

DER Register

Summary Pack – Pre-consultation workshop
November 2018

Context

On 13 November 2018 AEMO ran a workshop attended by 60 participants in Melbourne. The workshop was carried out with the following goals:

- ✓ To explore how the DER Register will be used by industry and AEMO
- ✓ To gain early insights to feed into the issues paper and draft DER Information guidelines
- ✓ For industry and AEMO to come to a shared view on the DER Register key issues and identify where further work may need to be done prior to the formal consultation in early 2019
- ✓ Confirm scope of the Rule change

This document provides a summary of the activities undertaken and captures some of the insights provided by participants.

Please note that all information in this package is indicative only and reflects the materials collected, informal discussions and recollection of the facilitators at the various locations.

Sessions

A	Introduction to the Workshop and to the DER Register
B	What should be the key objectives of an AEMO DER Register?
C	How will we design a good DER Register?
D	How do we capture the right data in the DER Register?
E	What does the data collection process look like?
F	Other Guideline themes
G	Day wrap up and next Steps

SESSION A: Introduction to the Workshop and to the DER Register

The aim of the Distributed Energy Resources (DER) Register (the Register) is to improve power system operation and security through greater visibility of where DER are connected in the NEM.

- On **13 September 2018** the AEMC made a final rule determination on NER clause 3.7E
- The rule places obligations on AEMO and NSPs for delivery by **1 December 2019**:

Obligations on AEMO

- a) Develop and host DER Register
- b) Develop and publish DER Register Information Guidelines
- c) Share disaggregated data with NSPs
- d) DER Register Report on website
- e) Consider DER information in load forecasts
- f) Share information with emergency services on request

Obligations on NSPs

- a) Collect the data outlined in the DER Register Information Guidelines
- b) Provide AEMO with their known information about existing DER in their network

SESSION A: Introduction to the Workshop and to the DER Register

Scope – What is DER?

	What is it?	Example	Collection	Worth noting
Load	<ul style="list-style-type: none"> Sub-set of DSP information (standing data) Contracted DSP Curtailment of non-scheduled load or provision of non-scheduled generation 	   <i>Manufacturing</i> <i>Hot water load</i> <i>Battery storage</i>	Demand Side Participation Guideline	<ul style="list-style-type: none"> Does not include passive loads DER Guideline doesn't define collection of load variables
Generation	Standing data relating to a <i>small generating unit</i> : <ul style="list-style-type: none"> <30MW Exempt from registering with AEMO 	  <i>Battery storage</i> <i>Rooftop solar</i>	Distributed Energy Resource Guideline	<ul style="list-style-type: none"> DER Guidelines specify the minimum size (kW) of DER generation devices

SESSION B: What should the DER Register key objectives be?

WHAT SHOULD A DER REGISTER LOOK TO ACHIEVE?

Break up into groups of 3-4 and take 5 minutes to list the objectives of the program (one objective per post-it note)



SESSION B: What should the DER Register key objectives be?

Summary:

Data Access

- Rules for data access
- User friendly interface
- Streamlined, fast interface for installers to collect/input data
- Accessible information on DER Resources
- Single, national system/ approach

Privacy

- Anonymisation of public information
- Secure
- Customer privacy considerations

Planning and Forecasting

- Data collected to inform network planning and forecasting activities
- Inform network maintenance
- Identify opportunities for investment
- Efficient management of distribution systems → system security and strength

Data Details

- Understand what data is needed
- Visibility of DER in the network, including size, distribution and technology
- High resolution data
- Charge/ discharge rates and volume

- Age and capability of DER installations
- Identify stationary vs mobile storage
- Safety information (e.g. trip settings)
- Product recall tracking
- Provide a similar level of detail to what is known about large scale generation
- Electric Vehicles
- Active vs passive
- Updated as DER is commissioned or decommissioned

Network Operation

- Demand management programs enabled
- Availability of reserve power
- Demand response availability
- Utilise DER to manage constraints
- Visibility of power quality mode changes and their impact on customer value

Efficiency

- Avoid duplication
- Comprehensive and accurate
- Consistency
- Simple means of capturing data
- Kept up to Date
- Facilitate system efficiency

- Minimise costs
- Standardisation of connections
- Consider a register process where customers are required to update their data and allow for the expansion of the register
- Start with static data with a view to move to live data, where possible
- Roadmap for future – need a process for consistent review, update and upgrade

What to do with the Data

- Be an accurate resource for the industry
- Track and monitor trends over time
- Identify opportunities for more renewables penetration
- Content of register could be used for development of new services
- Provide information for Open Energy Network concept
- Better collaboration between industry participants
- Facilitate DER participation by providing an accurate view
- Structure and content of register could become the basis for a dynamic resource

SESSION C: How will we design a good DER Register?

