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**AEMO ISP Transmission Cost Database Stakeholder Webinar**  
**20 January 2021**

# **Welcome**

## Housekeeping

- We will be using SLIDO for interaction in the second half of this webinar. Please use SLIDO in the background to raise your questions and provide feedback today

<https://www.sli.do/>

Use code #ISPTCW

- This webinar is being recorded live and will be made publicly available after the webinar



## Agenda

- **Introduction: purpose of this webinar**
- **Intended usage of the Transmission Cost Database (the database)**
- **Including risks in the estimate build-up**
- **Construction of the database**
- **Functionality of the database**
- **Timeline of transmission cost inputs for the 2022 ISP**
- **Q&A**
- **Next steps**



## Introduction

- **Context:**
  - Stakeholders have requested an increase in transparency for transmission costs used in the ISP.
  - Accurate cost estimation is pivotal to recommending that transmission projects proceed.
  - AEMO is developing a new Transmission Cost Database, primarily for use with Future ISP projects, to be made publicly available.
  - The initial version will be used for the 2022 ISP, and it will be continually improved and refined as new cost information becomes available.
- **Purpose of this webinar:**
  - To explain the approach and intended usage of the database
  - Provide an opportunity for stakeholder feedback and Q&A
- **Aims of the Transmission Cost Database program:**
  - Improve the accuracy of the transmission cost estimates used in the ISP
  - Increase the detail of cost estimates available to AEMO and to stakeholders
  - Increase stakeholder confidence in transmission costs used in future ISPs





## Intended usage of the database

Stage	Future ISP Projects	Future ISP Projects with Preparatory Activities	Project Assessment Draft Report (PADR) in development or completed	Project Assessment Conclusions Report (PACR) completed	Contingent Project Application (CPA) and ISP Feedback Loop
Example Projects	Network expansion options and candidate REZs in early stages	QNI Medium and Large, CQSQ, New England REZ etc	HumeLink, Mariner Link, Central-West Orana, VNI West		PEC, VNI Minor (NSW works)
Price certainty (Draft)	Class 5/4	Class 4/3	Class 4/3	Class 4/3	Class 3/2
Source of ISP Estimate	Database	TNSP	TNSP	TNSP	Not required for ISP

- **Background**

- ISP modelling requires cost inputs for projects at all stages of development prior to the CPA stage
- Accuracy increases with the level of design detail, and can be described by the AACE Classes

- **Intended purpose:**

- Database will produce high level estimates only – AACE Class 5/4
- Database will be used as the basis for AEMO estimates of candidate future ISP projects
- It will also be used to cross check TNSP estimates of ‘Actionable’ and ‘Future with Preparatory Activities’ projects

5 • **Intended Users:**

- AEMO, energy industry individuals and entities, with knowledge of transmission network capital projects and assets

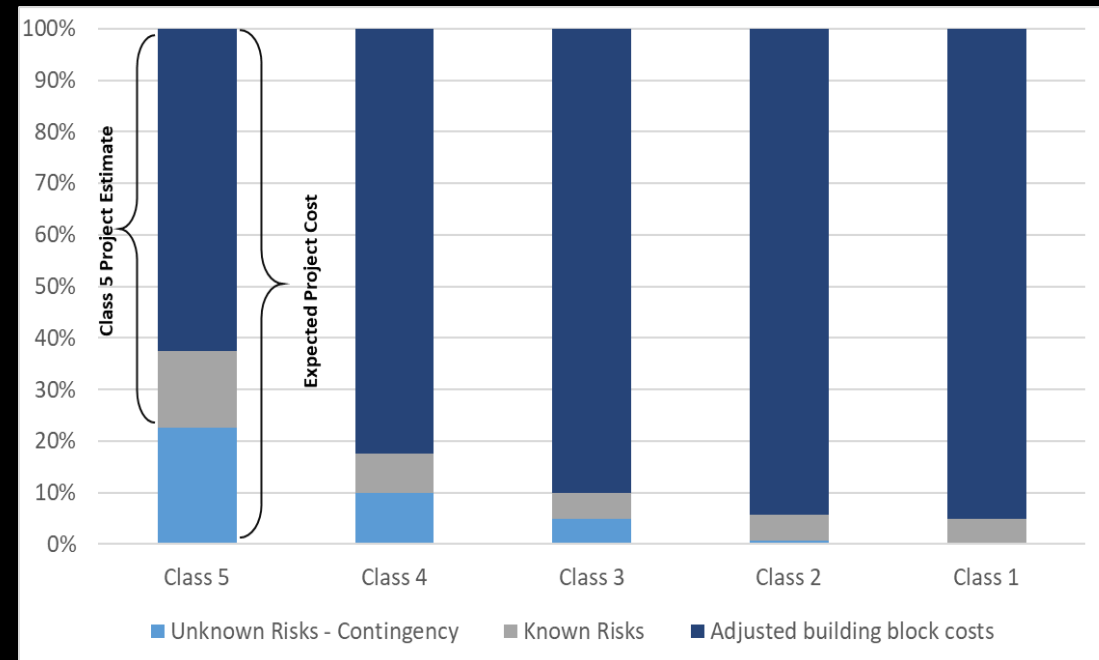
To participate, see [www.Sli.do](http://www.Sli.do) #ISPTCW

