

Connections Simulation Tool

Connections Simulation Tool
Industry Working Group (CSTIWG)

Session 3
17th March 2022



*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	Margarida Pimentel
2	10 mins	Feedback from previous sessions	Elliott Kuhlmann
3	50 mins	Demo and process	Alistair Wells / Elliott Kuhlmann
4	10 mins	Support Approach	Alistair Wells
5	15 mins	Timelines and Rollout Approach	Alistair Wells
6	25 mins	Draft pricing structure	Dave Lenton
7	5 mins	Next steps and close	Alistair Wells

Online Forum Housekeeping

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

Be respectful of all participants and the process.

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

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

Information in this presentation is indicative and subject to change throughout the development of the solution and into operations

Your Feedback

Thank you for your feedback from the previous sessions. An update is summarised below.



Supported in Release 1

- Network Access will be at the Point of Connection
- 2 week set up time to be supported. Note: May be extended for first time users for account set up.
- Network changes (such as line-outages, machines/ loads taken offline) can be made with a request to AEMO
- Plotting tool



Currently under assessment for Release 1

- Ability for OEMs to test model independent of a project
- Provide users with a PSSE snapshot or network diagram
- Ability to amend a submitted model

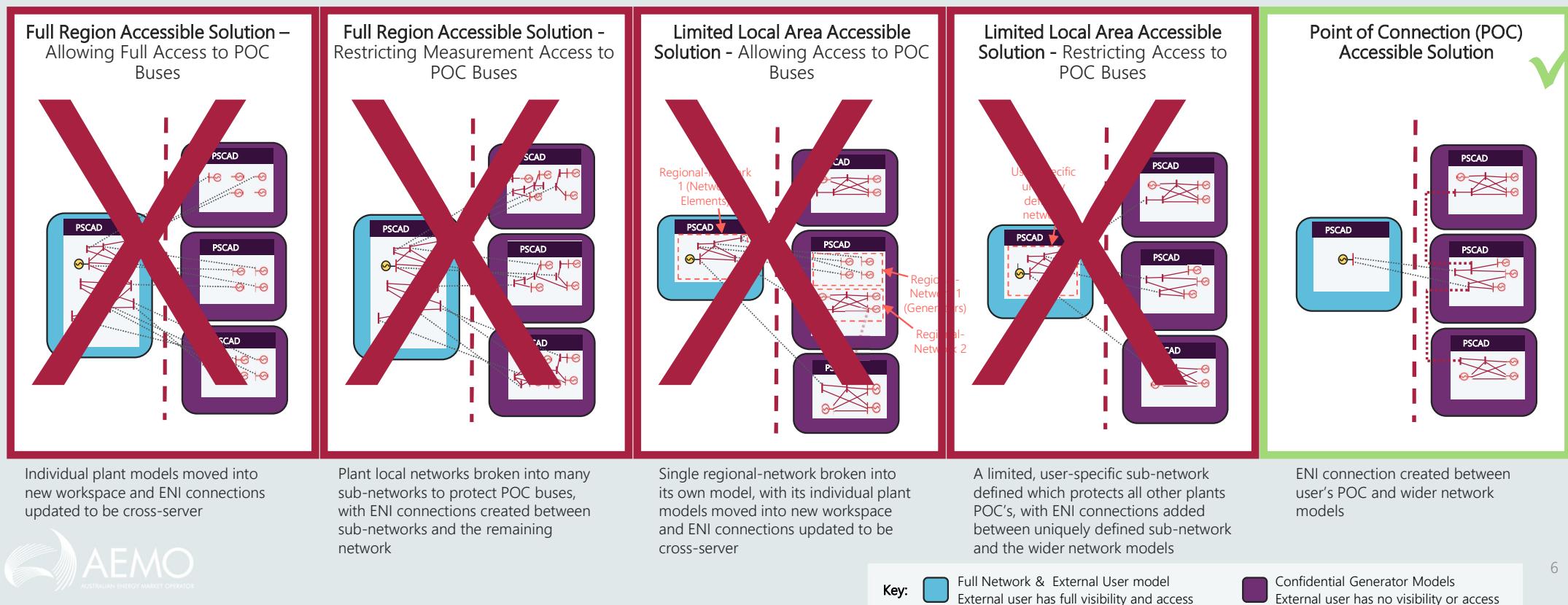


To be considered in future releases.

