Transmission Cost Database Update

21 October 2022

This webinar will be recorded and published on AEMO's website

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

We pay respect to their Elders past, present and emerging.

Interacting in today's webinar

1. Visit www.sli.do
2. Enter #AEMO
3. Sign in with your name
4. Type your question

Please note that this forum will be recorded and published online.

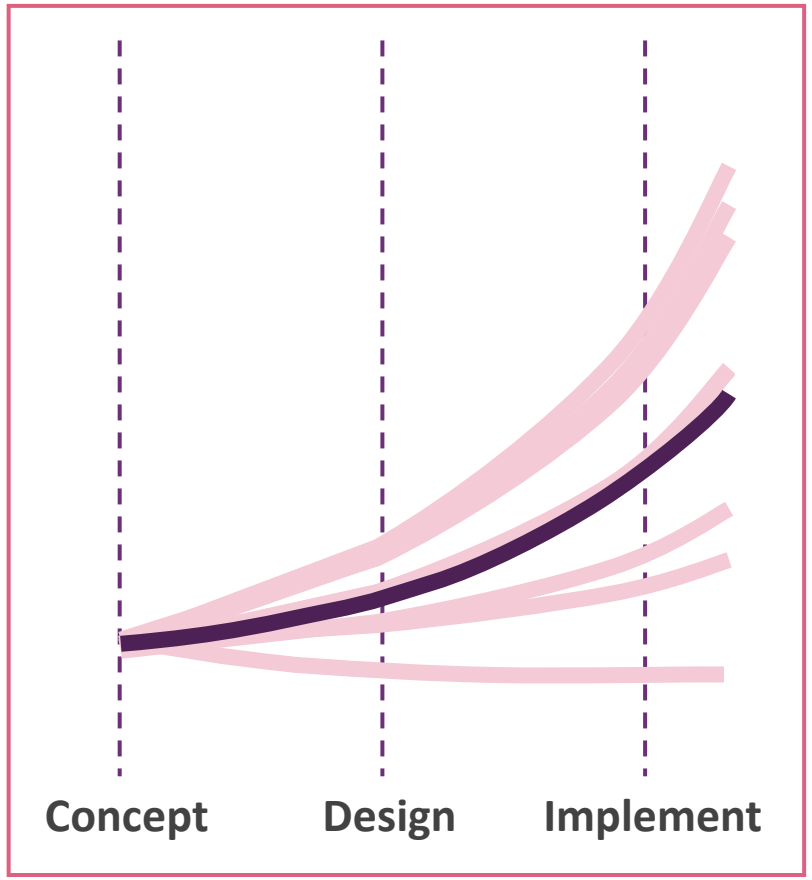
Agenda

- Background
  - Objective
  - Timeline
  - Update focus
  - Standardise cost estimates
  - Incorporating risk
  - Improvements to cost database
- Approach
  - Process
  - Benchmarking
  - Typical project breakdowns
  - Building block updates
  - Adjustment factor, risk, and indirect costs updates
  - Escalation factors