AACE Guidelines	
Class	Accuracy
5	-50% to +100%
4	-30% to +50%
3	-20% to +30%
2	-15% to +20%
1	-10% to +15%

## Calculating risks in the estimate build-up

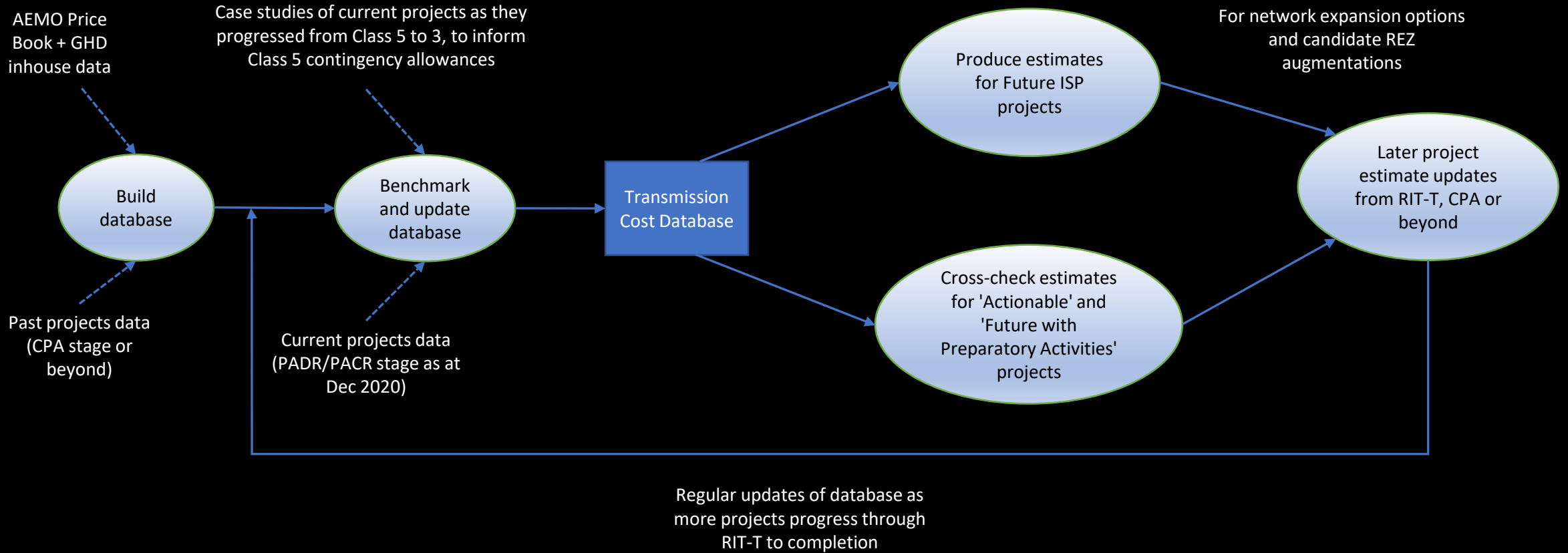
- **Baseline estimate of project building blocks (e.g. \$/km of line, \$/switchbay, \$/transformer etc.) and indirect costs**
- **Adjustment to the above costs to account for project specific attributes (e.g. brownfield, short length, geography etc.)**
- **Known Risks – some (for e.g. bad weather) will continue to exist during delivery**
  - Set of user input choices will drive the allowance allocation to relevant cost categories
- **Unknown Risks – is expected to be known or shifted to contractor as estimate advances to CPA stage**
  - Uses AACE practice guideline accuracy bands
  - Set of user input choices will drive the allowance allocation to relevant cost categories