- The ability to undertake studies in different grid situations (eg strong, medium or weak grid)

Network Visibility Options

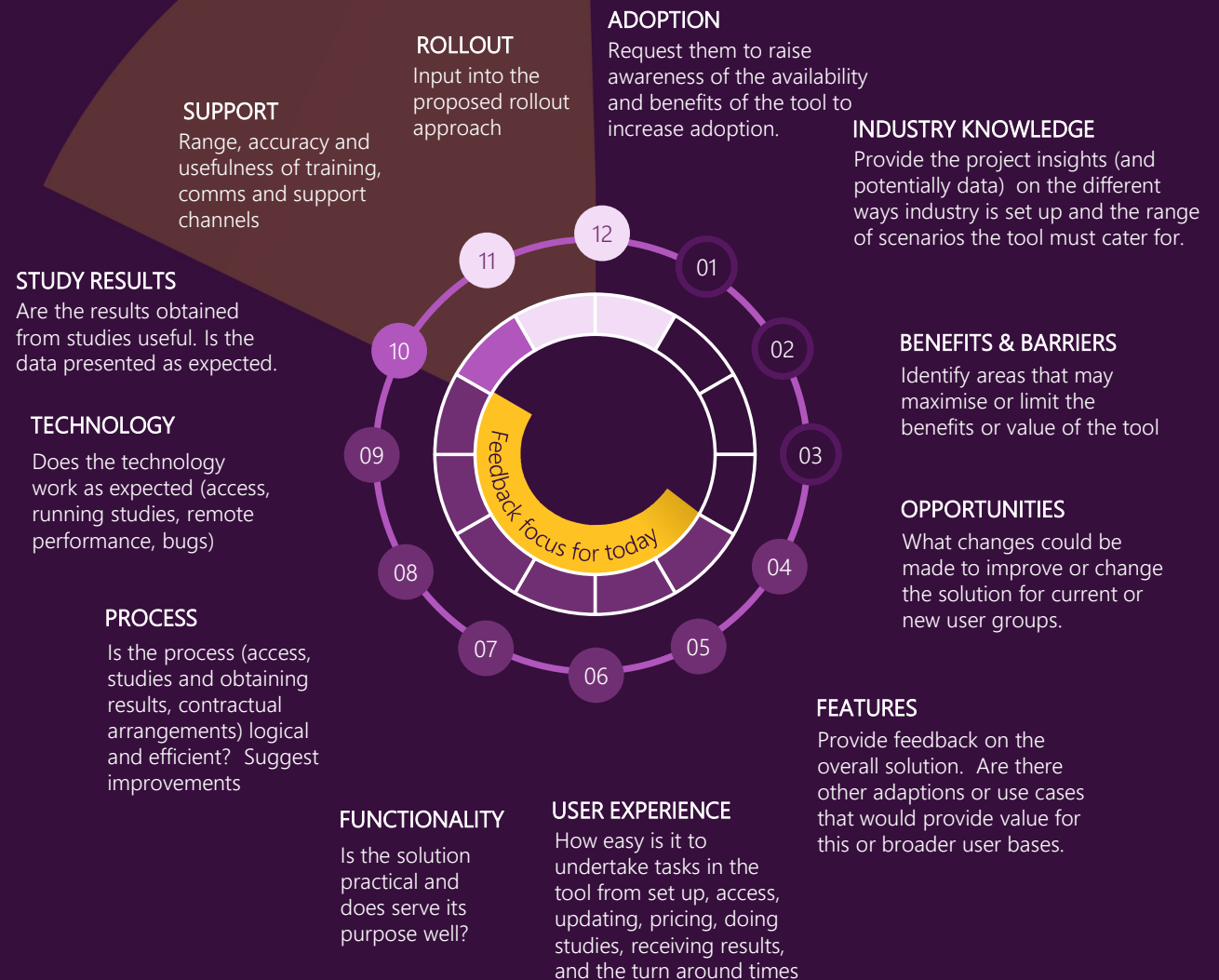
Last session we discussed the network visibility options that were being investigated. Working with NSPs across the regions it was decided that the Point of Connection Accessible Solution was solution that will be used in the tool. It provides a consistent approach across regions.



