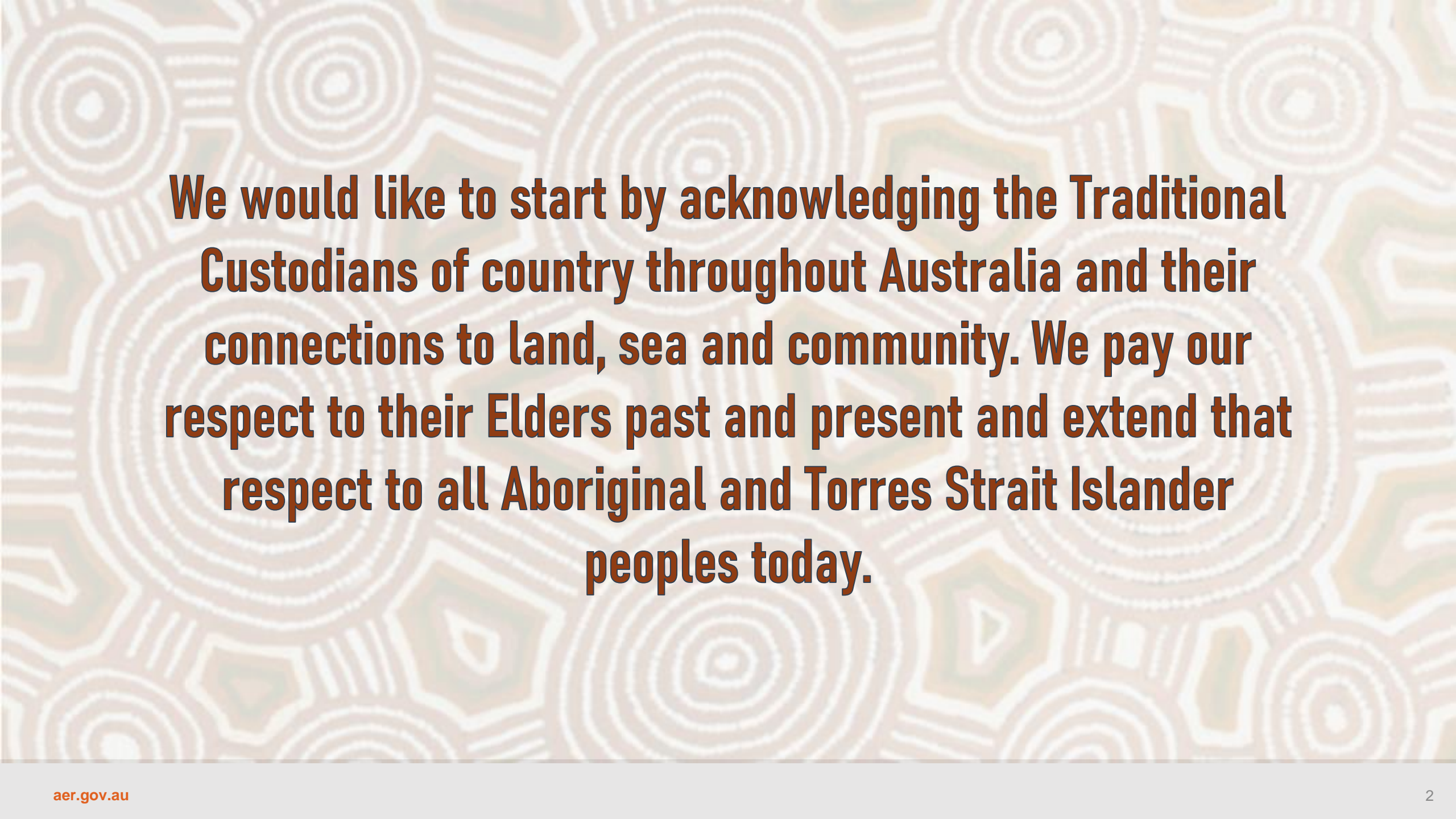


# Valuing emissions reduction

Review of the cost benefit analysis guidelines and RIT application  
guidelines – Virtual public forum



