

# Connections Simulation Tool

Industry Working Group  
Session 1

5<sup>th</sup> November 2021



*We acknowledge the Traditional Owners  
of country throughout Australia and  
recognise their continuing connection  
to land, waters and culture.*

*We pay our respects to their Elders past,  
present and emerging.*

# Agenda

#	TIME	TOPIC	PRESENTER
1	5 mins	Welcome Housekeeping	Siham Knowles Alistair Wells
2	20 mins	Working Group and AEMO Team Introduction Overview	Alistair Wells
3	20 mins	Connection Simulation Tool Concept Demo (MVP)	Elliott Kuhlmann
4	10 mins	Industry Engagement and Terms of reference	Alistair Wells
5	45 mins	Discussion Topics <ul style="list-style-type: none"><li>• Users of the Tool</li><li>• Industry Value</li><li>• Costs Considerations</li></ul>	Alistair Wells
6	5 mins	Next Steps and Close	Alistair Wells

# Online forum housekeeping

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Please mute your microphone, this helps with audio quality as background noises distract from the information being shared.

Join the conversation or use the "raise hand" function for any questions or comments

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Be respectful of all participants and the process.

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We will record this session for note taking purposes.

This presentation and the associated high-level summary of the meeting will be uploaded to the AEMO website

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The meeting will adhere to the AEMO Competition Law Meeting Protocol outlined in the appendices

# Industry Working Group Members

Name	Organisation	Industry Sector
Thai Vo Patrick Rossiter	GE Renewable Energy	OEM
Sylvain Grandidier	Siemens Energy	OEM
Charbel Antoun	TransGrid	TNSP*
Hieu Nguyen	Powercor	DNSP*
Amir Mehrtash	Power System Consultants	Consultant
Scott Partlin (Apology) Natasha Thompson Ronny Schnapp	NEOEN	Developer
Wai-Kin Wong	AGL	Developer

\* NSP engagement will be broader as we collaborate to determine the amount of network we can make available to users.

# The AEMO Project Team



Siham Knowles  
AEMO Business Sponsor



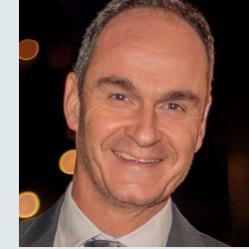
Steve Robinson  
AEMO Business Owner



Alistair Wells  
Project Lead



Elliott Kuhlmann  
Technical Advisor



Bertrand Etchepare  
Program Manager



Yuchao Ma  
Engineering Lead



Dave Lenton  
Pricing Model Development



Sarah Squire  
Change Manager

# The Connection Simulation Tool

A tool to help **developers, OEMs, NSPs, and AEMO** collaborate using common data sets to rapidly verify that prospective generators can be safely connected to the electricity network.



During the Enquiry and Application stages of the connections process, connections applicants will perform studies which incorporate their new plant model with the **same wide-area power system model that is used internally by AEMO** to assess connections applications.

Connections applicants will be able to **better design** their generating system and then be confident that the study outcomes will meet the acceptance criteria as defined in the rules.

This will significantly streamline the applications process, reducing both **risk and costs and reducing the iterations/time to complete connections approvals** (including AEMO's time to assess and finalise new asynchronous plant connections)

# Connections Application Tool Concept - MVP

Trial Users can define their point of connection and test scenarios by running simulations that utilise the relevant state network models

External

AEMO



External user has full visibility and access



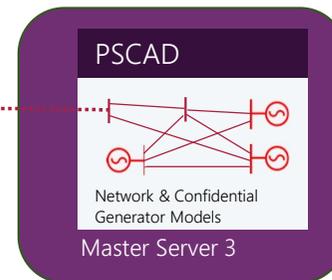
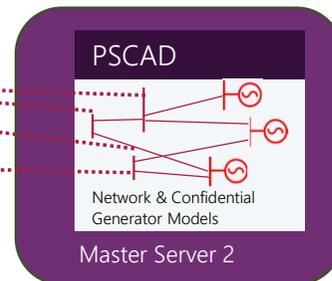
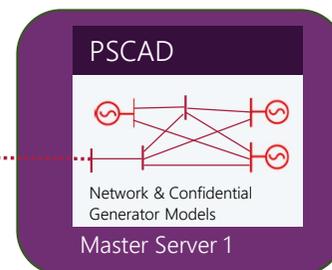
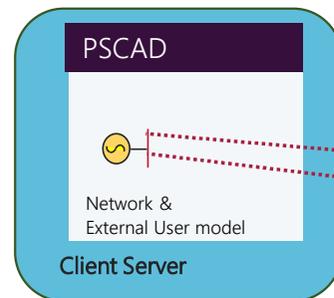
External user has no visibility or access