WHAT ARE THE DEVELOPMENT PRINCIPLES FOR DESIGNING THE DER REGISTER?

Instructions:

- Work individually
- Take 2 sticky notes
- Bring your sticky notes to the front of the room and place them on the most important design principles



Principle	Rank
Automate where possible	1
Leverage existing data collection methods and timings	2
Clear requirements	3
Value/ cost and impact	4
Avoid seeking data that won't be used	5
Avoid data collection duplication	6
Ensure privacy and data security	7

SESSION D: How do we capture the right data in the DER Register?

HOW CAN WE CAPTURE DATA THAT IS USEFUL TO THE INDUSTRY?

Instructions:

- Work in small groups
- Choose a player that is affected by the DER Register
- Take 20 minutes to complete template using post it notes
- Facilitated group discussion on key ideas from your player
- Take 10 minutes to update your template with any other ideas

WHAT WOULD AN IDEAL DER REGISTER LOOK LIKE FOR THIS PLAYER IN TERMS OF DATA CAPTURE?

Player: *AEMO*

- Make, Model, Manufacturer
- Capacity
- Frequency & Voltage settings (to understand ride through)

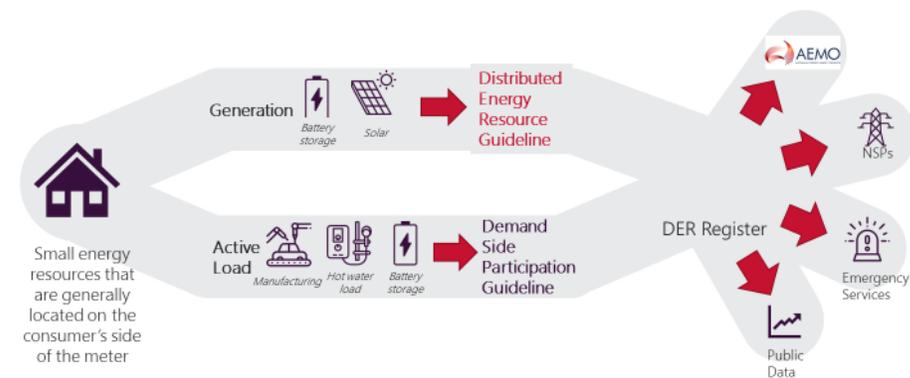
WHAT VALUE WOULD THIS CREATE FOR THIS PLAYER?

- | | | | |
|--|---|----|----|
| 1. Improved load forecast accuracy; operational, connection point & Energy Forecasts | 2. Improved visibility of DER → system security | 3. | 4. |
|--|---|----|----|

WHAT RISKS WOULD NEED TO BE MITIGATED FOR THIS PLAYER?

- | | | | |
|----|----|----|----|
| 1. | 2. | 3. | 4. |
|----|----|----|----|

Background stimulus



Who could the players be?



SESSION D: How do we capture the right data in the DER Register?

Stakeholder	Ideal data capture for this player?	Value created	Potential risks
DNISP	<ul style="list-style-type: none"> Consistency of data capture, which is accurate and easy for installers and other parties to update when changes are made to customer DER Information should be provided to the DNISP, so they can update the customers connection agreement The initial DER solution should, if possible, use existing systems and methods, but flexible solutions should be considered for future changes in the DER space, as the technology is progressing quickly Maintain customer privacy Can be easily implemented 	<ul style="list-style-type: none"> Regulatory compliance Better information for demand forecasting, demand management, constraint management and network planning Consistency of data requirements across DNISP. This should lead to consistency with installers to capture and provide information to the DNISP Improved assessment of connection applications. May help identify DER that is not registered Local hosting capacity (understanding what the current and forecast hosting capacity is) Could be used for Electricity Distribution Price Review (EDPR) Opportunity maps (largely for regulatory requirements and proponents) More comprehensive collection of DER information 	<ul style="list-style-type: none"> Ensuring the dataset is future-proofed (risk of creating a legacy dataset system) Resource and administrative burden, financial costs and requirements Risk of incomplete or inaccurate dataset, e.g. errors in installer information, keeping up to date with decommissioned devices Balance visibility and transparency of information with customer privacy concerns and confidentiality No capacity to opt out of register by customer, which may impact relationship management
Customer	<ul style="list-style-type: none"> Customers/ installers should have an easy and efficient means of providing installation data Customer should be able to access their data and ensure accuracy and change control from their site Protect privacy (e.g. no availability of name, address, etc.) Receive notification that their system has been registered as per requirements (could this be included in the connection agreement requirements?) 	<ul style="list-style-type: none"> Product recall. Easier to target product recall notices to relevant customers Have access to their own information (customer data, privacy framework) Easier to identify customers who can have their system remotely updated/ upgraded Opportunities to offer services to reduce bill amount 	<ul style="list-style-type: none"> Data security/ privacy and option to opt out of sharing specific details Increased complexity for installers to register may mean incorrect data or non-compliance Data for disconnection of installed equipment not entered Misuse of information if leaked. e.g. commercial use, marketing, cold calling, etc