**We would like to start by acknowledging the Traditional Custodians of country throughout Australia and their connections to land, sea and community. We pay our respect to their Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander peoples today.**

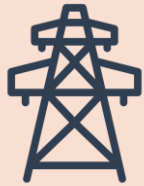
# Agenda/Contents

- 1 Introduction – Anthea Harris (AER, Chief Executive Officer)
- 2 Preliminary approach and factors in modelling emissions – Anthea Harris
- 3 Approach to valuing emissions reduction – Richard Lenton (ACIL Allen)
- 4 Next steps
- 5 Q&A

Sli.do: Enter URL “sli.do” and then type in code #7331411

# 1 Introduction

# AER's role



Economic regulation of transmission and distribution which promotes efficient investment



Ensure consumers are better off by promoting security, reliability and affordability

# AER's role in transmission and distribution planning

Regulatory investment test for transmission and distribution (RIT-T and RIT-D)

RIT application guidelines and cost benefit analysis guidelines

Monitoring compliance with the NER

# Emissions reduction in the NEO

- National energy objectives now include emissions reduction.
- NER updated to include changes in Australia's greenhouse gas emissions as a class of market benefit for both the RITs and the ISP.
- Australia's Energy Ministers agreed on a method to derive an interim value of emissions reduction (VER) to be used in applying the NEO
- AER draft interim guidance published in March 2024 (final published in May).

