

# Powerlink's Customer Panel Meeting

28 May 2020



- Welcome and introductions
- Update from Revenue Proposal Reference Group
- Update on Revenue Determination process
- Energy Charter Disclosure Statement – Maturity Model
- Australian Renewable Energy Agency (ARENA) study on renewable integration and system strength
- Powerlink's customer response to COVID-19
- Close and thanks

# Update from Revenue Proposal Reference Group

Henry Gorniak  
Customer Panel member – CS Energy

Matthew Myers  
Manager Revenue Reset



# Update on Revenue Determination process

Matthew Myers  
Manager Revenue Reset



- Cut 2 forecast published April 2020 and discussed with the RPRG.
- Expenditure Forecasting Methodology due to be lodged with the AER June 2020.
- Preliminary Positions and Forecasts Paper (PPFP) due to be published end July 2020.
- Will seek input from the Customer Panel on the PPFP outline – to be distributed for feedback in early June.
- **For discussion: any feedback / questions from the broader Customer Panel on the Cut 2 forecasts provided within the pre-reading.**

# Energy Charter Disclosure Statement – Maturity Model

Narelle Fortescue  
Customer Strategist



- Signatories to the Charter are at different stages of maturity, but all have committed to ongoing improvement.
- The Energy Charter Maturity Model:
  - Relates to the 5 Principles of the Charter
  - Organisations can consistently (but subjectively) assess their current maturity
  - Consider where they intend to progress and on what timeline
  - Plot actions to help improve their maturity.
- The Energy Charter Maturity Model will be the focus of 2019/20 Disclosure Statements.

	Elementary	Emerging	Evolved	Empowered	Exceeding
Definitions/ characteristics of capability	No formal approach to the majority of the Principles in Action	Emerging and repeatable approach to the majority of the Principles in Action	Evolved and defined approach to the majority of the Principles in Action and implemented	Empowered and proactive approach to the Principles in Action and customer outcomes measured and managed	Exceeding all Principles in Action and achieving optimal customer outcomes



# DRAFT – Powerlink current maturity levels



Capabilities					
	Elementary	Emerging	Evolved	Empowered	Exceeding
1. We will put customers at the centre of our business and the energy system		Current Maturity Level			
2. We will improve energy affordability for customers		Current Maturity Level			
3. We will provide energy:					
Safely			Current Maturity Level	n/a	n/a
Sustainably			Current Maturity Level		
Reliably			Current Maturity Level		
4. We will improve the customer experience		Current Maturity Level			
5. We will support customers facing vulnerable circumstances	Current Maturity Level				

We are seeking Customer Panel input on the following:

- Do you agree with our draft assessment of Powerlink's current position?
- Any feedback and comments?

# Management of system strength

Stewart Bell

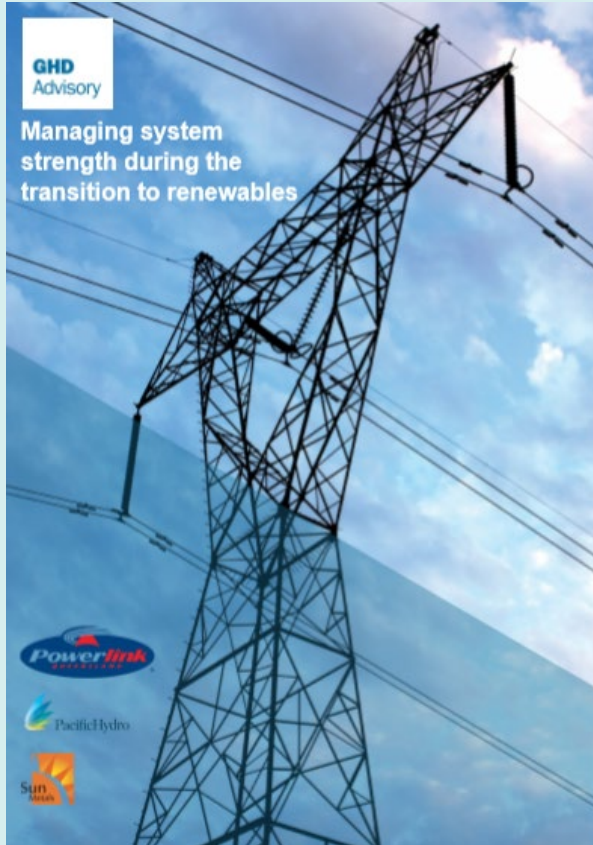
A/Executive General Manager Strategy and Business Development