External user



Authentication



## Release Features:

- 4-state model used in study
- Web portal access with user auth
- Relevant state electrical model visible to user
- User selects Point of Connection and sets up study
- Scripts to automate multiple runs
- Scripts to retrieve and email results

# Demo

# Connections Simulation Tool Rollout\*

\* Dates are indicative

**Kickoff**  
Apr 2021

Commence portal development  
Cloud and Security design  
Engage trial participants

**Connections MVP**  
Oct 2021

**MVP field trials and enhancement**  
Engage a small number of Trial Users to participate in an MVP trial  
  
Users to expand over the trial

**Connections Beta**  
Q1 2022

**Beta version release**  
Launch a Beta version of the Connections Tool, providing access to a larger group of users including applicants and potentially an NSP - Incorporate their feedback in regular updates

**Connections Release 1 – PSCAD**  
Q1/Q2 2022

**Next Generation Connections Tool V1 release - PSCAD** Available to an initial set of users, to be expanded over the following 12 months

**Connections Release 2 – HYPERSIM**  
(TBD)

**Next Generation Connections Tool V2 – HYPERSIM**  
Add HYPERSIM platform as alternative EMT simulation tool

2021 Q2

2021 Q3

2021 Q4

2022 Q1

2022 Q2

2022 Q3

**Industry Working Group**  
(indicative focus and timing)

## Session 1

- Terms of Reference
- Industry scenarios
- Benefits / Barriers
- Opportunities

## Session 2

- Features
- User Experience
- Pricing Model
- Functionality
- Process

## Session 3

- Support
- Rollout

## Session 4

- Close
- Adoption (TBD)
- Reporting inputs (TBD)
- AOB

# Industry Engagement

The success of the Connections Tool requires that it directly meets the need of industry. We will work collaboratively with industry and engage broadly to gain feedback to best ensure we understand their needs and address them in the solution.



## User Feedback

MVP, BETA and Release 1 industry users will be asked directly about their views and recommendations for the solution. During development (MVP, BETA) the solution will be an AEMO/industry collaboration



## Network Service Providers

This group will be asked to provide input on the elements of network that will be made visible within the tool.



## Industry Working Group

This group will represent their industry sector and receive updates and demonstrations of the solution and be asked to provide their insights, recommendations and development opportunities.

← This is you



## Broad Industry Engagement

We will engage and communicate with industry including webinars, existing forums, websites and newsletters. We will seek support from industry bodies to gain visibility of Connection Tool to increase adoption.