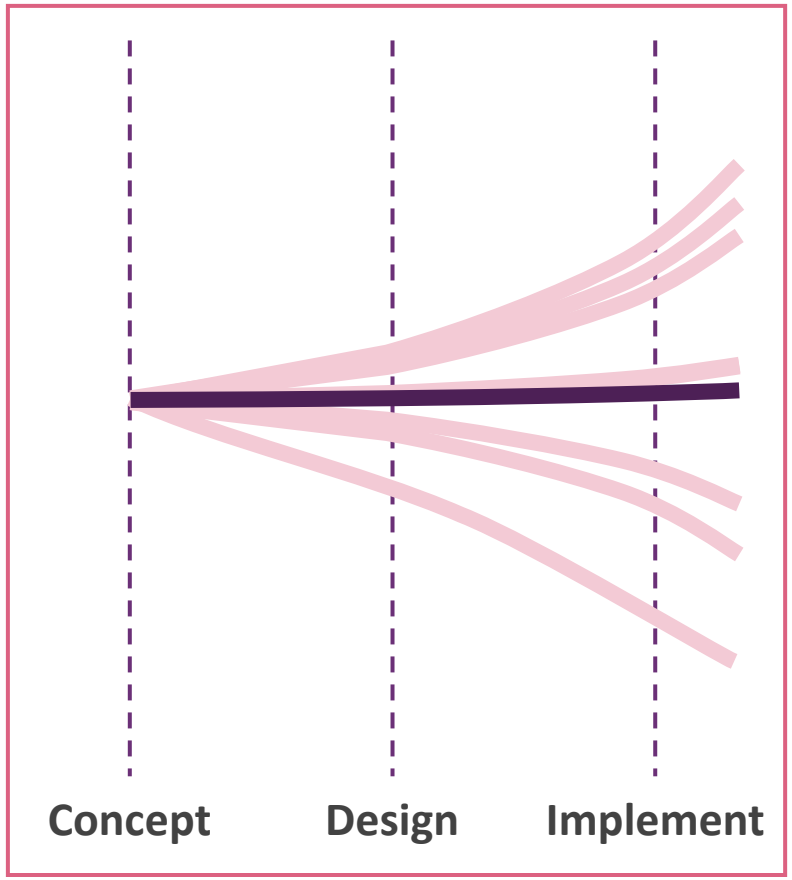
Background

Objective

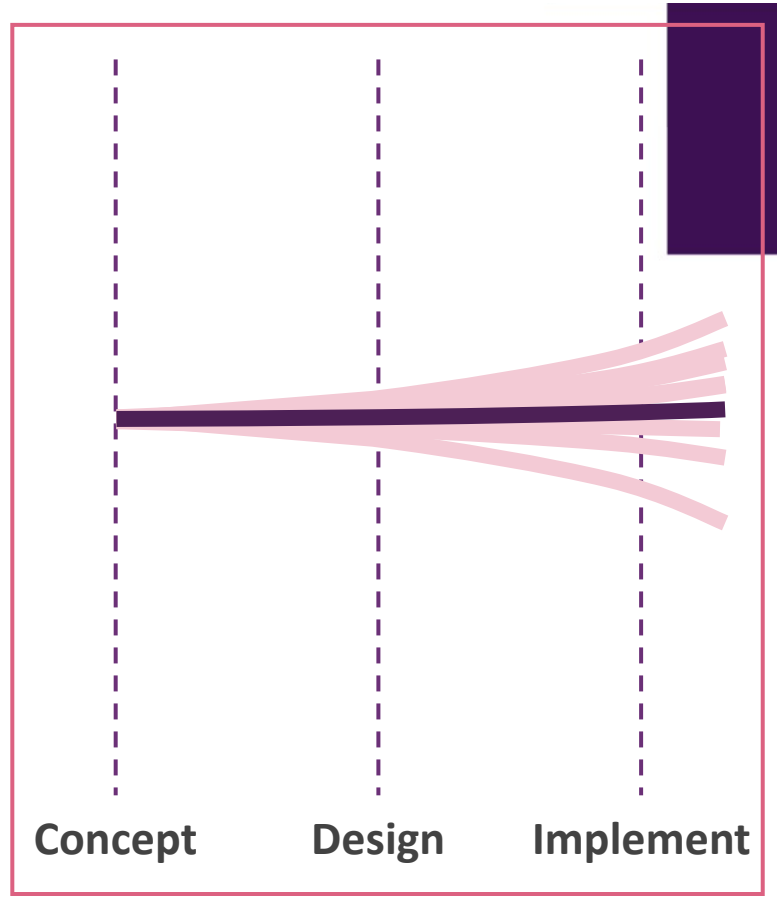
We had low estimates



We want them to stabilise



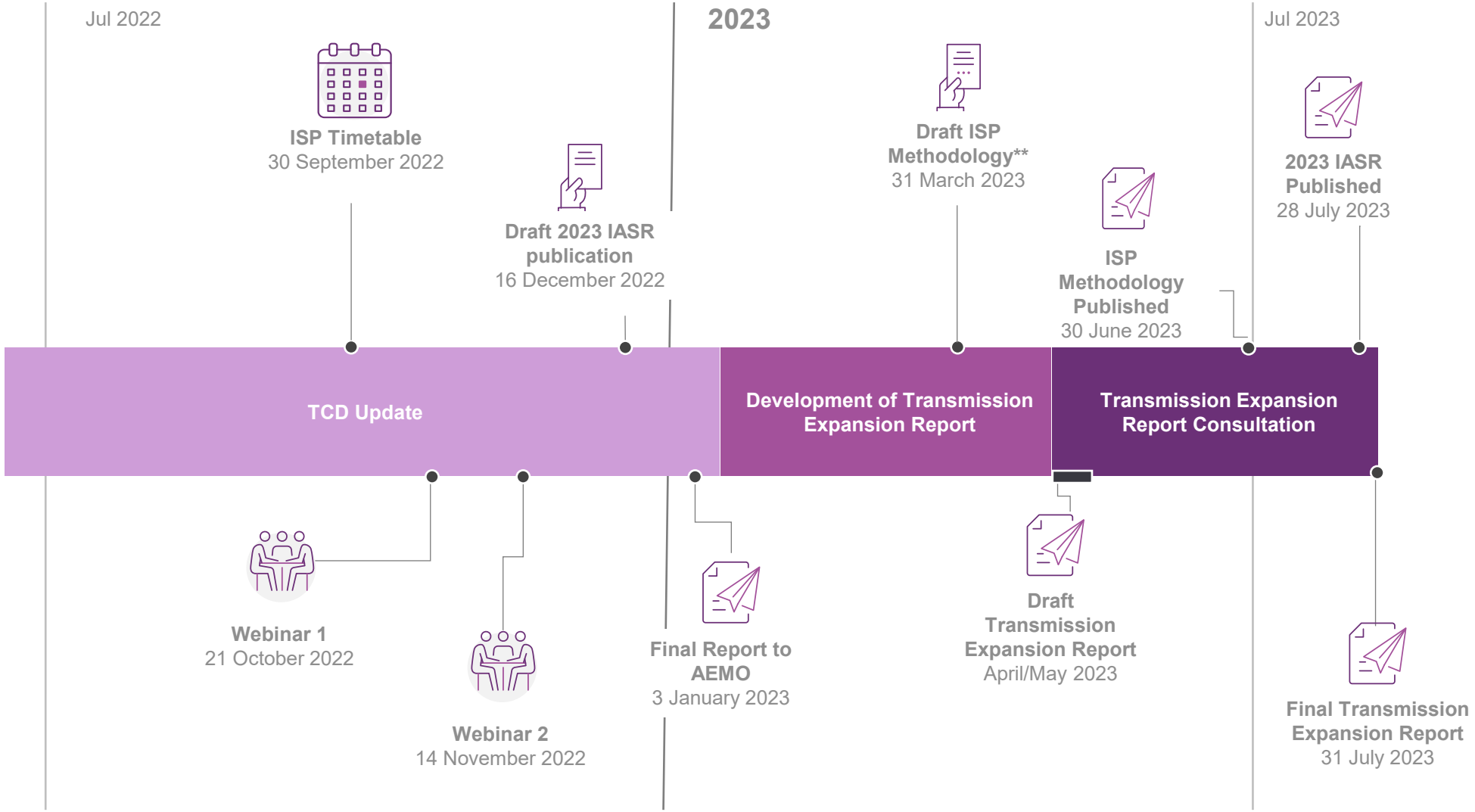
…and be more accurate



Add risk offsets

Add rigour

Timeline


Jul 2022
2023
Jul 2023
ISP Timetable
30 September 2022
Draft 2023 IASR publication
16 December 2022
Draft ISP Methodology**
31 March 2023
ISP Methodology Published
30 June 2023
2023 IASR Published
28 July 2023
TCD Update
Development of Transmission Expansion Report
Transmission Expansion Report Consultation
Webinar 1
21 October 2022
Webinar 2
14 November 2022
Final Report to AEMO
3 January 2023
Draft Transmission Expansion Report
April/May 2023
Final Transmission Expansion Report
31 July 2023

Update focus

Transmission Cost Database

Macro tool

- Published on the AEMO website and used to develop cost estimates
- Produces excel workbook cost estimate files

