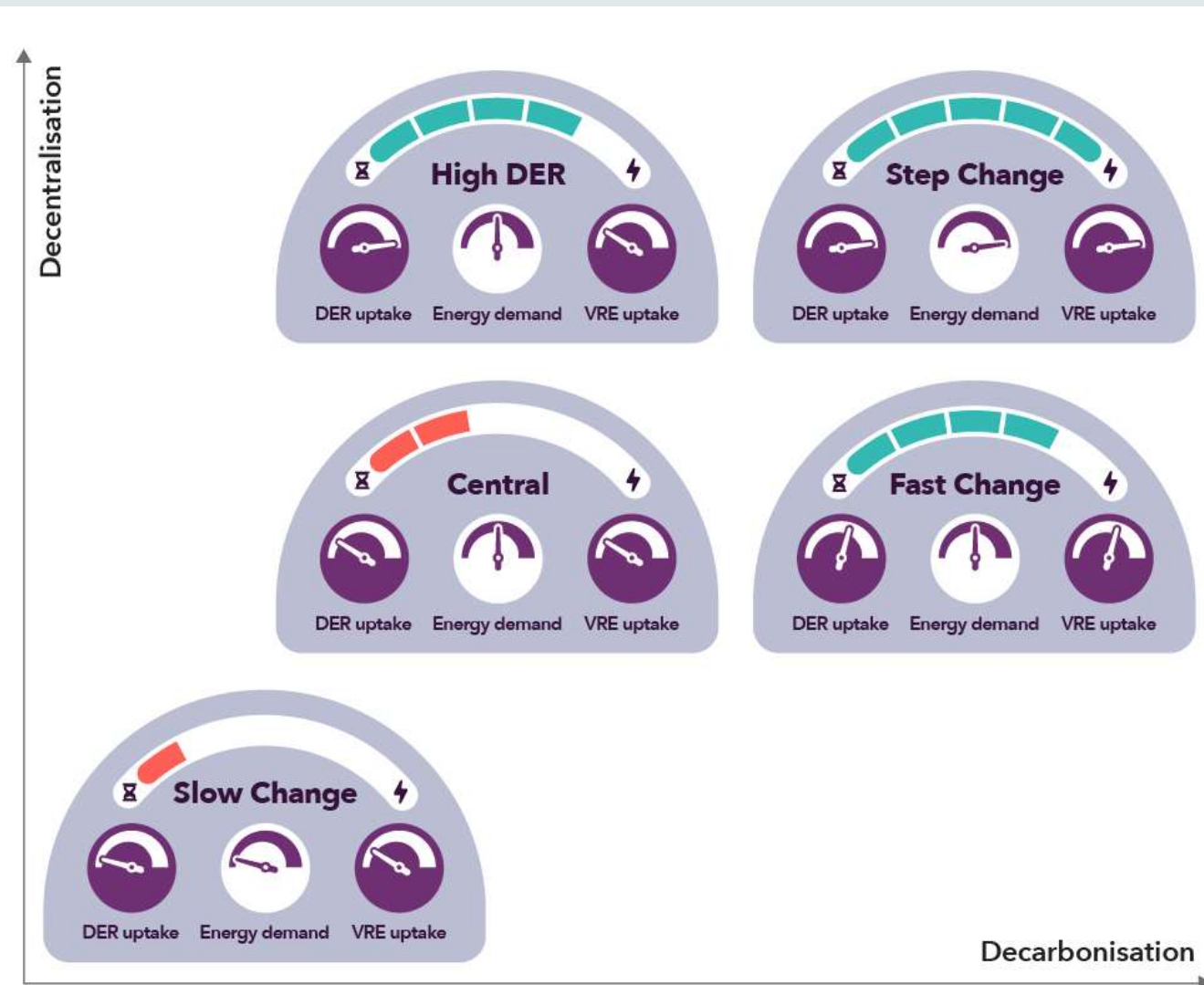
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Introducing...the ISP