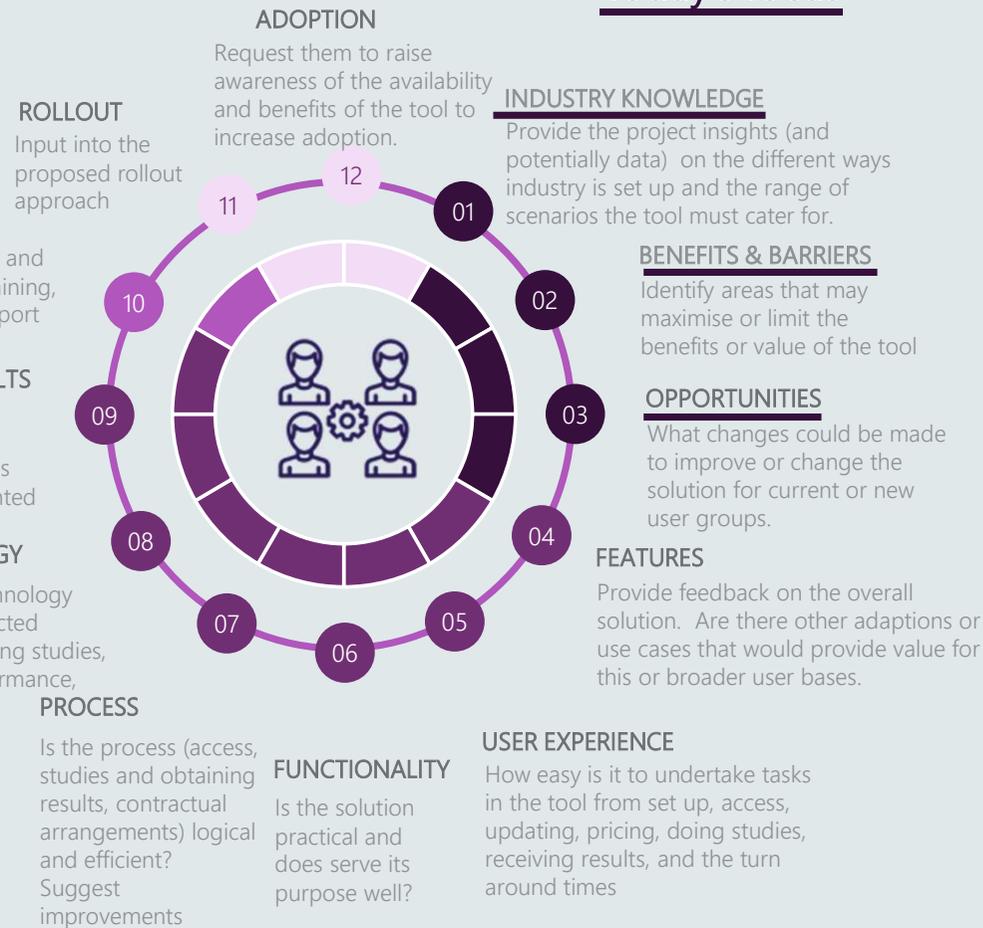
# CSTIWG Terms of Reference

## Your Role

**Purpose:** This working group aims to facilitate direct feedback on the tool as it develops to ensure it is as useful as possible.

**Activity and Support:** The working group will receive updates and demonstrations and be asked to provide their insights, recommendations and development opportunities (qualitative and quantitative).

**Scope:** The Connections Simulation Tool Industry Working Group will serve in an advisory capacity only and provide insights to help develop the tool.



## Today's focus

## Industry Working Group Feedback Sought

Industry	Industry Knowledge	+++
	Benefits & Barriers	+++
	Opportunities	++
Solution	Features	++
	User Exp	++
	Functionality	+
	Process	++
	Technology	+
	Study Results	+
Help	Support	+
Rollout	Rollout	+++
	Adoption	++

KEY – Anticipated input  
+ Minimal  
++ Some  
+++ Significant

**When:** From the Minimum Viable Product (MVP) stage, through to the final tool

# CSTIWG Terms of Reference

## Structure Key Points

Industry Working Group  
Feedback Sought

### Representation

- The Working Group comprises representatives of different (and potential) users of the Simulation Connection Tool including
  - Developers
  - Original Equipment Manufacturers (solar, wind, battery)
  - Consultants
  - Transmission Network Service Providers
  - Distribution Network Service Providers

### Working Group participants are expected to:

- Have sufficient expertise and experience to consider matters and provide the views to help the effective development and deployment of the Tool.
- Work collaboratively with other Working Group participants.
- Be from organisations that would be users or potentially impacted by the Connections Simulation Tool.

### Meetings

- 4 virtual meetings of ~2 hours (November 2021 to June 2022).
- All meetings will be in video conference format
- Additional workshops and/or out-of-session meetings may be scheduled as/if required.

### Governance

AEMO will run the session and manage

- Preparation and distribution of meeting correspondence
- Circulation of a draft agenda.
- Circulation of draft minutes.

Notes:

Outcomes from the working group may be provided to ARENA and published in knowledge sharing reports.