Daniel Andersen

Manager Network Strategy

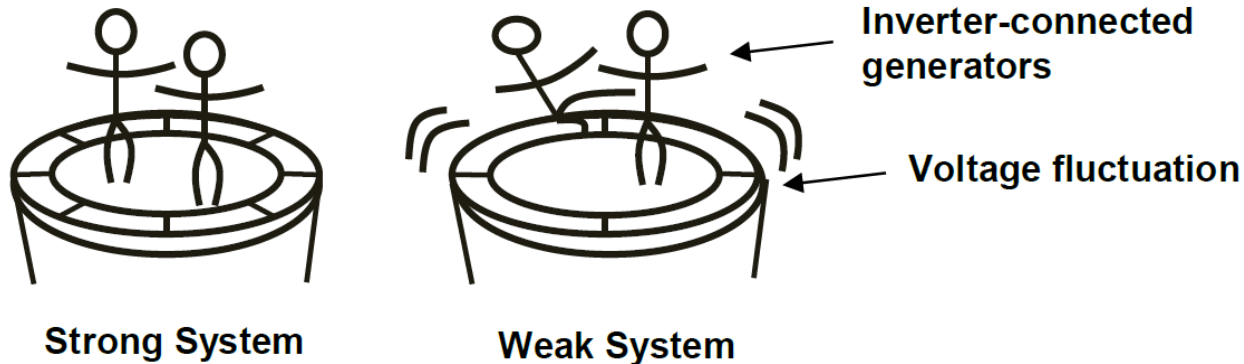


- Australian Renewable Energy Agency (ARENA) Report
  - What is system strength?
  - How can it be remediated?
  - What is the merit of shared solutions?
- North Queensland shortfall and remediation.



- ***Managing system strength during the transition to renewables***
- The full report is available at:  
<https://arena.gov.au/assets/2020/05/managing-system-strength-during-the-transition-to-renewables.pdf>

- There is no universally accepted definition of ‘system strength’ and our collective understanding of the issues is evolving with time.
- System strength is commonly understood to be a way of describing how resilient the voltage waveform is to disturbances.
- Having a pliable voltage waveform is a pre-condition in which problems are much more likely to emerge.
- The most topical problem at the moment is inverter control interactions.



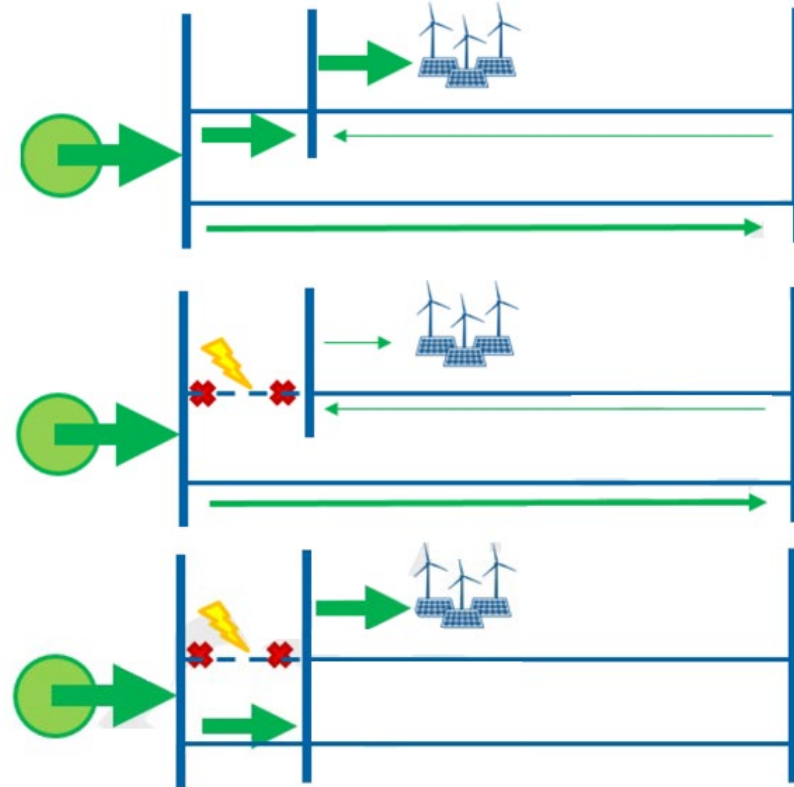
1. Increasing the supply of system strength
2. Improving the flow of system strength
3. Managing with low system strength

- System strength is produced by synchronous machines
  - Synchronous generators (coal, gas, hydro, pumped hydro)
  - Synchronous condensers
- Options to achieve this include contracting, retrofitting and new build
  - Needs to be additional (not already part of the Australian Energy Market Operator's (AEMO's) baseline).