Feedback

1. Do you have further feedback following the last session
2. Today please consider the following feedback areas
 - Support
 - Rollout

We will also look at the pricing model



Demonstration Scenario

RenPower Pty Ltd

Registered Participant



Operate several renewable plants.

They want to build a new plant



Sandeep
Project Manager



GoodEngConsulting

Consultant

RenPower has engaged GoodEng Consulting to design their new wind plant and prepare their formal connections application.



Anisha
Engineering Manager



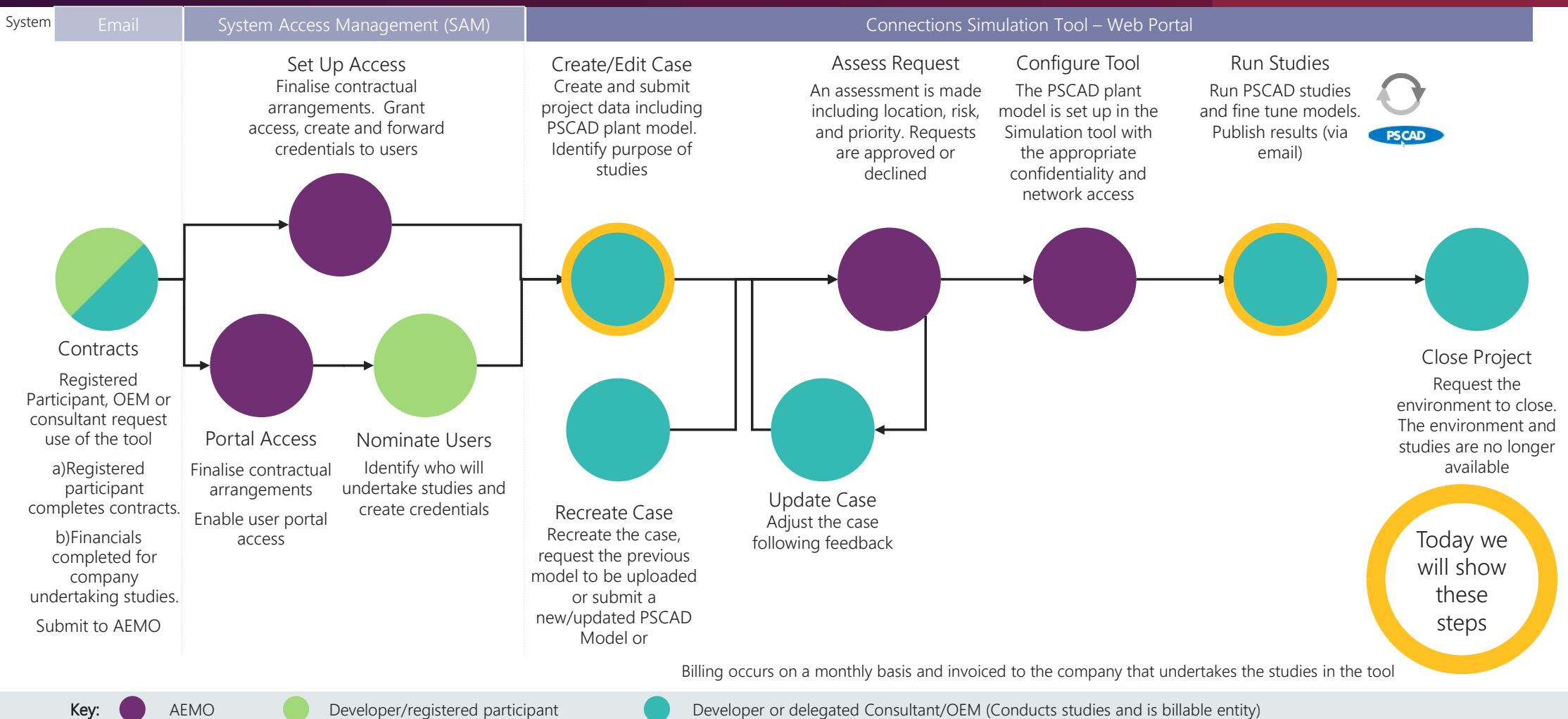
Chris
Engineer



Connections
Simulation Tool

RenPower and GoodEng have agreed to use the Connections Simulation Tool to investigate issues with their plant models.