Any expense incurred as a result of attending meetings or activities associated with the working group are at the expense of the participant or their employer.

# Users of the Tool

Industry Working Group  
Feedback Sought

We have identified the following potential users of the Connections Simulation Tool. All use of the tool is optional.



**DEVELOPERS**

Primary use case

Use the tool (or support and provide access) for studies to be conducted on their real plants



**OEMs**

Primary use case

Study real plant behaviour



**CONSULTANTS**

Primary use case

Study real plant behaviour



**NSPs**

Potential use case

Test a real plants, components of the network or system behaviour



**RESEARCH/EDUCATION**

Future development  
Out of scope

Test generic plant model, or system behaviour, conceptual design of a generator

# Value to Industry

Industry Working Group  
Feedback Sought



## Shared System Model

During the Enquiry and Application stages of the connections process, connections applicants will perform studies which incorporate their new plant model with the **same wide-area power system model that is used internally by AEMO** to assess connections applications.



## Greater Confidence in Studies

Connections applicants will be able to **better design** their generating system and then be confident that the study outcomes will meet the acceptance criteria as defined in the rules.



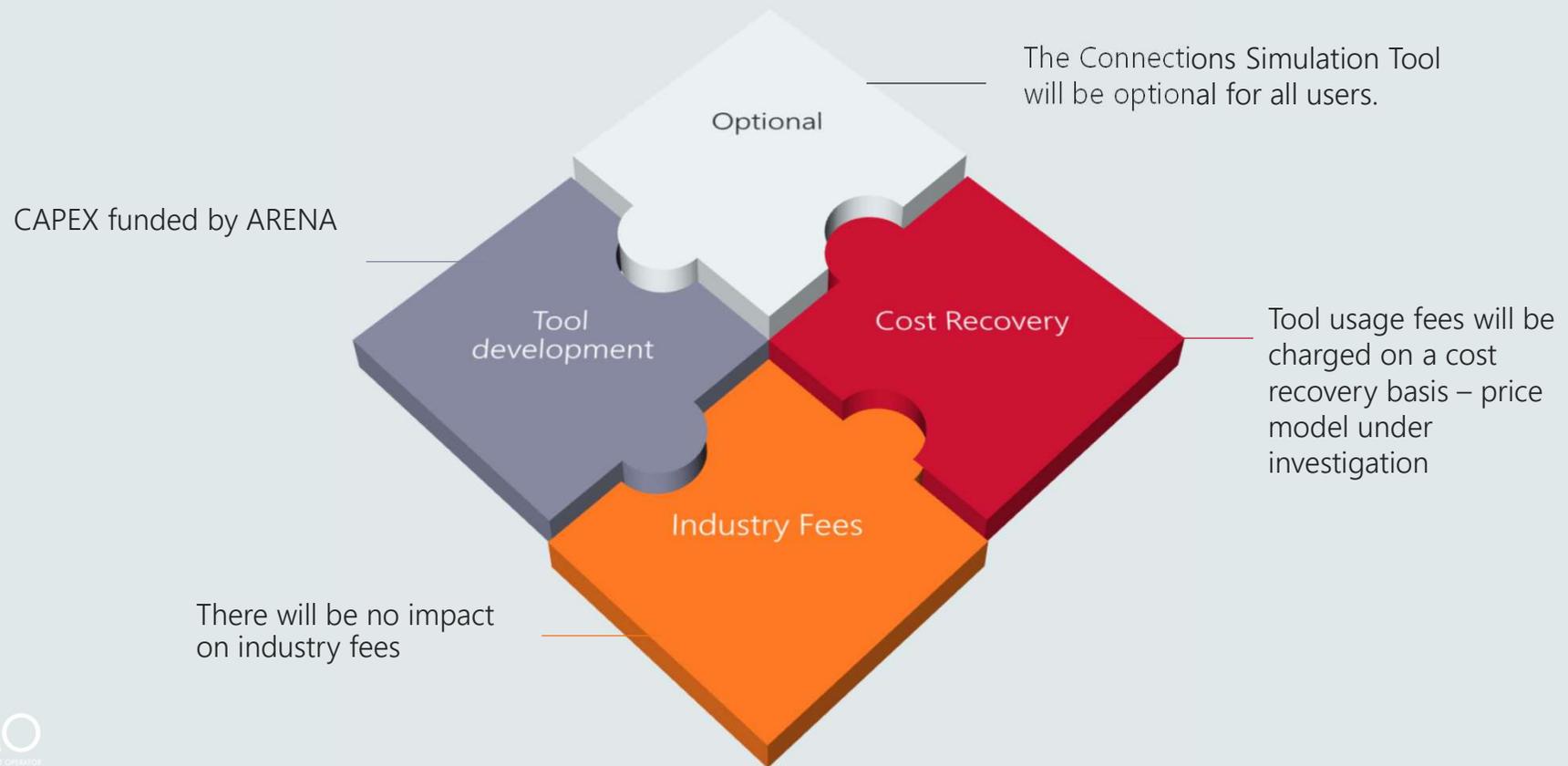
## Faster Application Process

This will significantly streamline the applications process, reducing both **risk and costs and reducing the iterations/time to complete connections approvals** (including AEMO's time to assess and finalise new asynchronous plant connections)

# Costs Considerations

Industry Working Group  
Feedback Sought

We anticipate the following cost considerations. The cost model is a work in progress and will be discussed in greater detail in the next sessions.



# Next Steps

If you have further feedback from today's session please email us at [connectionstool@aemo.com.au](mailto:connectionstool@aemo.com.au).

You will be sent a high level summary of the meeting notes from this session in the next week - prior to uploading to the AEMO website.

## Next session

- Earmarked for **Friday 10<sup>th</sup> December 10am -12noon AEST**
- The focus on this session will aim to include
  - Demo including portal access, uploading models etc
  - Draft wide-area access solution (The amount of network visible within the tool)
  - Draft pricing model
  - The focus on feedback during this session will be:
    - Features- Adaptions or use cases that would provide value