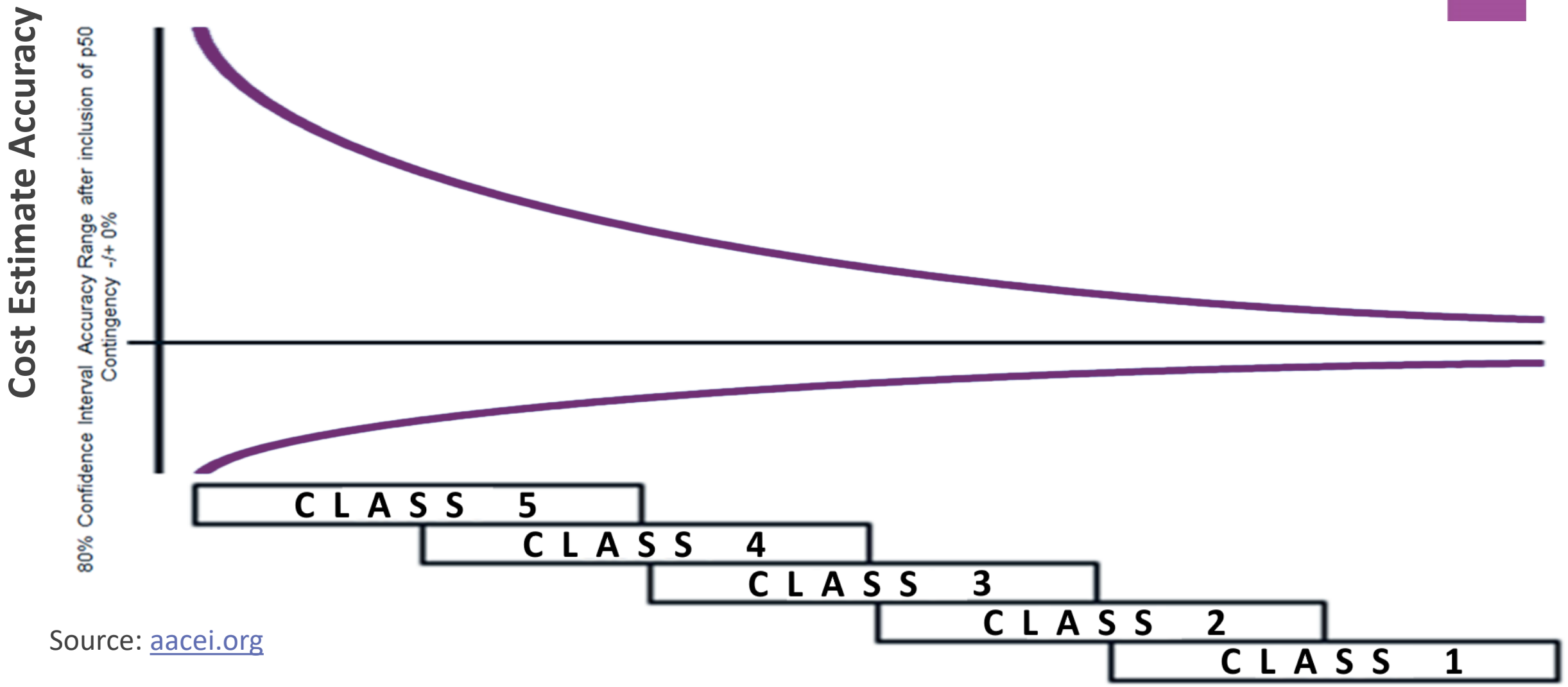
Cost & Risk Data

- Access within the macro tool and comprised of unit costs, escalation factors and risk allowances
- Unit costs, factors and allowances are calibrated with the latest project data

Master File

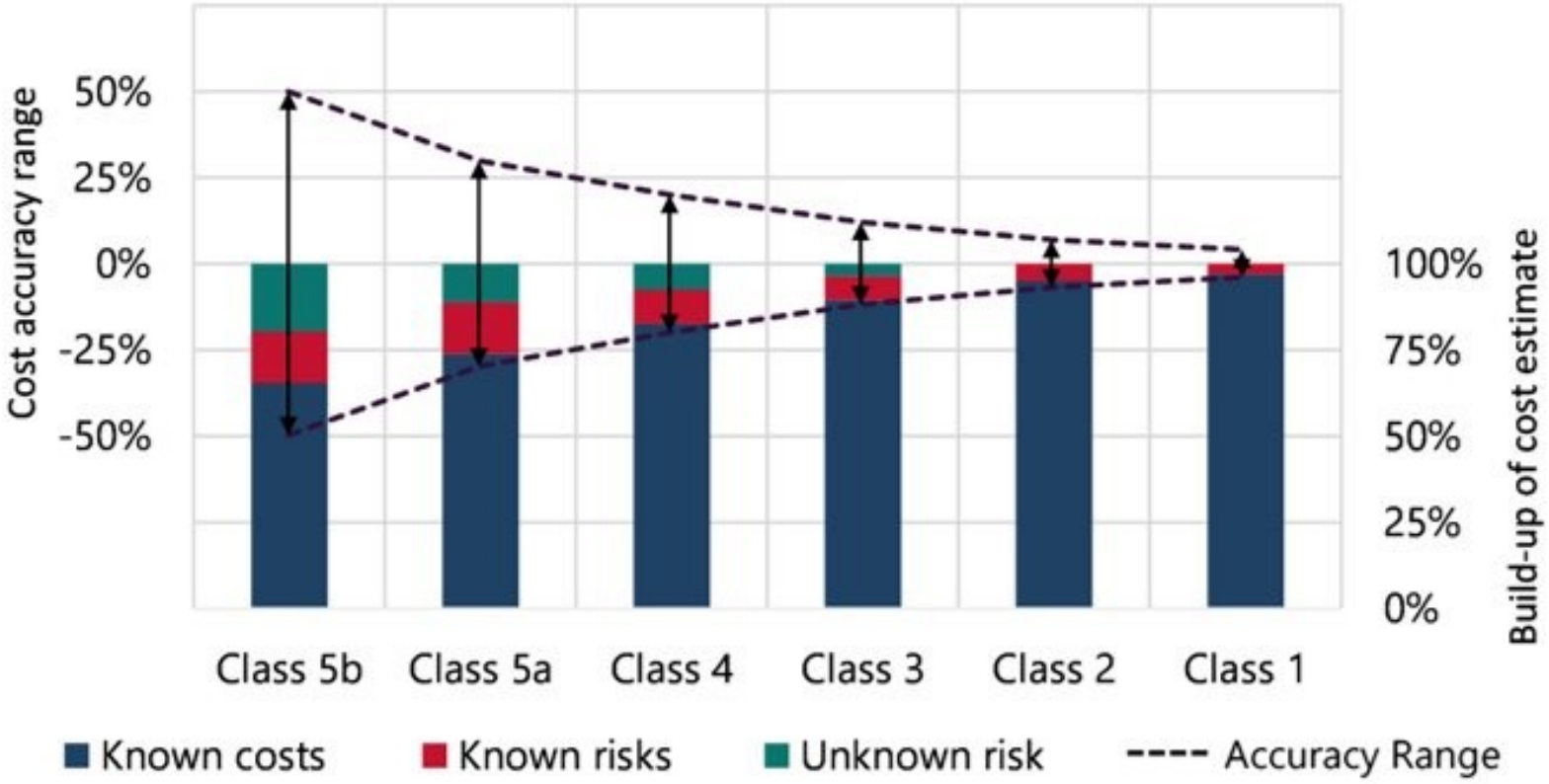
- Internal tool used to batch process cost estimates from previous macro tool files