SESSION D: How do we capture the right data in the DER Register?

Stakeholder	Ideal data capture for this player?	Value created	Potential Risks
Installer	<ul style="list-style-type: none"> • Same data/collection and submission process as the CER and DNSP process. That is, one data capture portal that feeds multiple processes. • Selection of manufacturer, make and model should pre-populate fields (unless altered from manufacturers settings) • Simple to lodge new information into the register • Smart phone app • Information on installation site available (e.g. previous installs, product recalls, etc.) 	<ul style="list-style-type: none"> • Streamlined, single point of data entry to DER, CER and DNSP • Simple and easy to use • Warranty linkage • National system, with consistency across the DNSPs 	<ul style="list-style-type: none"> • Non-compliance • Input of incorrect data (accidental or intentional) • Security of access • Extra training and time on site • Multiple registration/ submission requirement if not set up correctly (CER, DER, DNSP, etc)
Emergency Services	<ul style="list-style-type: none"> • Up to date data, specifically around device location, technology type (e.g. battery chemistry) 	<ul style="list-style-type: none"> • Increased safety • Can bring the right equipment for the job 	<ul style="list-style-type: none"> • If not updated, then the data will be inaccurate and unreliable • Must include battery de-registration • Reliability of DER service (need 24/7 access)
Aggregator	<ul style="list-style-type: none"> • Inclusion of static/ standing data that is unlikely to change • Validation of aggregated NMIs 	<ul style="list-style-type: none"> • Flexibility to expand services over time • Simple, low cost to participants • Able to validate assets that are aggregated 	<ul style="list-style-type: none"> • Misuse or misinterpretation of information • Sharing of market sensitive information • Alignment with customer data privacy principles • Inconsistency with other DER/ DSO initiatives happening
TNSP	<ul style="list-style-type: none"> • Transmission node identity aggregate data at postcode level (visibility at DNSP level) • Variables should include: <ul style="list-style-type: none"> • Power quality modes • Trip settings • Run back schemes 	<ul style="list-style-type: none"> • Better manage variations due to weather events • Coordination of load with DNSP (active loads vs passive) • Visibility of equipment power quality modes (e.g. inverter) • Better network investment/ maintenance decisions 	<ul style="list-style-type: none"> • Data integrity risks. E.g. Unusable, inaccurate, duplicate, incomplete data • Onerous compliance/ enforcement obligations (e.g. rule changes) • Failure to capture or adapt to future changes • Cost of implementation

Data discussion

- The following are some preliminary variables put forward by AEMO that could be considered for the DER Register.
- At the workshop, some discussion was held in sessions D and F around variables for collection. A room-wide discussion was facilitated in the afternoon to specifically address the variables for inclusion in the register.

Category	Sub-category	
NMI(s)	DERID (unique ID for each DER device)	
DER devices	<ul style="list-style-type: none"> • Fuel source • Make, model, manufacturer • Storage capacity (kWh, if applicable) • Capacity (kW) • Is the device remotely controllable 	<ul style="list-style-type: none"> • Installation date • Installer • Registered for Ancillary service provision • Device part of aggregated control • What standard applies
Inverter	<ul style="list-style-type: none"> • Make, model, manufacturer • Capacity • Installation date • What standard applies 	<ul style="list-style-type: none"> • Changes made to default manufacturer settings • Inverter enabled mode of operation
Trip settings	<ul style="list-style-type: none"> • Frequency 	<ul style="list-style-type: none"> • Voltage
Runback scheme		
Decommission date		

Data discussion

The following summarises variables in AEMOs preliminary dataset that workshop participants agreed with, additional variables that were proposed and ones that should be given further thought. AEMO intends to further engage industry on the DER register variables and data model.