User Process





Web Portal Demo

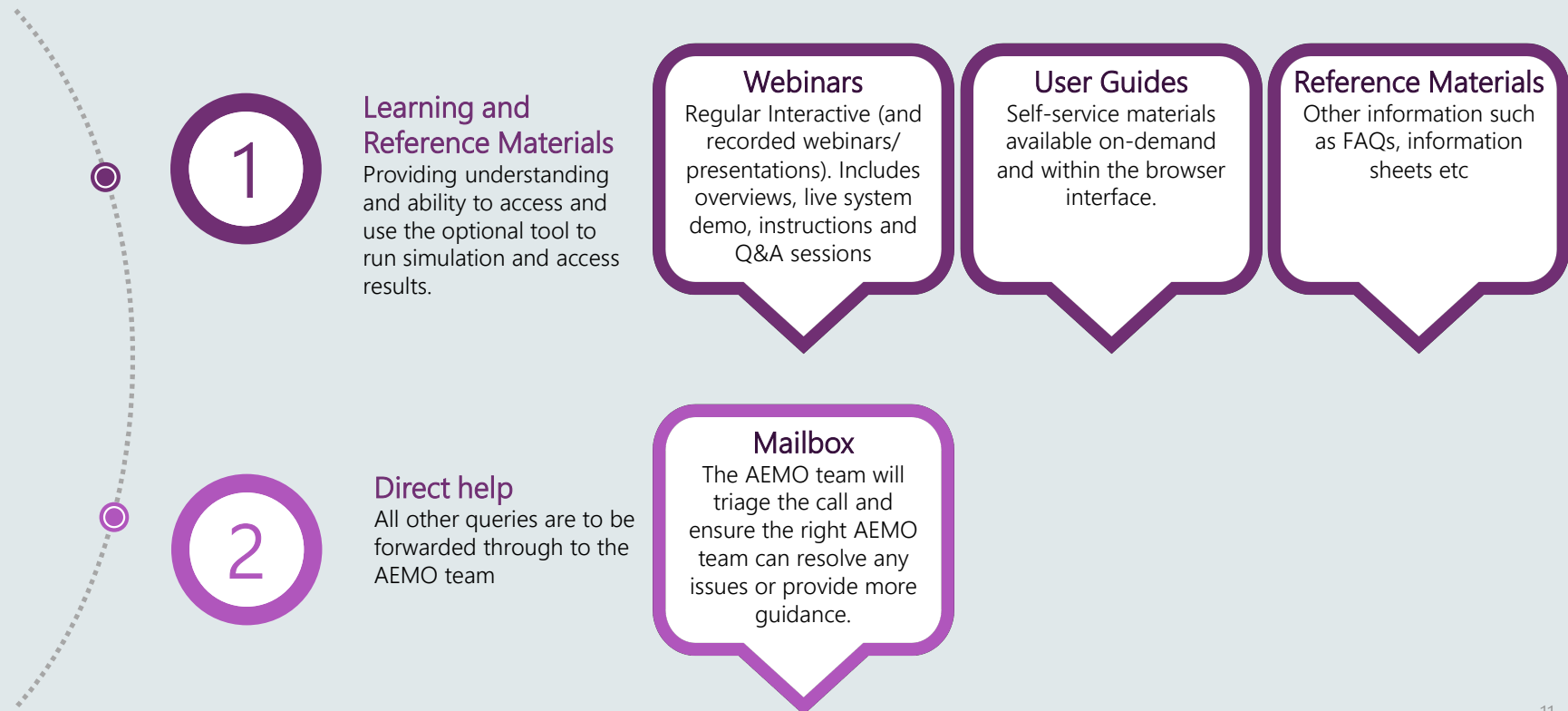
Support channels

At times users will require support.

This could include

- Initiating the service
- Knowing how to use the system
- Billing queries
- User queries
- Technology issues
- Complaints

Users will be encouraged to follow the following steps



Connections Simulation Tool Revised 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 Pilot (Showcase and Setup) Q2 2022

Showcases of processes and pre-Beta release, incorporating feedback.