Standardise cost estimates



Source: aacei.org

Incorporating risk



Improvements to cost database

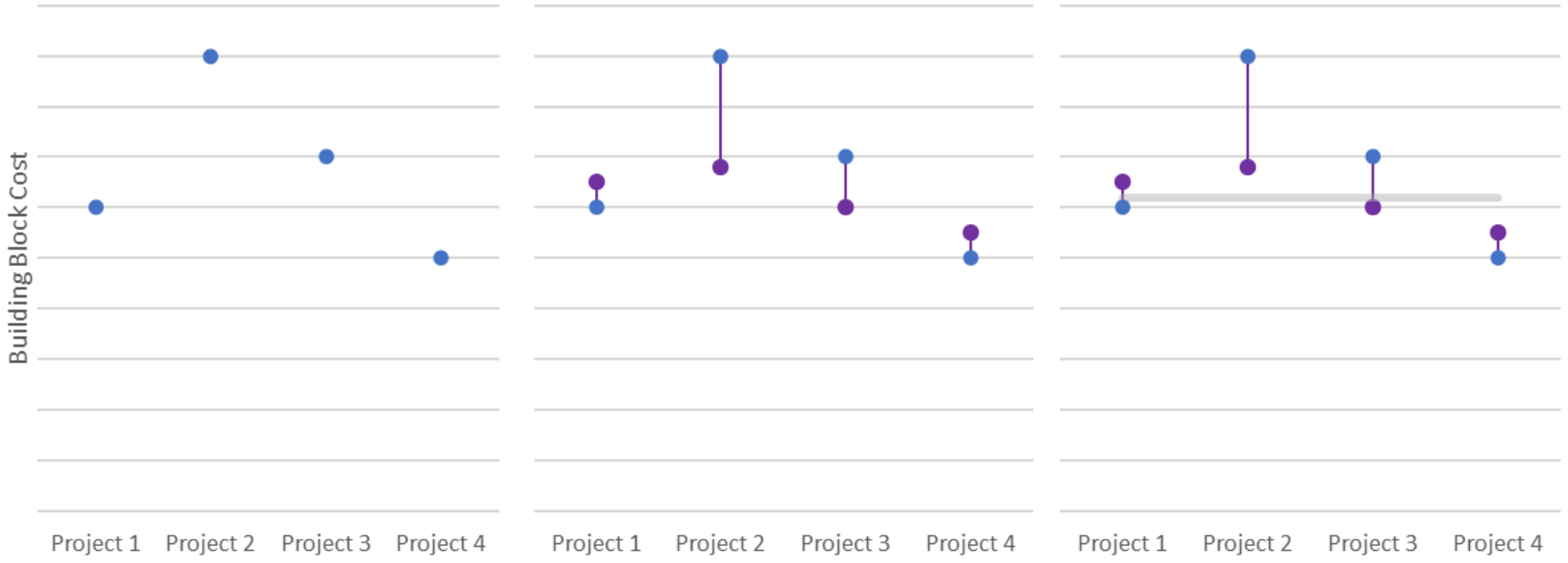
Transmission Line	Substation	Underground Cable
• Inclusion of TNSP standardised preliminary cost estimate building blocks • NEM wide focus	• Transformers • Switchbay arrangements • Generator and synchronous condenser • More options for reactive power devices and power flow controllers • Smaller land options	• Transition stations • Comparable options to overhead lines • Compensation stations • Consideration for spare cable