Craig Price | GM Systems Planning

Managing risks, costs, and reliability in a world with large future uncertainty



Resource Outlook

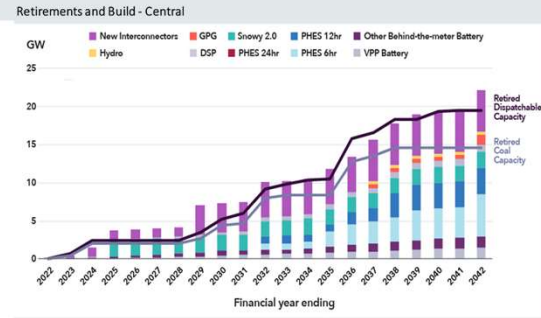
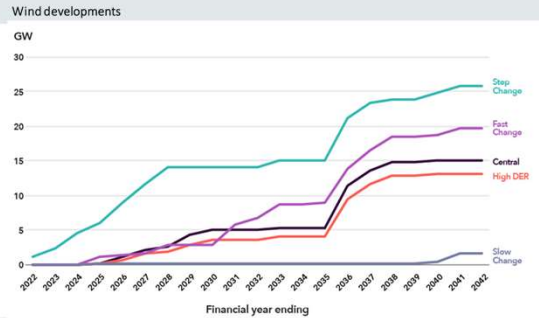
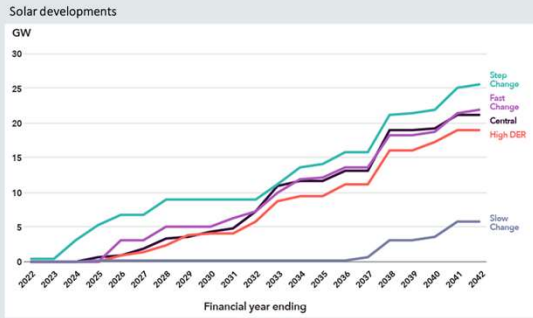
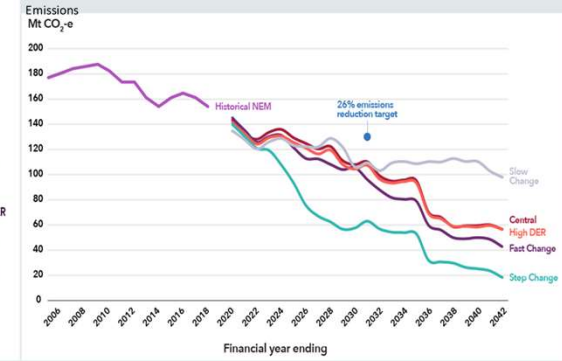
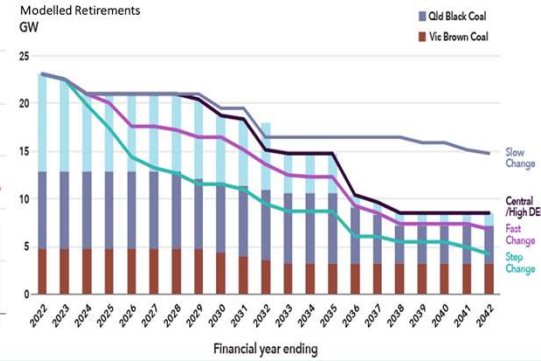
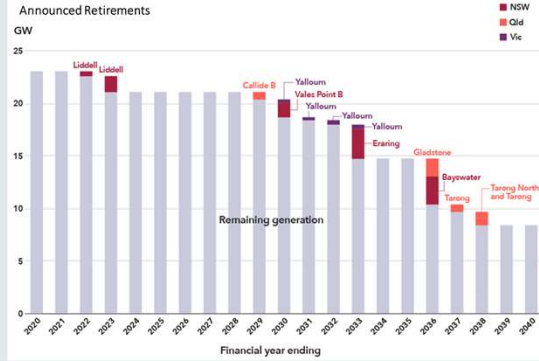
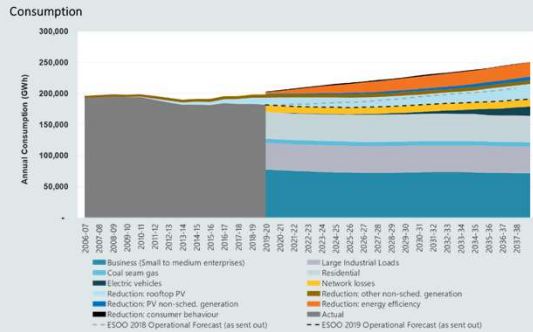