Prep and setup for pilot

Connections Pilot (Launch) Late Q2 2022

Beta version release

Launch a Beta version of the Connections Tool.

Incorporate feedback in updates

Connections Release 1 – PSCAD Mid Q3 2022

Connections Simulation Tool V1 release - PSCAD

Available to an initial set of users, to be expanded over the following 12 months

2021 Q2

2021 Q3

2021 Q4

2022 Q1

2022 Q2

2022 Q3

2022 Q4

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 4a

- Demo
- Process
- Adoption

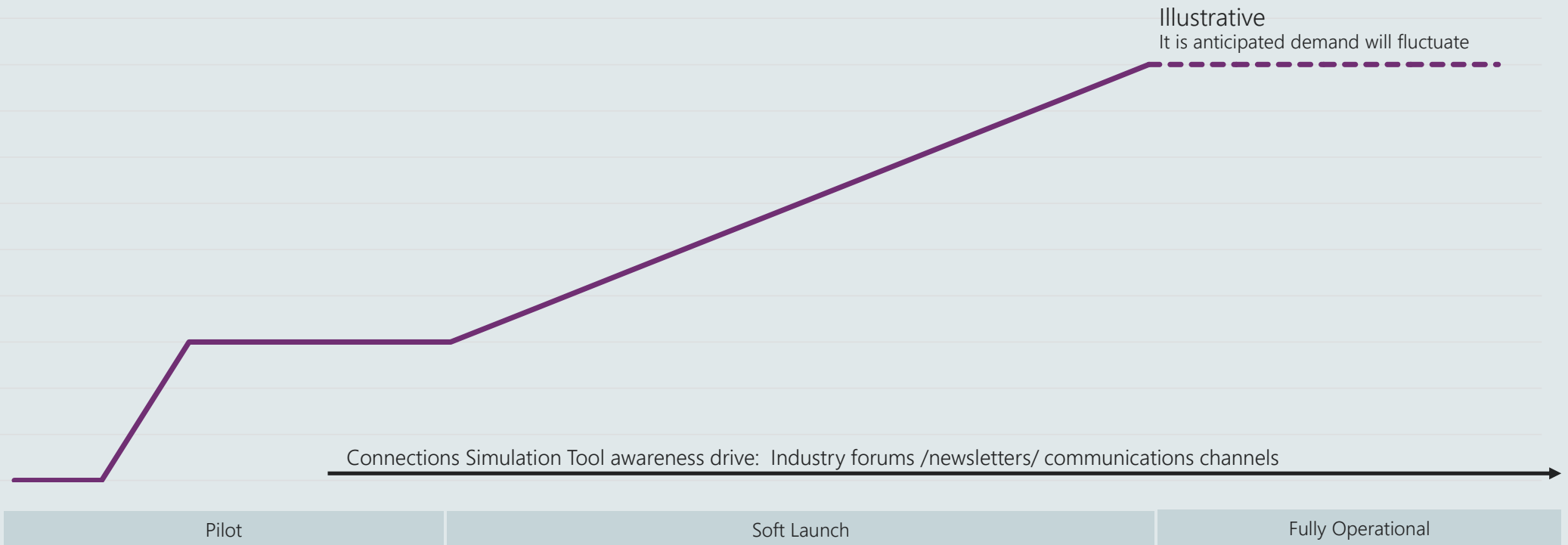
Session 4b

- Feedback
- Reporting inputs

Session 4 to be divided into 2 shorter sessions

Rollout Approach

Industry Working Group
Feedback Sought



- Targeted users on test environments

- Increasing number of users based. Demand will be assessed and approved based on the attributes of the case its, complexity and AEMO capacity
- Establish Connections Simulation Tool service request channels on AEMO website
- Commence regular and recorded user webinars

Price Modelling Approach



AEMO Costs based on Small Connections Tools Team from inception

Estimated at 4 engineers (Based on forecast simulations and effort required)

Includes additional part time manager and admin support

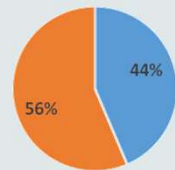
Additional consulting resource assumed to meet demand on a monthly basis