Approach

Process

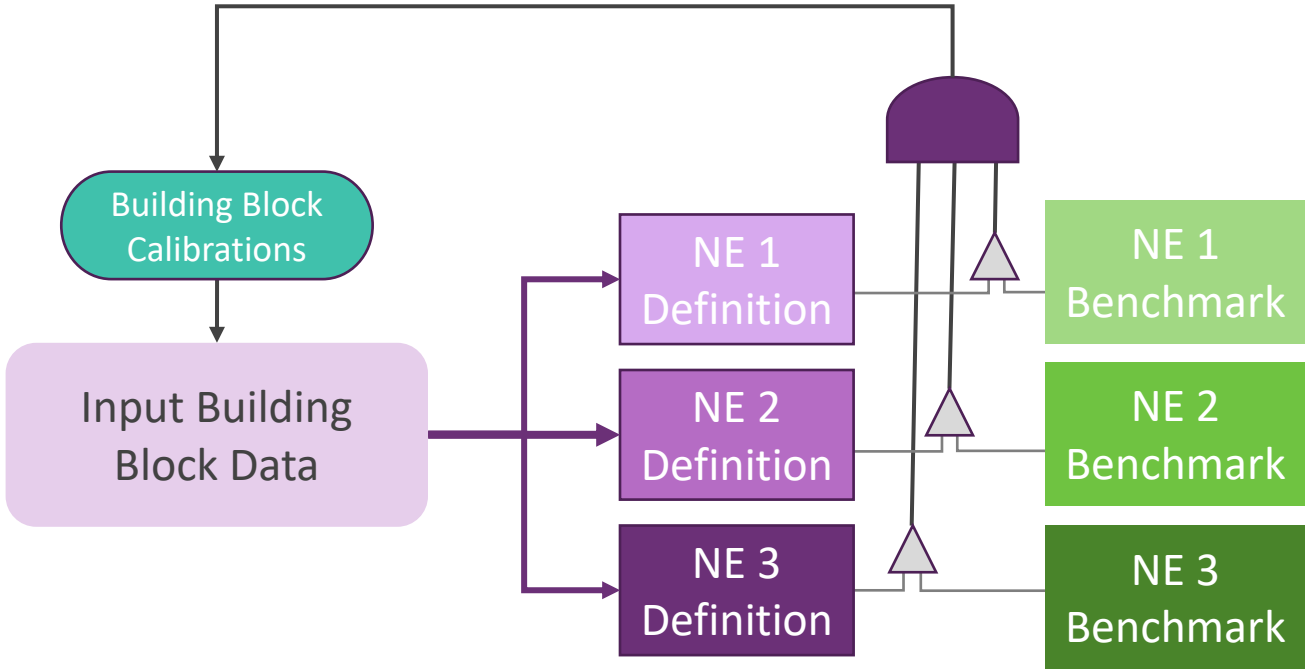
- Processing recent project data to observe changes since original Transmission Cost Database development, update for adjustment and risk factors
  - Mott MacDonald Australian and International project experience
    - Engineering, Procurement, and Construction Contractor & Network Service Provider Side
  - Transmission Network Service Provider data request for TNSP Standardised elements
  - Sources identified but anonymised
- Overseas project data to be used when limited or no Australian project data available, particularly:
  - Greater range of High Voltage Direct Current direct buried cables
  - Greater range of High Voltage Alternating Current tunnel installed cables
  - High power HVDC converters