2

# Preliminary approach and factors in modelling emissions



# Emissions reduction benefit - preliminary approach

Energy market modelling



Emissions from fossil-fuel generators

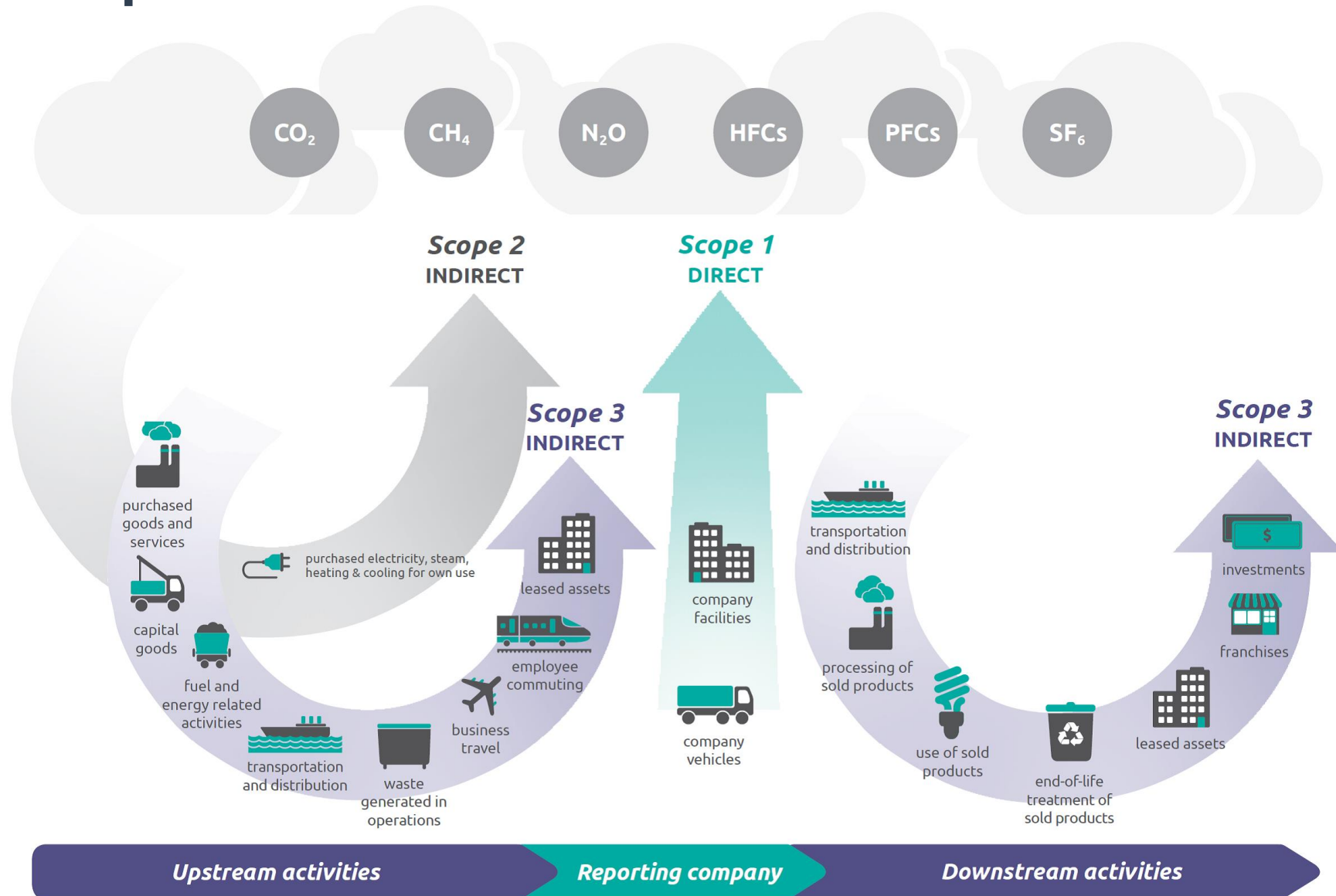


Emissions reduction benefit = VER multiplied by difference between emissions in the investment case and base case

# Additional factors

- We have highlighted several further issues in the consultation paper:
  - Scope of emissions factors
  - Whether emissions embodied in the production of infrastructure (such as steel and cement) should be included
  - Source for inputs related to emissions reduction benefits (e.g. generator emissions intensity factors)
  - Emissions reduction in other sectors as a direct result of the network investment decisions
  - The approach to discounting emissions reduction benefits when calculating net present values

# Scope of emissions



# Other issues

## Sources

- RIT guidelines and CBA guidelines provide principles that inputs be:
  - Transparent;
  - From a verifiable source; and
  - Relevant.
- Draft ISP uses Clean Energy Regulator 2021/22 data

## Emissions in other sectors

- Emissions reduction in other sectors as a direct result of the network investment
- E.g. network investment which enables more EV charging load to displace emissions of petrol vehicles

# Other issues

## Approach to discounting

- CBA guidelines:
  - *The discount rate in the ISP is required to be appropriate for the analysis of private enterprise investment in the electricity sector across the NEM and is required to be consistent with the cashflows that the ISP is discounting.*
- Additional principles in the CBA guidelines:
  - Reflect systemic risk associated with cashflows
  - Regulated cost of capital as lower bound
  - Not be used to capture uncertainty
  - Informed by expert guidance
  - promote competitive neutrality between network and non-network options
- Different discount rate for emissions reduction benefits might lead to a lower overall discount rate (through weighting) or more than one discount rate

# Stakeholder views



Preliminary approach and additional option of including VER within the modelling as a cost on fossil-fuel generators



Additional factors in modelling emissions



**REMINDER:** We are currently reviewing the guidelines for other matters:

- social licence (forum May 20)
- Other AEMC rules changes (forum May 16)