Significant Client Environment costs added to AEMO resource costs

- Bill of Materials being finalised
- Main cost is VM cost
- 64 Core Machine and 8 Core Pair is likely requirement

Costs that are Client Environment Costs Based on 3 month project example



■ Client Environment Costs ■ Other costs



Modelling approach aligns available engineering time each month

Done over a 36-month period with non-linear application rate

Includes engineering time to maintain models



Lifecycle of each connection simulation model follows several steps

- 1) Application
- 2) Set Up
- 3) Use of Simulation Model,
- 4) Close Down of Simulations



Provide Indicative Charging Options to recover Covers

Charging options intended to recover cost

Still finalising Environment costs and forecast numbers

Price will be dependent on usage volumes and duration of simulations

Key Modelling Input is Number of Simulations

Original assumption based on Key Connection Information – Now updated for Jan 2022 figure

Application	Forecast	Latest Key Connection Information figures Used as Input
Pre-feasibility – General Models	6 p/a	Will be a higher subset of applicants than New Connection Enquiries, but applicants may not be ready for a study. Assume 5% of New Connection Enquiries.
Enquiry Phase – General models available to assist in enquiry phase	24 p/a	185 Active New Connection Enquiries – Assume around 15% of current new connection enquiries require a simulation model
Application Phase – General model during the application phase	12 p/a	44 New Application to connect – Assume some may have done study already, but other may need new or updated simulation model to review and negotiate standards. 1/3 rd of current application above 30 MW (36 applicants)
Application Phase - Specific simulations – These are established to replicate problems in the connections process	12 p/a	44 New Application to connect – 36 are above 30 MW so this is 1/3 rd of this total that may require specific model to assess issues.
Plant Upgrade – Impact of Changes to Existing Equipment and Control Systems	5 p/a	Estimate of number of plant upgrades that may require new study

- AEMO NEM Generation Information – 537 sites (Committed 51, Anticipate = 18, Proposed 468)
- Current simulation figures only around 10% of the potential new generation investment

Charging Options

Industry Working Group
Feedback Sought
 Charging structures and impact on
 length and number of projects

- Three charging options were considered to recover costs
 - Option 1 would require AEMO to include a risk premium to ensure cost recovery
 - Option 2 and 3 mainly variable charges with different options for some fixed charges
- Client Environment Charges will depend on duration of the Simulation project
 - Users of the Tool could chose to reduce simulation times to minimise this cost
- Level of AEMO Support will depend on the needs of the client

Option	Application Fee	Fixed Charge	Set up Charge	Client Environment Charges	AEMO Support Post Set up	Close Down Costs
1 – Fixed Charge Only	\$Fixed	Set to recover costs with risk premium	n/a	n/a	n/a	n/a
2- Variable Charge & Fixed Application Fee	\$Fixed	n/a	Hourly rate (Forecast 20 hrs)	\$Daily Rate – Options on VM Size	Hourly rate (Forecast ~15 hrs per month)	Hourly rate (~2 hrs)
3 - Fixed Application, Fixed Set up and Variable Cost	\$Fixed	n/a	Fixed Charge for Set up based on expected time	\$Daily Rate – Options on VM Size	Hourly rate (Forecast ~15 hrs per month)	Hourly rate (~2 hrs)

Next Steps

If you have further feedback from today's session please email us at 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 as a 1 hour session in early May. This will be confirmed via a meeting invite when possible
- The focus on this session will include an end to end demonstration of the process and tool.



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

Appendices

Appendix 1

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.

Appendix 3

The AEMO Project Team



Margarida Pimentel
AEMO Business Sponsor



Alistair Wells
Project Lead



Elliott Kuhlmann
Technical Advisor



Chris Espinoza
Program Manager



Dave Lenton
Pricing Model Development



Sarah Squire
Change Manager

Appendix 4

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 Corey Chin	Powercor	DNSP
Amir Mehrtash	Power System Consultants	Consultant
Scott Partlin (Apology) Natasha Thompson Ronny Schnapp	NEOEN	Developer
-	AGL	Developer
Wai-Kin Wong	Hatch	Developer