Variables that should be included

- Installation date
- Go Live Date
- Panel (DC) capacity (MW)
- Inverter (AC) capacity (MW)
- Storage (kWh) capacity
- Rate of charge/ discharge
- Location
- Make and model/ serial number
- Asset/ technology type
- Decommissioning/ warranty expiration
- Power quality response modes
- Trip settings
- Protection and control settings (e.g. P-Q control)

Variables to consider adding

- Export limits
- Quality Flag (e.g. legacy, new, validated, pending, etc)
- Device positioning (e.g. Tilt/ orientation)
- Trip settings (start frequency, drop dead frequency)
- Commercial/ Residential/ Industrial flag
- Single phase/ three phase
- Transmission Substation
- Zone substation

Variables to consider removing

- Devices considered in aggregate control should be carefully considered as a variable, as this may be hard to maintain in a static database.

SESSION E: What does the data collection process look like?

For this session, participants were separated into 3 groups (Blue, Green and Red) around the room, to independently workshop what a high-level collection, validation and submission process might look like.

Collection, Validation & Submission

Instructions:

- Take 10 minutes to discuss in small groups how you imagine the collection/ validation/ submission process will look like
- In your colour group, map out your process using the cut-outs provided
- Present back to room
- Discuss and review in colour groups

Players

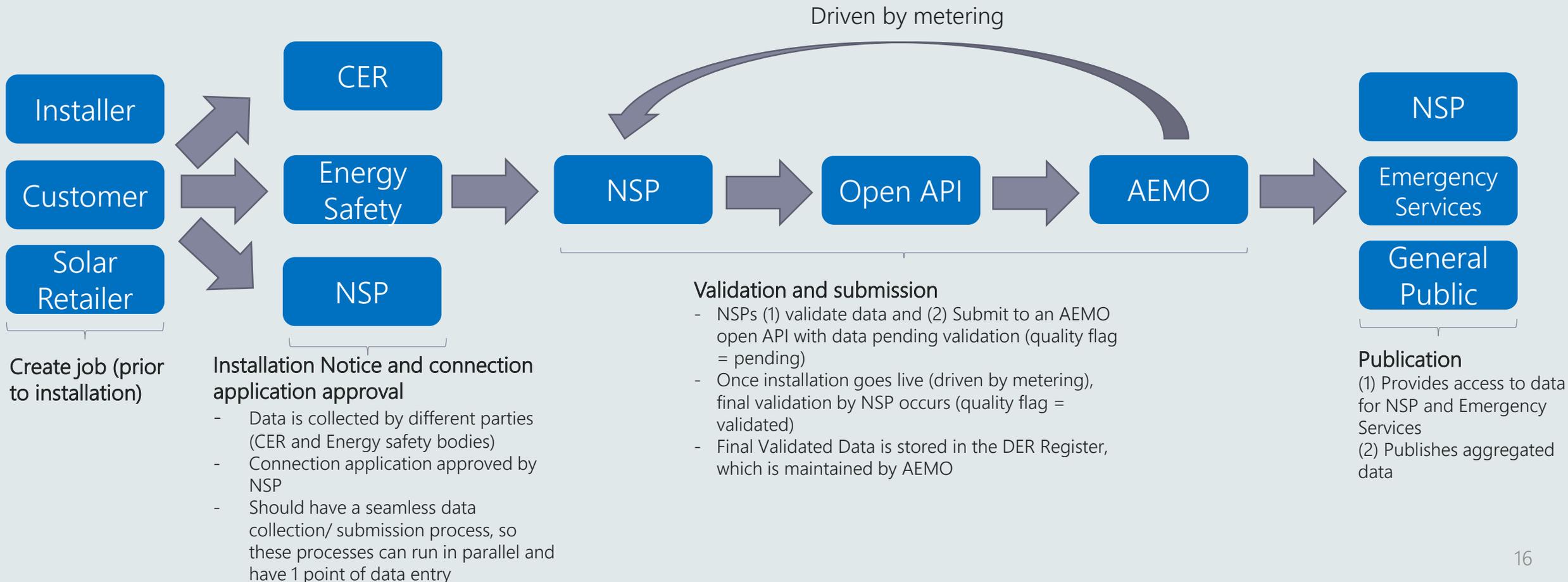
AEMO DNSPs Installers TNSPs Customers Aggregators Government/Regulators Public Access