Andrew Turley | Manager, Integrated Energy Systems

Resource Outlook

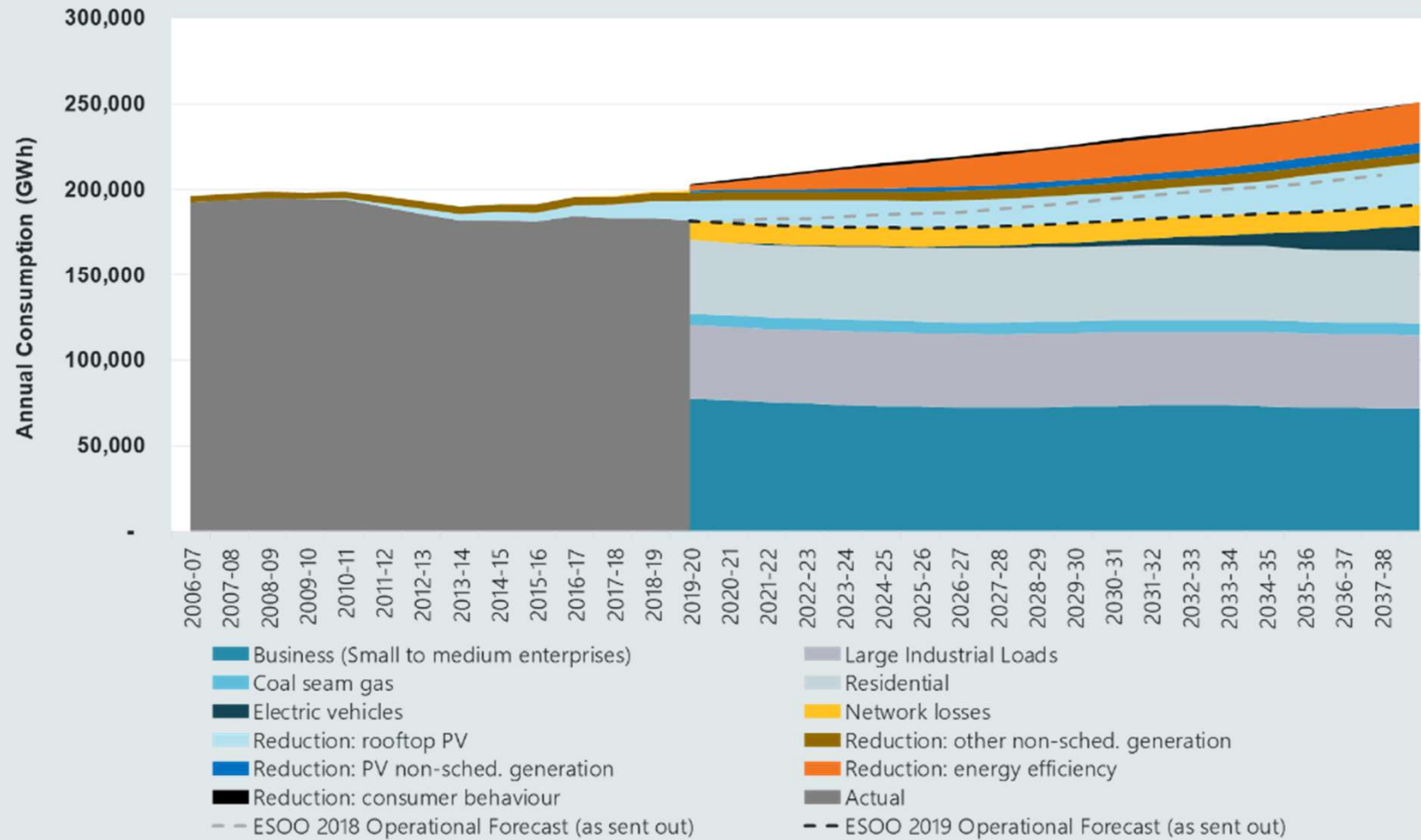
- What we heard from stakeholders?
 - Strong role for storages of various technologies, locations and storage depths
 - Balance of renewable energy technologies (wind and solar) to complement storage and network availability
 - Battery storage potential much stronger than initial projections
 - Cost uncertainty and resource availability may provide development challenges that need consideration