    - User Experience- How easy is it to undertake tasks in the tool from set up, access, updating, pricing, doing studies, receiving results, and the turnaround times
    - Functionality - Is the solution practical and does serve its purpose well for each user type?
    - Process- Are the process (access, studies and obtaining results, contractual arrangements) logical and efficient

You will also have an opportunity to provide further feedback from the first session.



# Questions and further feedback

## Thank you

For further information visit

<https://www.aemo.com.au/initiatives/trials-and-initiatives/connections-simulation-tool-project>

or contact [ConnectionsTool@aemo.com.au](mailto:ConnectionsTool@aemo.com.au)

# Appendices

# AEMO Competition Law Meeting Protocol

AEMO is committed to complying with all applicable laws, including the Competition and Consumer Act 2010 (CCA). In any dealings with AEMO regarding proposed reforms or other initiatives, all participants agree to adhere to the CCA at all times and to comply with this Protocol. Participants must arrange for their representatives to be briefed on competition law risks and obligations.

Participants in AEMO discussions **must**:

- Ensure that discussions are limited to the matters contemplated by the agenda for the discussion
- Make independent and unilateral decisions about their commercial positions and approach in relation to the matters under discussion with AEMO
- Immediately and clearly raise an objection with AEMO or the Chair of the meeting if a matter is discussed that the participant is concerned may give rise to competition law risks or a breach of this Protocol

Participants in AEMO meetings **must not** discuss or agree on the following topics:

- Which customers they will supply or market to
- The price or other terms at which Participants will supply
- Bids or tenders, including the nature of a bid that a Participant intends to make or whether the Participant will participate in the bid
- Which suppliers Participants will acquire from (or the price or other terms on which they acquire goods or services)
- Refusing to supply a person or company access to any products, services or inputs they require

Under no circumstances must Participants share Competitively Sensitive Information. Competitively Sensitive Information means confidential information relating to a Participant which if disclosed to a competitor could affect its current or future commercial strategies, such as pricing information, customer terms and conditions, supply terms and conditions, sales, marketing or procurement strategies, product development, margins, costs, capacity or production planning.