Submissions on consultation paper due 5 June

3

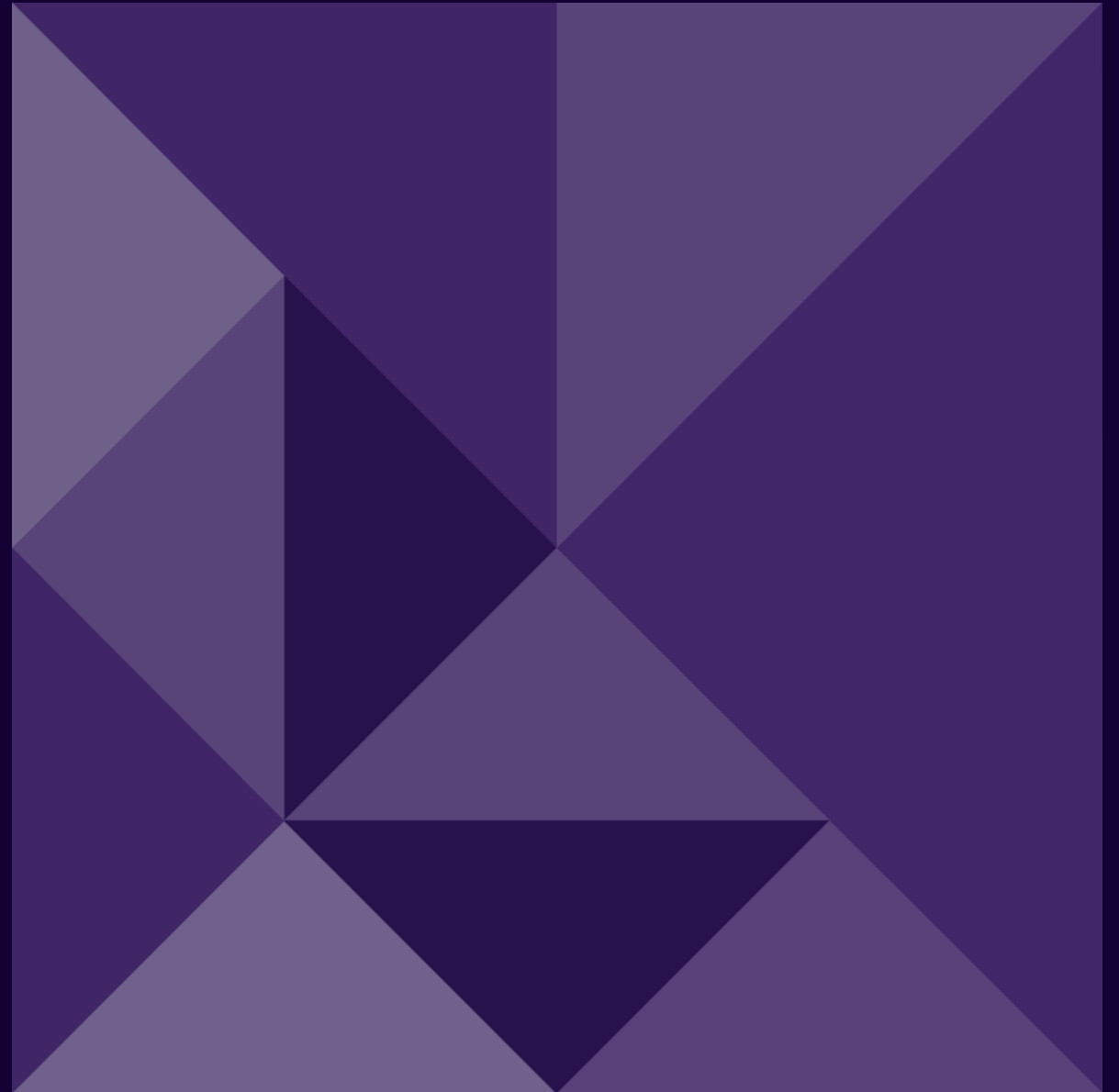
# Approach to valuing emissions reduction

14 May 2024

# Amended NEO – Valuing emissions reduction

Considerations for AER's CBA and  
RIT guidelines

**ACIL ALLEN**





# Introduction

- Scope of work
  - Engaged by AER to assist in its consideration of way emissions reductions objectives are included in electricity market modelling when making network-related regulatory determinations

# Outline

- Current RIT approach
- Current ISP approach
- Interaction of RIT and ISP
- MCE Statement of VER
- What does this all mean for RIT? Challenges
- Potential approach (and others)
- Guiding principles

# Outline

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# Current RIT approach

- ISP actionable projects and RIT–T proponents
  - Adopt inputs, assumptions and scenarios from most recent inputs, assumptions and scenarios report (IASR) unless there's a demonstrable reason not to
  - Adopt long term planning market modelling
- RIT-D projects
  - Adopt inputs based on market data and assumptions and forecasts that are transparent, and from reputable and independent source
    - AEMO IASR data as a starting point