Resource Outlook



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Consumption



Resource Outlook



REZ, Renewable Integration & Network



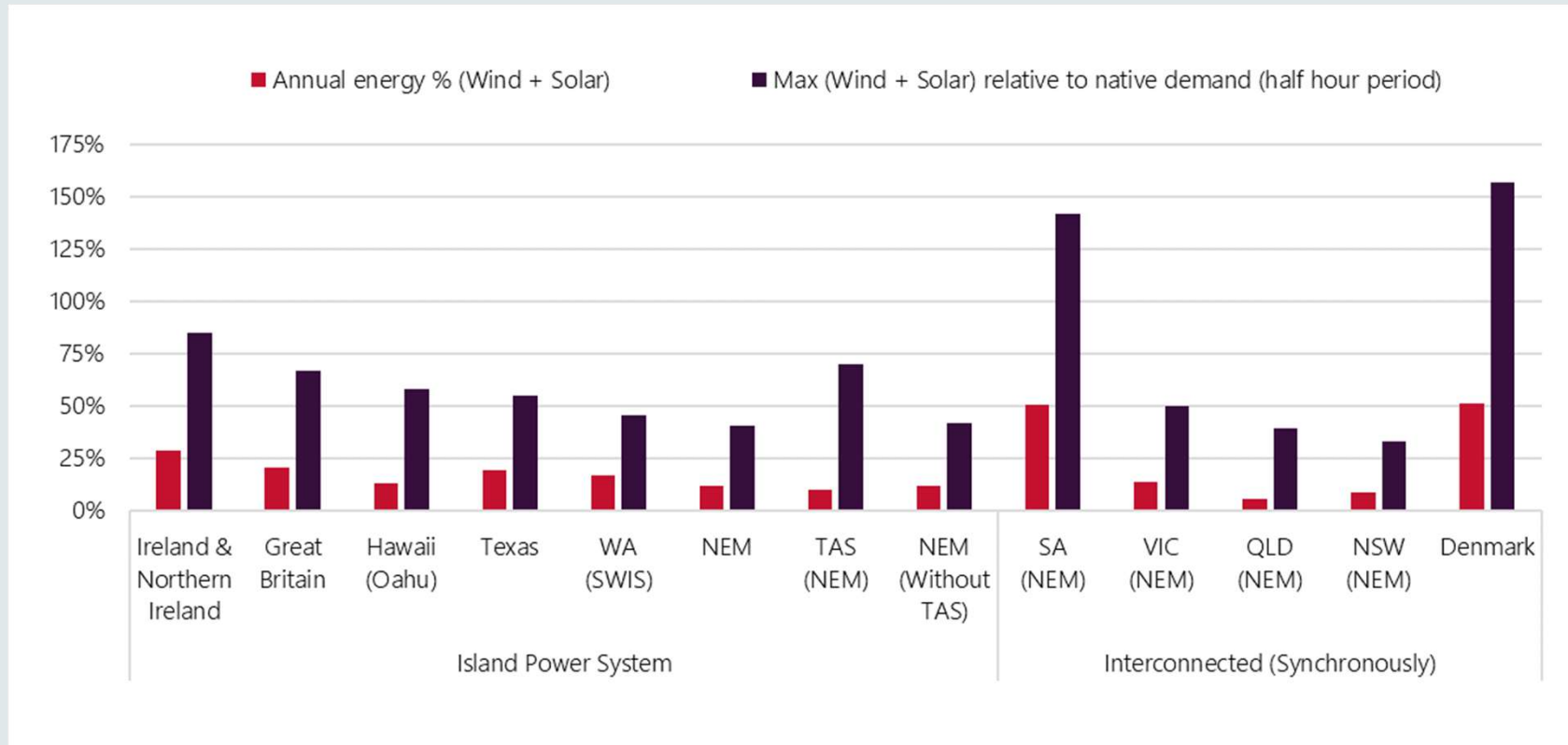
Elijah Pack | Manager National Planning
Chris Davies | Manager Future Energy Systems
Bianca Christison | Acting Principal Engineer