Process

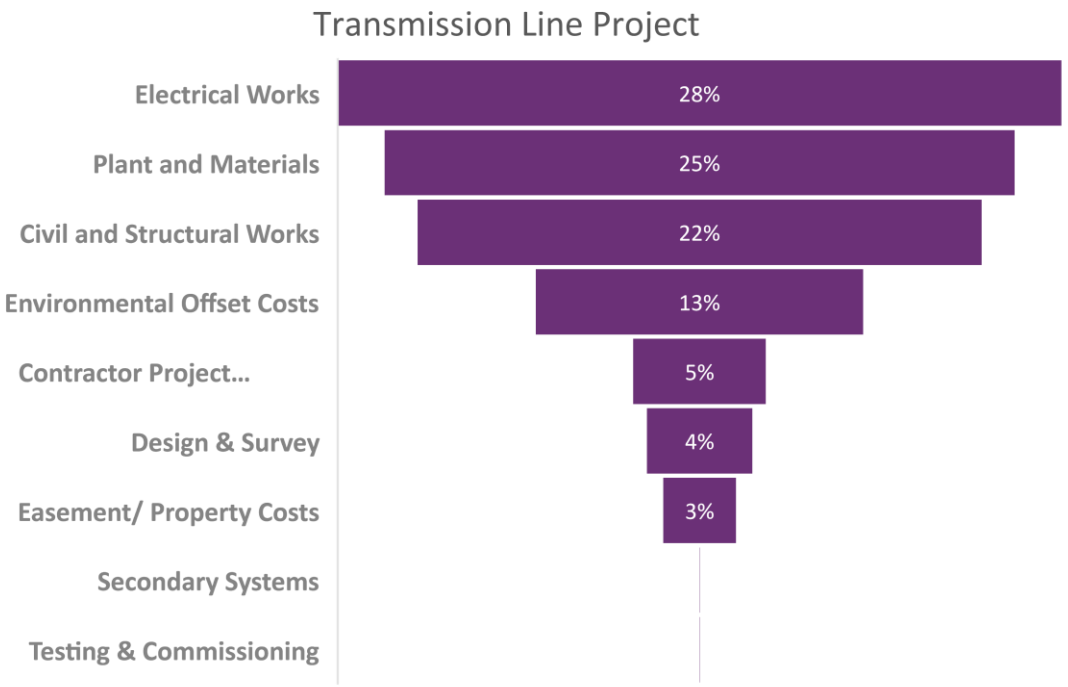

Building Block Cost
Project 1
Project 2
Project 3
Project 4
Project 1
Project 2
Project 3
Project 4
Project 1
Project 2
Project 3
Project 4

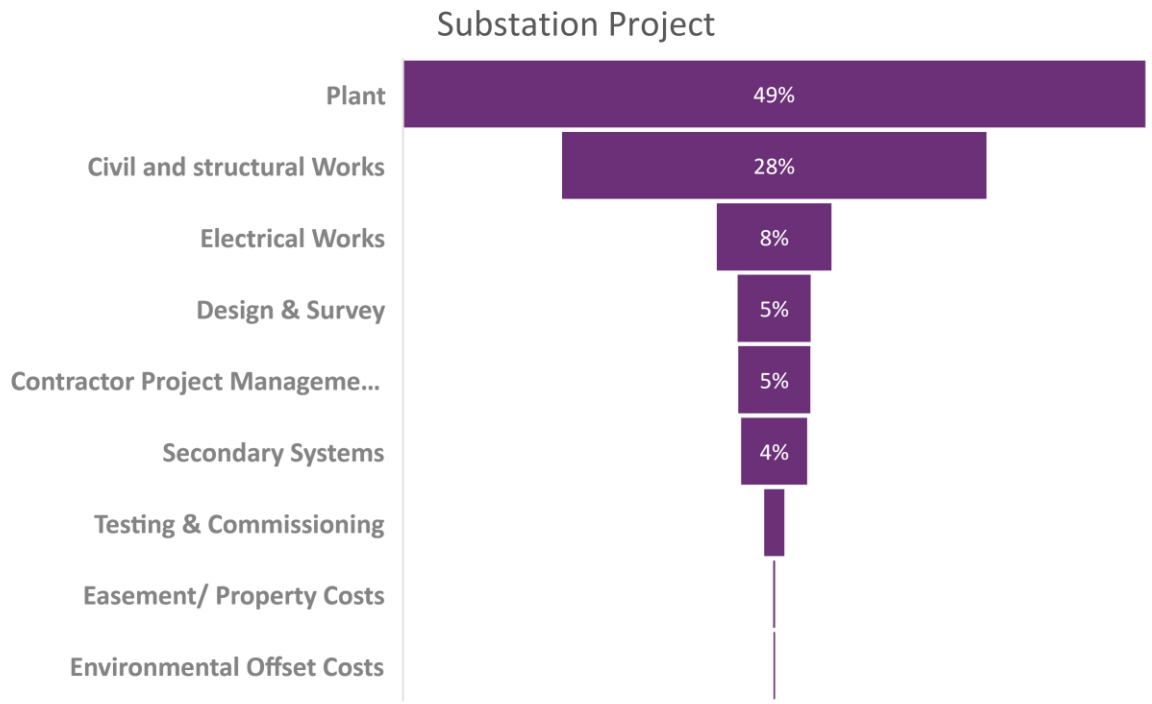
Benchmarking

- Project estimates for six Actionable Integrated System Plan projects and overseas project data used to benchmark building block cost
    1. Building block adjustment: Determine variation in Network Element cost between benchmark project estimates and estimates derived from updated Transmission Cost Database. Adjust building block costs to reduce variation. Iterative process.
    2. Comparative overall project estimate: develop overall project estimate for same project as benchmark project, compare variation in total project estimate