Processes

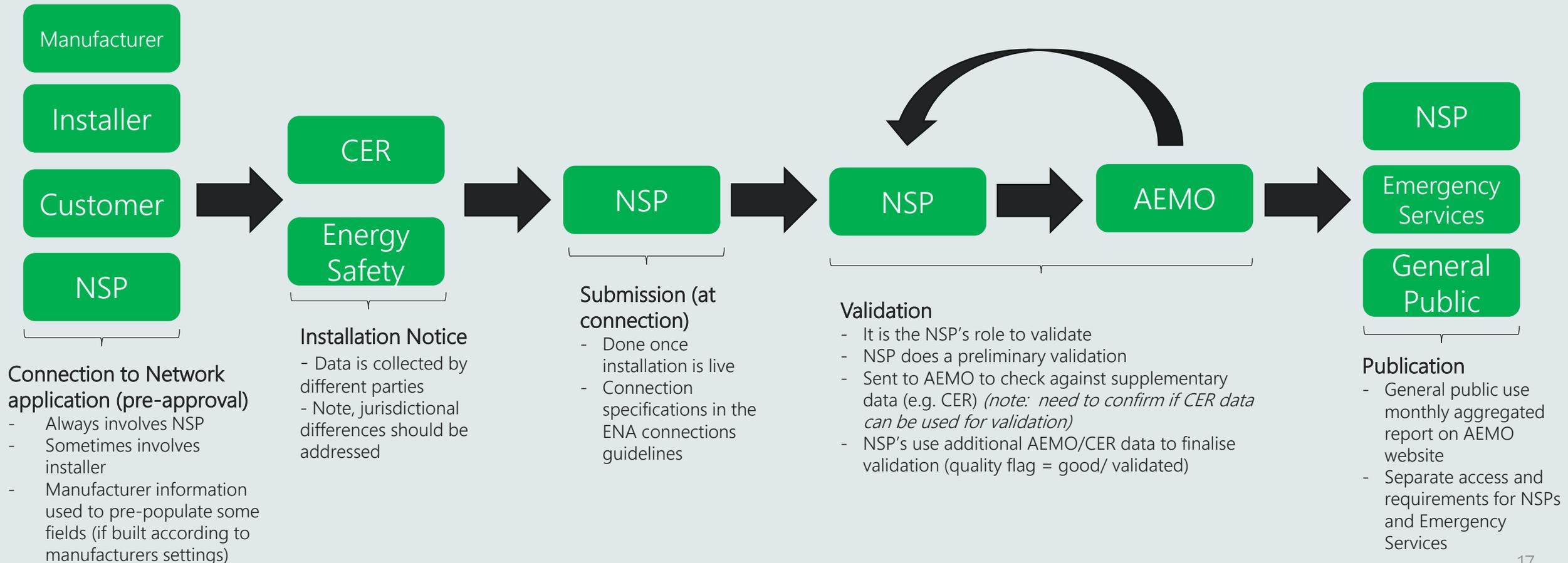
Data Submission → Data validation → Data Publication

What can we do in the future?