REZ, Renewable Integration & Network

- What we heard from stakeholders?
 - System strength analysis and costing is a priority
 - Other system security services, such as frequency control, operating reserves and fleet ramping requirements should be detailed
 - The outcomes from the Renewable Integration Studies (RIS) should be integrated into the ISP
 - Include more detailed analysis of how strategic placement of storage can be optimised to limit network build
 - Consider ways to stage REZ expansions

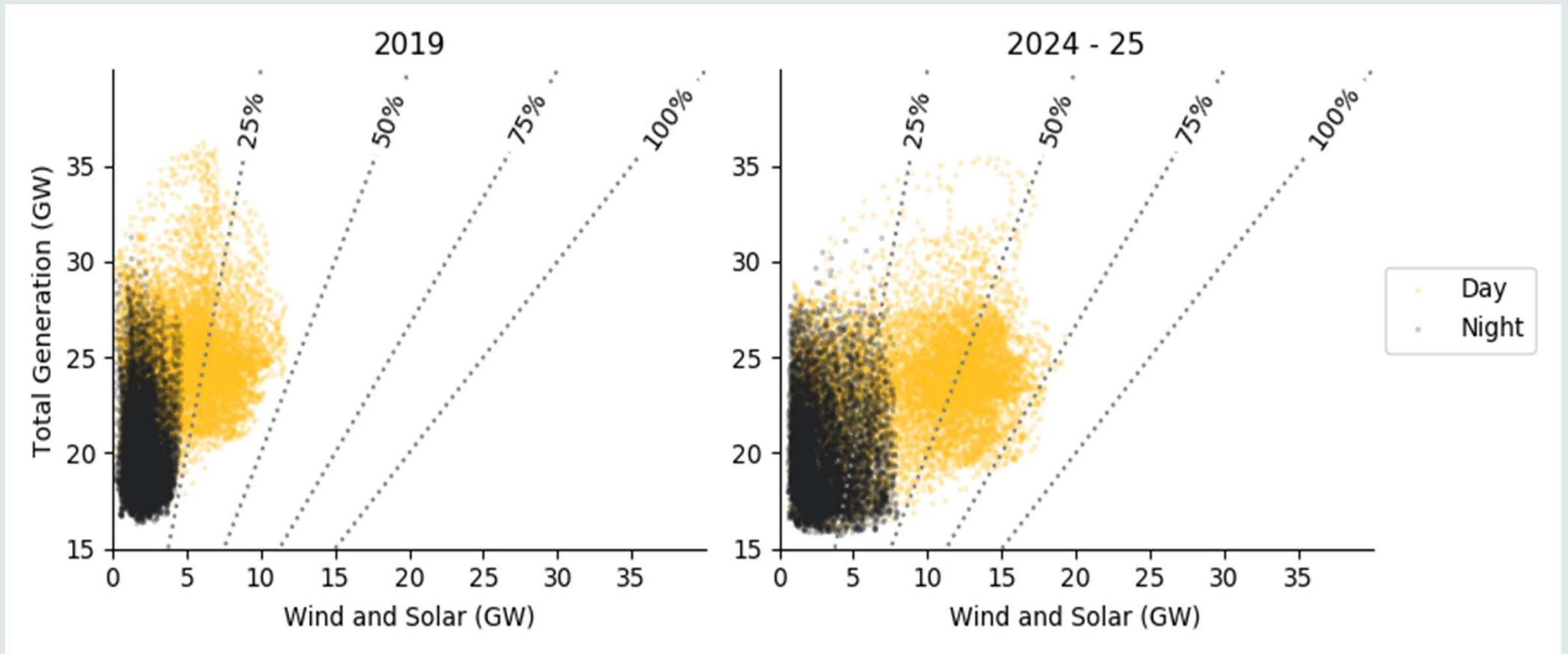
REZ, Renewable Integration & Network

Large international power systems operating with high instantaneous penetrations of wind and solar generation, and Australian comparisons