### Adjusted building block costs



\* AEMO expects that CPA estimates will have no unknown risks

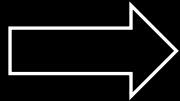
# Construction of the database



# Functionality of the database

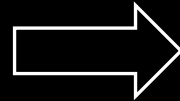
**User inputs**

Description of various network elements and its scope and attributes



**Project cost macro**

- Building block costs
- Indirect costs
- Project attributes
- Known risks
- Unknown risks



**Model output**

- Overall project estimate (view A)
- Overall project estimate (view B)
- Individual network elements build-up

## Sample templates

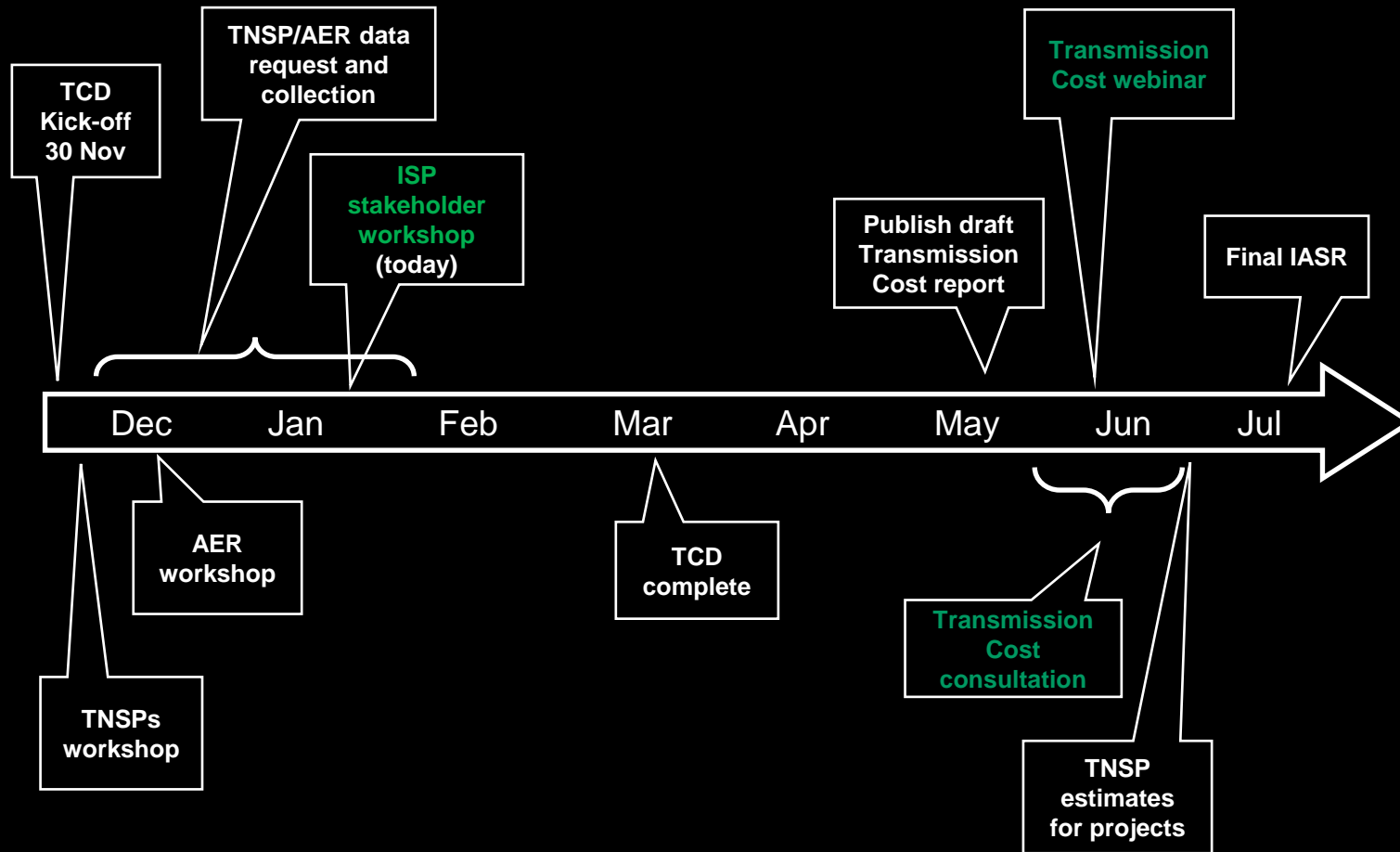
Network Element	Plant & Materials	Electrical & Structural Works	Civil Works	Design, Testing & Commissioning	Total Contract Delivery Costs	Easement/ Property Costs	Environmental Offset Costs	Total expected project costs
Baseline cost								
Adjusted baseline cost								
Known risk allowance								
Unknown risk allowance								
Total Expected Project Cost								