Typical project breakdowns





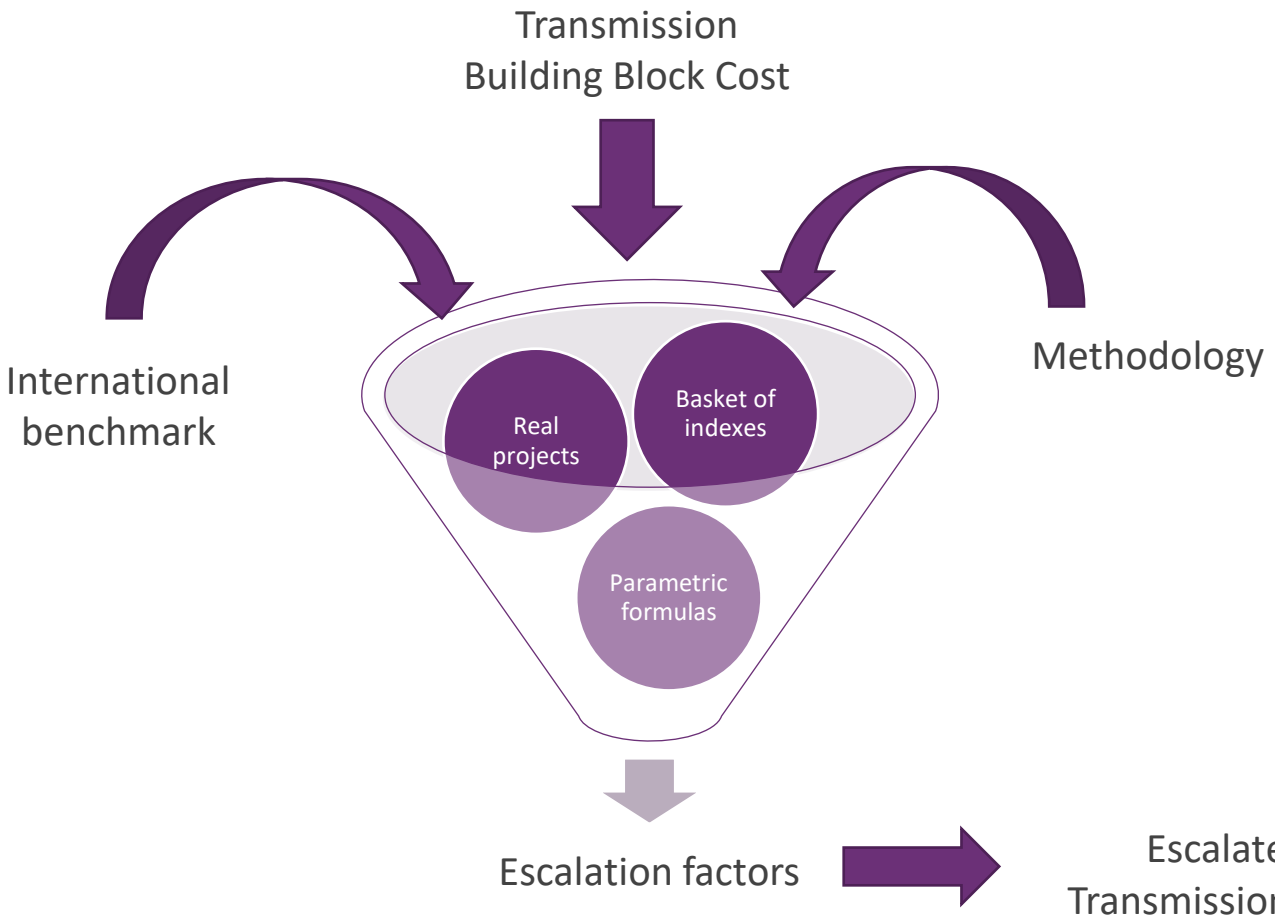
Building block updates

- Project costs trending upwards
- Significant increases in property/easement costs
  - Impacted by landholder sentiment, more generous government projects, increases in agricultural land prices
- Significant increases in Environmental costs
  - New biodiversity schemes

Adjustment factor, risk, and indirect costs updates

- Adjustment factors for project conditions, location jurisdiction
- Known and Unknown risk factors
- Developing new “Expectations of PPI” adjustment factor
- Original TCD had limited project data from periods of high economic uncertainty and significant supply constraints, a greater upper range on macroeconomic risk factor
- Stakeholder engagement costs are increasing with increased expectations for stakeholder and community engagement
- Risks around Cultural Heritage and Social License are frequently underestimated

Escalation factors



Advantages

- Take into account factors that most influence the formation of the costs of equipment, materials and services.
- Ability to update the costs at any time, ensuring a good approximation of the values practiced in the market.
- Balances the weights of different indexes inside each basket.
- Use of public economic data.

Q & A

1. Visit www.sli.do
2. Enter #AEMO
3. Sign in with your name
4. Type your question

Or sign in from the multimedia tab on the right side of your Webex window

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

MOTT MACDONALD

For more information visit

aemo.com.au