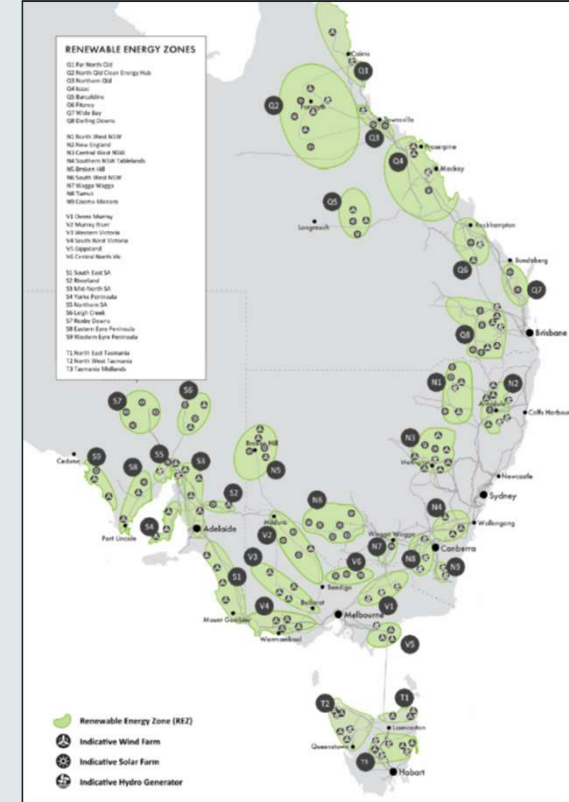
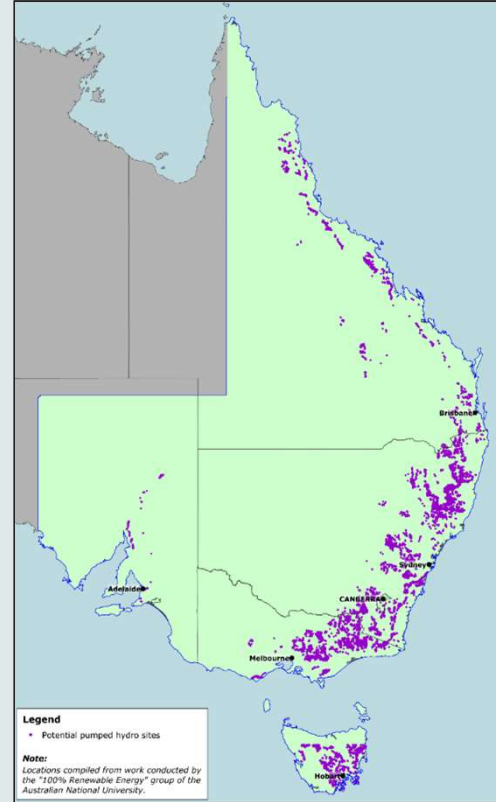
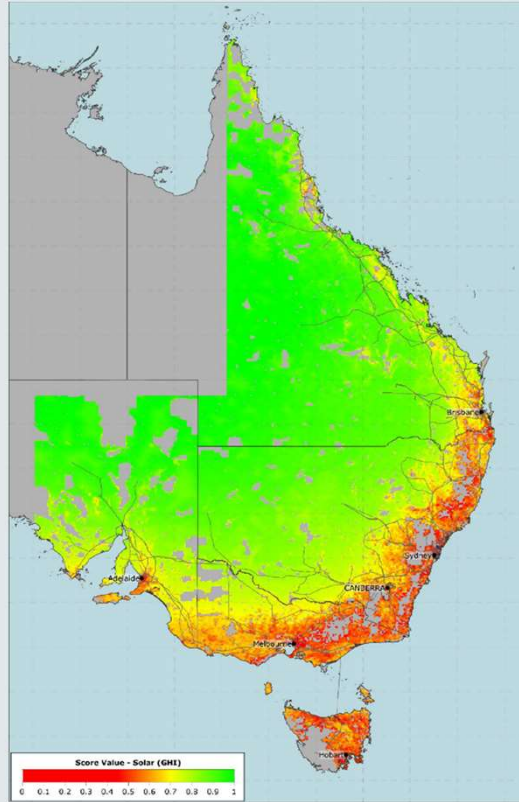
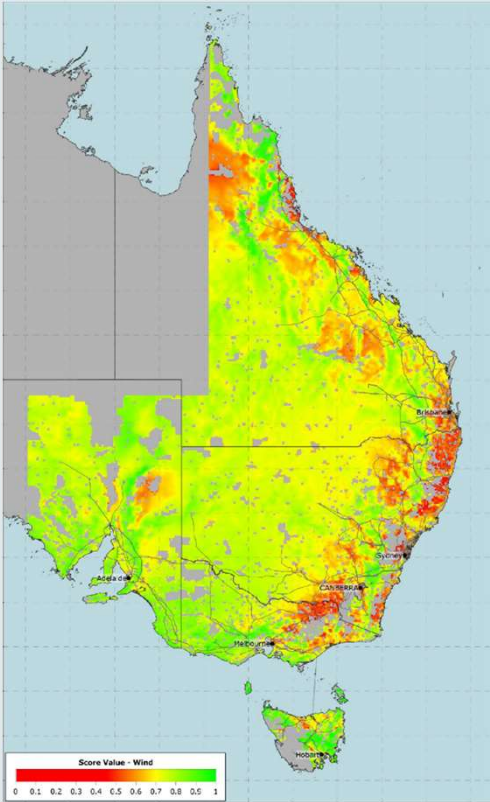