**SUBSTATION COST DATA REQUEST TEMPLATE**  
(suitable for both early stage estimate for benchmarking purpose and also advanced stage estimate for database development purpose)  
(applicable to network elements within the overall Project)

Cost Items	\$ estimate and factor choices	Scope, quantity and cost description comments
<b>Plant and Equipment</b>		
Material Large Specialist Equipment - Power Tr, HVDC Converter, Spicon, PST, SVC etc.)	\$\$\$	
Material (other primary plants)	\$\$\$	
Material (secondary plants)	\$\$\$	
<b>Electrical works</b>		
Electrical installation works (Large Specialist Equipment - Power Tr, HVDC Converter, Spicon, PST, SVC etc.)	\$\$\$	
Electrical installation works (other primary plants)	\$\$\$	
Electrical installation works (secondary plants)	\$\$\$	
<b>Civil works</b>		
Switchyard civil and structural installation works for Large Specialist Equipment	\$\$\$	
Switchyard civil and structural installation works for other primary plants	\$\$\$	
Masonry control building civil and structural installation works	\$\$\$	
Building material (demountable, coirms huz)	\$\$\$	
Building installation work (demountable, coirms huz)	\$\$\$	
<b>Contractor overheads</b>		
Contractor Project Management, Site Management, Mobilisation and demobilisation, and Contractor Overheads	\$\$\$	
<b>Owner overheads</b>		
Design and engineering costs	\$\$\$	
Commissioning	\$\$\$	
<b>Related / Host Owner Costs</b>		
Property acquisition	\$\$\$	
Environmental costs (Biodiversity charges)	\$\$\$	
Community and stakeholder engagement costs	\$\$\$	
Switching and outage management cost	\$\$\$	
Owner corporate overheads (Project Management, Site Management, HSE assurance)	\$\$\$	
<b>Adjustment factor for project attributes (applied in</b>		
Adjustment factor 1 (location, extreme and regional, urban)	Select from (brackets)	Qualifying comments
Adjustment factor 2 (terrain, difficult, normal, easy)	Select from (brackets)	Qualifying comments
Adjustment factor 3 (procurement type - GDC, turnkey etc)	Select from (brackets)	Qualifying comments
Adjustment factor 4 (delivers timeframe - tight, adequate, long)	Select from (brackets)	Qualifying comments
Adjustment factor 5 (market factor - tight, normal, excess capacity)	Select from (brackets)	Qualifying comments
Adjustment factor 6 (greenfield/brownfield)	Select from (brackets)	Qualifying comments
Adjustment factor 7 (special protection scheme - minor, typical)	Select from (brackets)	Qualifying comments
Adjustment factor 8 ( )	Select a description for the	Qualifying comments
<b>Known Risks (applied in project forecast)</b>		
Risk event 1 (weather delays)	\$\$\$	The basis of risk calculation
Risk event 2 (network access and outage restriction)	\$\$\$	The basis of risk calculation
Risk event 3 (geotech findings)	\$\$\$	The basis of risk calculation
Risk event 4 (compromise acquisition)	\$\$\$	The basis of risk calculation
Risk event 5 (environmental offset)	\$\$\$	The basis of risk calculation
Risk event 6 ( )	\$\$\$	The basis of risk calculation
<b>Unknown Risks (these risks will start to merge into known risks as the projects advance towards CPA stage with cost being added to direct and indirect costs above). (This may be a contingency applied in projects forecast)</b>		
Unknown scope & technology risks (BAU, moderate, high)	Select from (brackets)	The basis of risk calculation/contingency added in early stage estimates and qualifying comments
Unknown productivity/labour cost risks (BAU, moderate, high)	Select from (brackets)	The basis of risk calculation/contingency added in early stage estimates and qualifying comments
Unknown plant procurement costs (BAU, moderate, high)	Select from (brackets)	The basis of risk calculation/contingency added in early stage estimates and qualifying comments
Unknown project overhead risks (BAU, moderate, high)	Select from (brackets)	The basis of risk calculation/contingency added in early stage estimates and qualifying comments