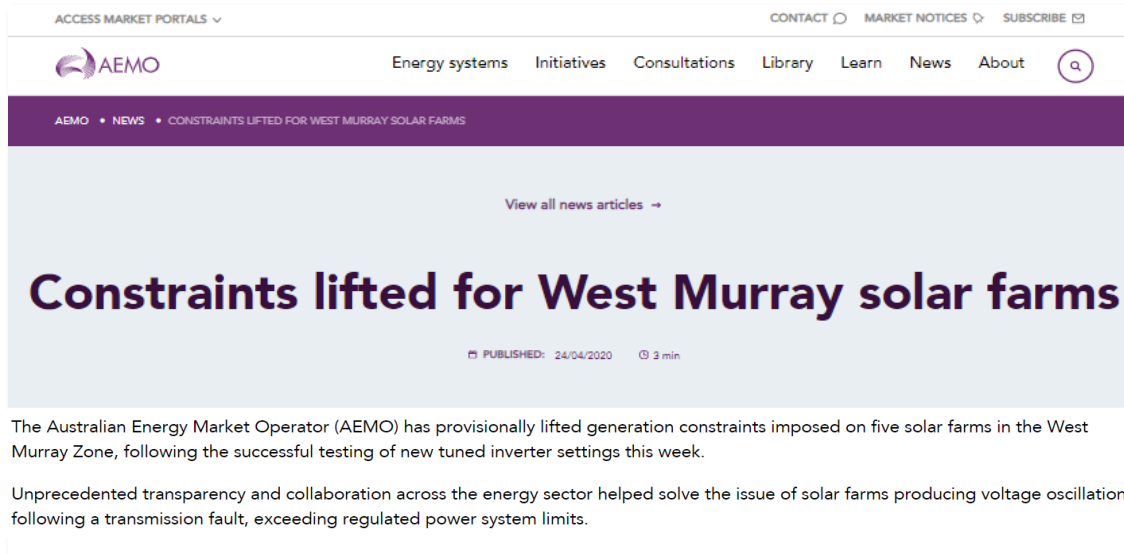
## 2. Improve the flow of system strength

- It is possible for developers to fund large upstream augmentations, but this is unlikely to be economic.
- Sometimes relatively modest changes can yield meaningful improvements – especially where issues are experienced during network contingencies (N-1).




### 3. Managing with low system strength

- Options depend on the specific issue(s) being experienced.
- It may be acceptable to have special protection trip the generator in certain situations.
- Advanced inverter controls can help reduce inverter control interactions.
- Grid forming inverters combine a different control strategy with energy storage.



The screenshot shows the AEMO website with a news article titled "Constraints lifted for West Murray solar farms". The article is dated 24/04/2020 and is 3 minutes long. The text of the article states: "The Australian Energy Market Operator (AEMO) has provisionally lifted generation constraints imposed on five solar farms in the West Murray Zone, following the successful testing of new tuned inverter settings this week. Unprecedented transparency and collaboration across the energy sector helped solve the issue of solar farms producing voltage oscillations following a transmission fault, exceeding regulated power system limits."

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## Constraints lifted for West Murray solar farms

PUBLISHED: 24/04/2020 ⌚ 3 min

The Australian Energy Market Operator (AEMO) has provisionally lifted generation constraints imposed on five solar farms in the West Murray Zone, following the successful testing of new tuned inverter settings this week.

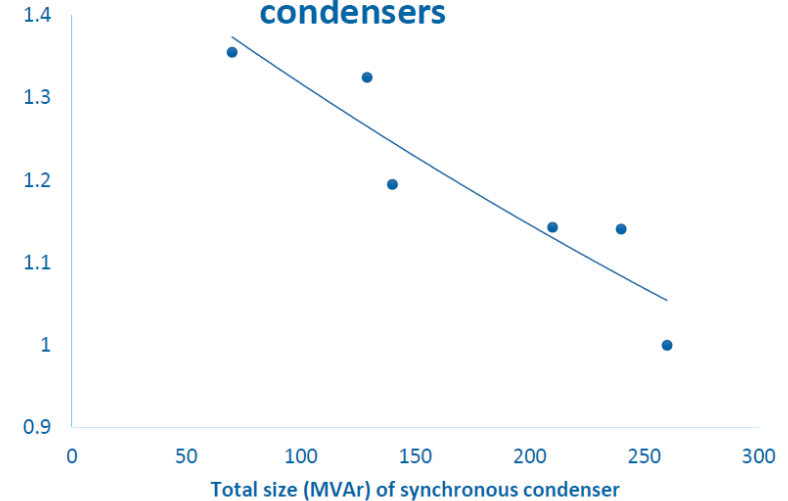
Unprecedented transparency and collaboration across the energy sector helped solve the issue of solar farms producing voltage oscillations following a transmission fault, exceeding regulated power system limits.