REZ, Renewable Integration & Network

NEM total generation and wind and solar PV generation 2019 (actual) and 2025 (central scenario)



REZ, Renewable Integration & Network



Q&A



aurecon

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Prioritising further work



- Further validation of the plan through detailed hourly simulations
- Resilience to climate change – we will be including a chapter on this in the Final ISP
- Central West NSW REZ – other sensitivities with generation development in this zone
- Choice of route selection for VNI West
- In step change scenario, are we confident the system is operable in 2040?
- Cost increases on interconnectors or generators (capex generally)
- Projections of Marginal Loss Factors (MLFs)

Prioritisation for final ISP

Q&A



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To help us going forward...

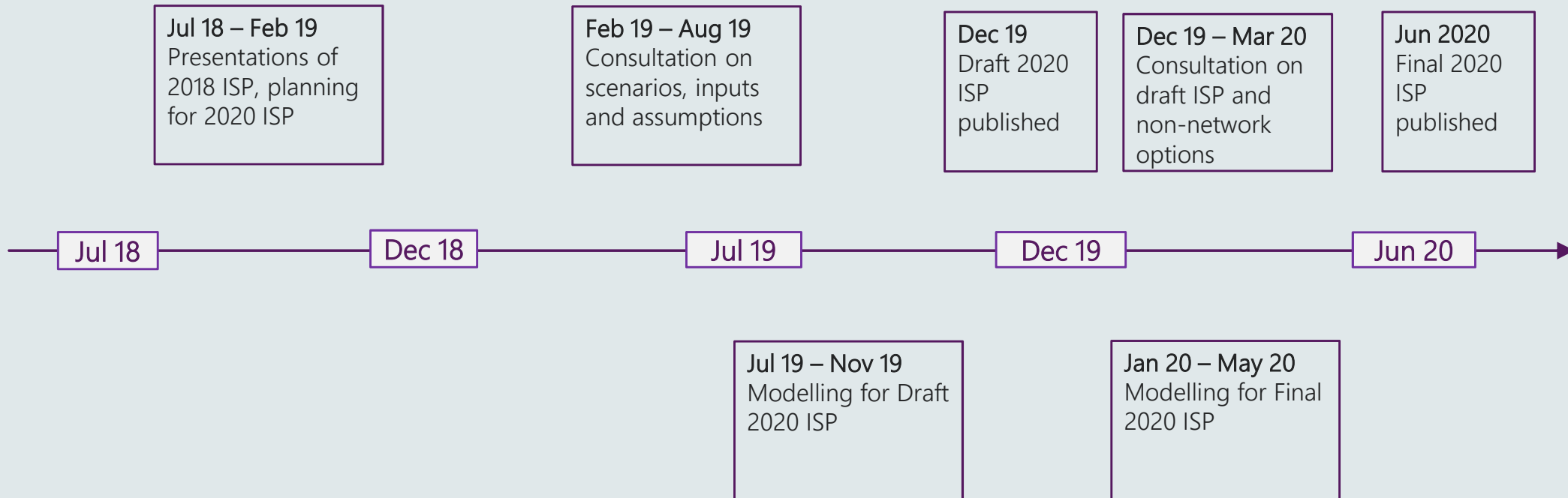
We'd like to get your thoughts on today's session

- Head here on your tablet or mobile device and leave us some feedback

Feedback

bit.ly/379GkAd





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Next steps



Thank you!