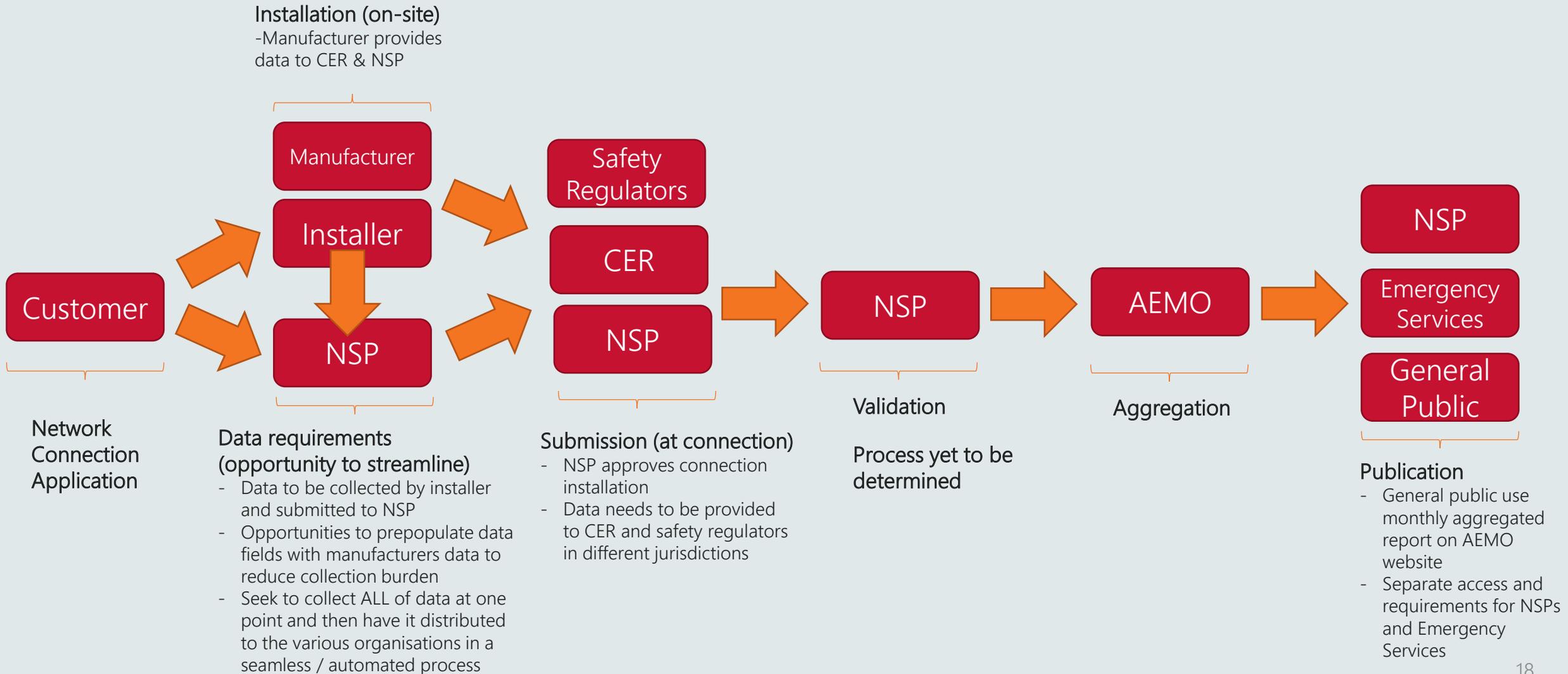
SESSION E (Blue): What does the data collection process look like?



SESSION E (Green): What does the data collection process look like?



SESSION E (Red): What does the data collection process look like?



SESSION E: What does the data collection process look like?

Key themes that emerged across all three stations (blue, green, red) included:

1. **Streamlining of processes.** When DER is installed there are data requirements for several different bodies, including the CER (creation of STCs), DNSPs (connection application, etc), safety regulators (requirements differ for different jurisdictions), and AEMO (DER Register). A key theme was to have **one, single point of data entry that could feed multiple processes.**
2. **Data Validation.** The groups discussed how data should be validated by the NSP and submitted to AEMO. Several groups discussed **iterative/ feedback loop processes**, which could be supported by supplementary datasets. Further discussions should be facilitated to explore an acceptable validation process across NSPs.
3. **Data publication.** All groups noted that access to the data will differ between NSPs, Emergency Services and the general public. **Different points/ types of access will need to be explored** to facilitate the use cases for each of these stakeholder groups.

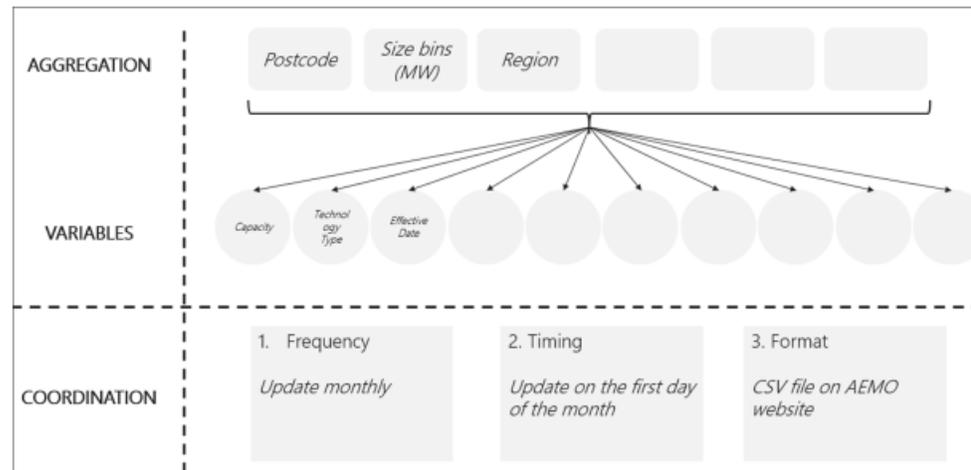
AEMO will investigate how we can support the development of this collection process across industry, to promote a streamlined approach to DER data collection.