- Meaningful economies of scale and other practical benefits such as development times and supply of inertia
- Significant tyranny of distance effects
- Shared solution is most effective with direct connection to the main transmission backbone.



Source: GE Budget Letter, 2019

## Normalised life cycle costs of synchronous condensers



GHD developed, 2020. Note that this is drawn on commercially sensitive information provided by synchronous condenser manufacturers to GHD for this work and from other project data to which we have access. It is not intended to portray the potential range of sizes available. Also, the intent of the plot is to show relative changes in cost with size rather than absolute costs available through firm tender responses.

1. There is no universally accepted definition of 'system strength'.
2. There are various options to increase the supply of system strength. Synchronous condensers are effective across most situations, hence becoming the 'default' solution.
3. There are significant scale-efficiency and practical benefits of a shared model for implementing synchronous condensers.
4. However, there are also significant 'tyranny of distance' effects. The viability of shared responses is likely to be greatest where inverter-based generators are directly connected to the main transmission backbone.

- Modelling of system strength has progressed over time – new issues recently identified e.g. inverter control interactions
- On 19 March, imposed operating limits on three renewable generators in North Queensland (Mt Emerald, Sun Metals and Haughton)
- AEMO issued a formal fault level shortfall notice on 9 April:
  - 90MVA fault level shortfall at 275kV Ross Substation
  - Regulated obligation for Powerlink to remediate
  - Target date of remediation is 31 August 2021
- Important to note the key consideration is the stability issue near Cairns. Not all solutions that meet the 90MVA fault level shortfall at Ross will solve this issue.

- Powerlink issued an Expression of Interest (EOI) for market offers on 9 April, closed 13 May.
- EOI in two parts:
  - Short-term proposals (up to two years) e.g. run existing generation
  - Long-terms proposals (beyond two years) e.g. synchronous condenser
- Strong interest from market in three broad categories:
  - Running of existing synchronous generation
  - Tuning inverters in renewable plants, as per West Murray in Victoria
  - Stabilising plant: synchronous machines, batteries with grid-forming inverters
- Way forward likely to be some combination of proposed solutions. Inverter tuning has emerged as a potential solution following Victorian experience.

# Powerlink's customer response to COVID-19

Kevin Kehl  
Interim Chief Executive



## COVID-19 lockdowns have cost 1.6 million Australians their incomes, ABS survey shows

By business reporter Michael Janda  
Posted 20 Apr 2020, updated 20 Apr 2020



The coronavirus lockdown has had a dramatic effect on employment figures in Australia. (ABC News: Chris Taylor)

## QUEENSLAND JOB LOSSES

HARDEST-HIT INDUSTRIES	
■ Accommodation and food services	24.7 per cent drop
■ Arts and recreation services	14.2 per cent drop
■ Mining	10.6 per cent drop
■ Information media and telecommunications	8.1 per cent
■ Rental, hiring and real estate services	7.5 per cent
LEAST-AFFECTED INDUSTRIES	
■ Education and training	1.7 per cent rise
■ Public administration and safety	No change
■ Electricity, gas, water and waste services	0.1 per cent drop
■ Financial and insurance services	0.5 per cent drop
■ Health care and social assistance	2.1 per cent drop

Source: Australian Bureau of Statistics



- The energy sector has experienced very little impact from COVID-19 to date
- There are 6 million Australians on either Jobseeker or Jobkeeper
- The wider economy materially impacted into the longer term.



- Working with our directly-connected customers to consider financial hardship requests and potential changes to project delivery timeframes.
- Developed a specific procurement guideline to support our small and medium-sized enterprise (SME) contractors with a commitment to paying our suppliers as quickly as possible.
- Contacted non-government organisations and individuals that lease our land or property to discuss lease payment deferrals if they are experiencing financial hardship.
- Reallocated \$35,000 of our sponsorship budget to partner with Energy Queensland for a community grants program to support vulnerable customers.
- Working with Energy Charter signatories to help develop a consistent approach to energy efficiency and energy literacy programs.
- Engaging with landholders to update land access and working conditions where required due to COVID-19 impacts.



## The Energy Charter





## Two key purposes

- Together we will safely deliver as much of our work program and business strategy as possible ensuring the health and wellbeing of our people.
- We will harness the disruption in the current environment to develop and embed new work practices, technology and cultural changes to improve our business.



Close and thanks