## Timeline of transmission cost inputs for the 2022 ISP



Legend: Opportunities for stakeholder engagement

9 To participate, see [www.Sli.do](http://www.Sli.do) #ISPTCW



## Q&A

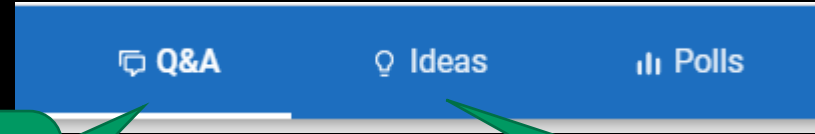
- Please use the SLIDO link and the provided code to raise your question – use the Q&A tab
- You can also use the Ideas tab in Slido for comments or suggestions
- We aim to answer as many questions in this session as possible, prioritising the most popular questions
- Remaining questions will be responded to in a written response to be published after the webinar

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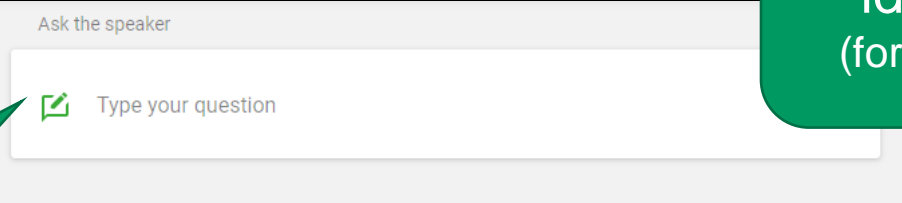


# Slido Instructions

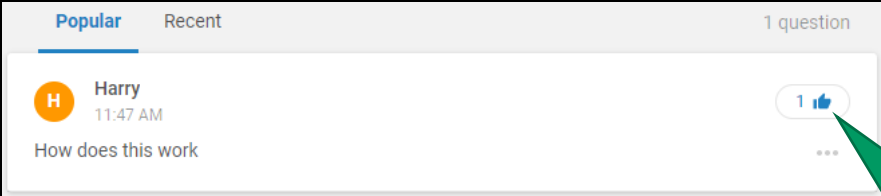


Use this tab to ask Questions

Use this tab for comments, ideas and suggestions (for AEMO review post-session)



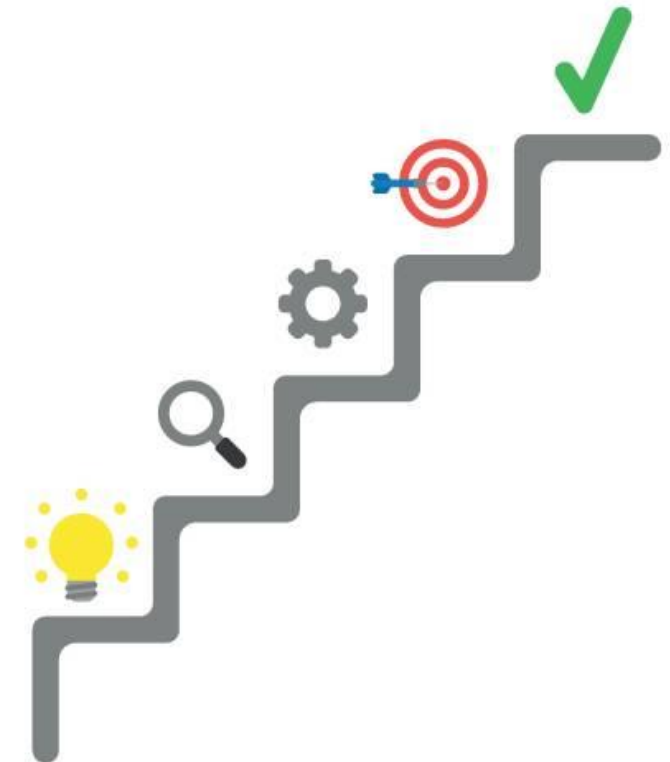
Type your question here



“Like” your preferred questions

## Next Steps

- **Ideas feedback will be reviewed and incorporated where feasible**
- **Responses to questions will be provided in written format and published, along with recording of the session**
- **Reminder – further opportunities for feedback during the Transmission Cost Consultation in May – June 2021**





**\* Thank You**

→ [ghd.com/advisory](https://ghd.com/advisory)