SESSION F1: Reporting

RED STATION: WHAT IS THE BEST WAY TO REPORT DER INFORMATION TO THE PUBLIC?

Instructions:

- Take 10 minutes to write down variables and aggregation levels
- Facilitated group discussion on key variables and aggregation levels as a room
- Facilitated discussion on coordination of the report publication



SESSION F1: Reporting

Break variables (variables used to group data)

- Post code*
- SA4
- LGA
- Gridded area (1km x 1km)
- State
- Transmission substation
- Zone substation

Aggregated variables (grouped data that is displayed in the report)

- Building type (residential, commercial, industrial)
- Installation date
- Go-live date
- **Total installed capacity***
- Fuel type (i.e. DER category, asset type)
- Distribution
- *Note: no addresses to be shown, and need a minimum number of results per aggregation category to display*

Coordination

- **Frequency:** Update monthly, quarterly or live (based on validation)
 - Could develop a monthly snapshot to highlight changes
- **Timing:** Timing of update (e.g. midnight) does not matter as much as defining the frequency.
- **Format:** Downloadable CSV at the start. Move to interactive pivot tables.

SESSION F2: Access

GREEN STATION: WHAT ARE THE USE CASES FOR ACCESSING THE DER REGISTER?

Instructions:

- Work in small groups
- Take 10 minutes to complete template
- Facilitated discussion on access use cases and design considerations

Who needs access?



What are the differences in access requirements?

Will parties ever need to request load (DSP) and generation data together?

What process attributes would you like AEMO to consider?

*Is it best to leverage existing processes (e.g. MSATS)?
Should the process for access be the same for all use cases?*

SESSION F2: Access

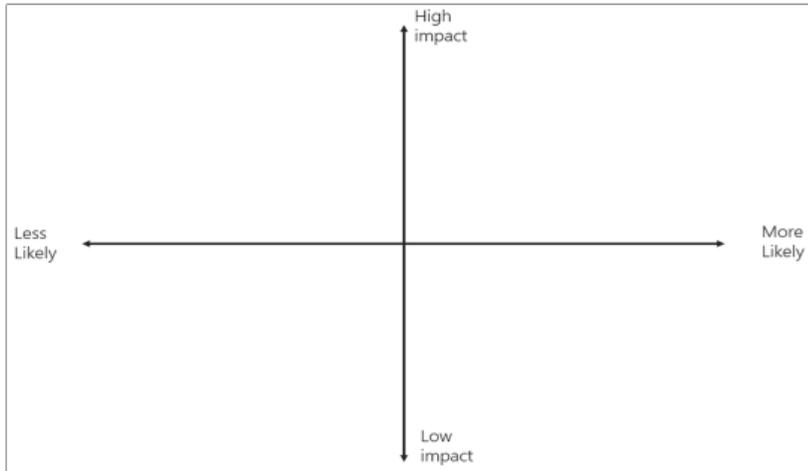
Who should have access?	What are the different access requirements?	What process attributes would you like AEMO to consider?
<ol style="list-style-type: none"> 1. NSPs 2. AEMO 	<ul style="list-style-type: none"> • Specific information: View data via NMI discovery, view data related to specific network. • Need to be able to create/ edit/ validate data 	<ul style="list-style-type: none"> • How to validate/ authorise access to different parties <ul style="list-style-type: none"> • Level of validation • Customer privacy and confidentiality • Cost of access/ paid market insights • Digitisation (avoiding signing declarations) • Customer data rights linkages • Simple process
<ol style="list-style-type: none"> 3. Emergency Services 	<ul style="list-style-type: none"> • Access data via a separate portal/ process, compared to NSPs • Should not be able to edit data • Important data is location, equipment and DER device fuel type 	
<ol style="list-style-type: none"> 4. Government and government agencies (AER, CEC, CER, state and federal government) 5. Regulators 6. General Public 7. Aggregators/ Retailers 8. Data collection agents 9. Academia 10. Other industry groups/ bodies 	<ul style="list-style-type: none"> • Public/ aggregate information only 	

SESSION F3: Privacy and confidentiality

BLUE STATION: HOW DO WE ENSURE THAT PRIVACY AND CONFIDENTIALITY ARE MAINTAINED?

Instructions:

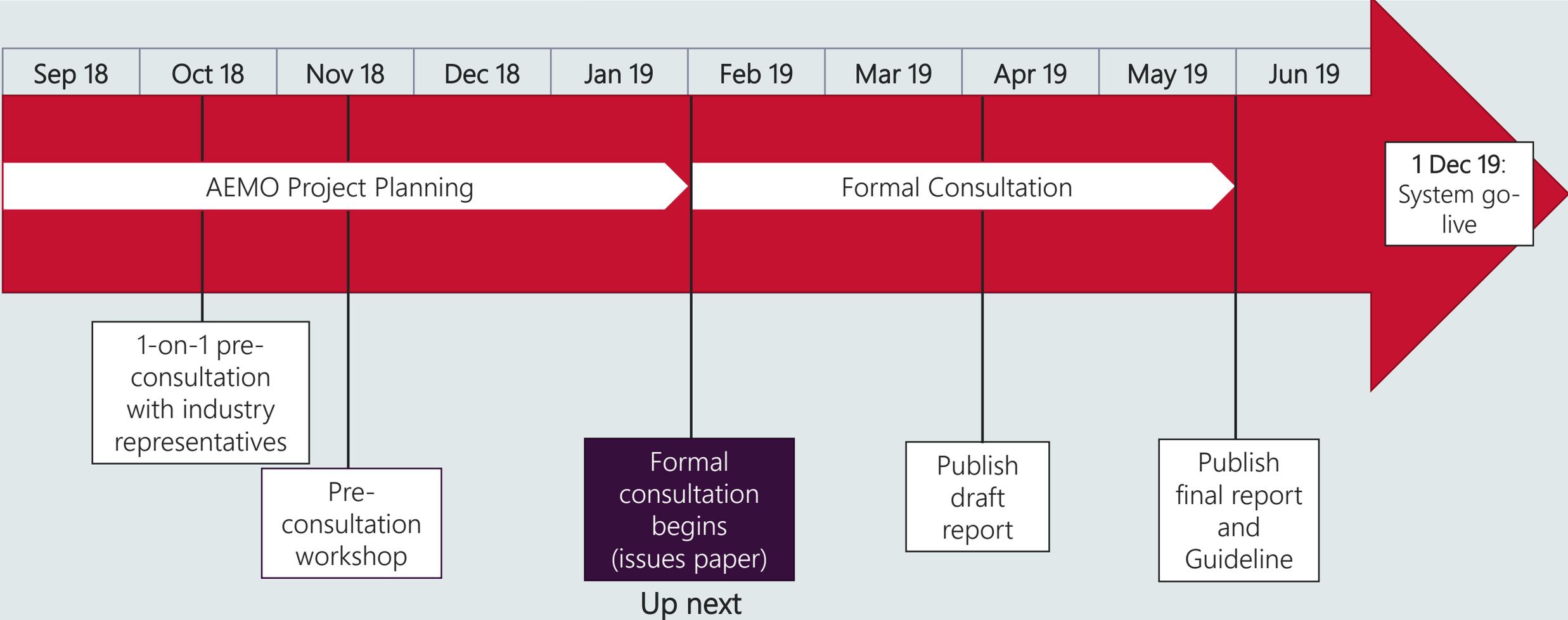
- Take 5 minutes to individually compile risks (1 risk per post-it)
- Place/map risks on grid
- Facilitated group discussion on key risks and mitigation strategies
- Match mitigation strategies to risks (use post-its)
- Take 5 minutes to update grid based on mitigations



The following items were considered, however not mapped to a grid, such as the one on the left:

- Minimum standards
- Data leaks/ wrong people get access
- API security/ third party portal security
- Privacy and security provisions

Next steps



Contact



<https://www.aemo.com.au/Stakeholder-Consultation/Consultations/NEM-Distributed-Energy-Resources-Information-Guidelines-Consultation>



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AEMO

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