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# Current ISP approach

- 2024 ISP scenarios have **NEM** carbon budget(s) as an input
- Derived by CSIRO and Climate Works based on multisectoral modelling
  - projects least cost pathway to achieve **economy wide** carbon budget
  - Based on **global** emissions reduction objectives
  - Provides NEM wide budget

# Current ISP approach

- ISP modelling satisfies NEM carbon budget (along with satisfying a range of other things) as part of least cost optimisation
- Does three things:
  1. Derives **implied carbon value** for **NEM** (not economy wide).
    - Cost of achieving an additional increment in emissions reduction in optimal solution
  2. Constrains long-term dispatch of thermal plant by introducing more investment in zero emissions technology if this contributes to meeting carbon budget on least cost basis
  3. Potentially alters short-term dispatch of thermal plant if implied carbon value for NEM is sufficient to change merit order of thermal plant
- Outcome
  - Imposing carbon budget increases cost of satisfying demand (and other constraints) on a least cost basis all other things equal

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# Interaction of RIT with ISP

- ISP modelling includes known emissions reductions policies (federal and state)
  - These policies typically apply out to 2035
- Beyond 2035, no further specific emissions reduction policy mechanisms assumed
- Including a carbon budget is a way of modelling a generalised emissions reduction policy beyond 2035
- Currently no policy mechanism in place explicitly imposing a cost of carbon on thermal generation
  - But current policies incentivise renewable energy and storage development which indirectly alters longer term dispatch opportunities and price outcomes of thermal plant

# Interaction of RIT with ISP

- An ISP scenario run with and without network project will result in **same cumulative NEM emissions** over carbon budget period
  - carbon budget is an input / constraint and is satisfied under both cases
- Although **no change in cumulative NEM emissions**, there may be a change in emissions trajectory within a carbon budget period (**intertemporal differences**)
  - **Any changes in cumulative emissions to directly value arrive from intertemporal differences**
- Extent to which network project makes it easier to comply with NEM carbon budget (within a carbon budget period) implicitly included in market benefits as measured by change in generation build and operating costs
  - If inclusion of network project increases market benefits, then value of project in terms of making it easier to reduce emissions is implicitly included in market benefits – **but it is not reported separately**

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# MCE VER

- VER describes value of emissions reduction (in \$/tonne terms)
  - VER expressed as an annual price series
  - Interim VER is mid point of:
    - \$33/tonne escalating at 10% pa and IPCC median marginal cost of abatement values
      - 2024-2029: IPCC Fifth Assessment Report Representative Concentration Pathway 2.6 scenario (RCP2.6)
      - 2030-2050: IPCC Sixth Assessment Report Category 2 scenario (C2)
- VER reflects anticipated **economy wide**, or more accurately, **global** marginal abatement costs

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# What does this all mean? Challenges

- Implied carbon values from various sources measured at different points in supply chain
  - MCE/VER, CSIRO/Climate Works, ISP
  - Economy-wide / Global, Global, NEM
- Current RIT approach, when using a scenario with carbon budget (such as ISP scenario), in effect includes value of emissions reduction in market benefit (aside from intertemporal changes)
- While current RIT modelling indirectly includes implied carbon value in some scenarios, that value will not necessarily be same as VER
  - NEM wide versus economy wide versus global

# Outline

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# Potential approach incorporating VER into RITs

- **Continue to use market (ISP) modelling as is, but value intertemporal emissions differences at VER**
- Don't incorporate VER into scenario modelling as an input
- But use VER to value any emissions differences in the with and without project development cases
- Could impact RIT outcome
  - Might be some slight changes in emissions trajectory timing/shape within a carbon budget period (but cumulative NEM carbon budget still achieved)
  - VER has no influence on modeled outcomes (not an input), but might influence choice of development option
- Represents a balance between preserving intent of ISP (not changing inputs), consistent with current RIT guidelines and MCE statement

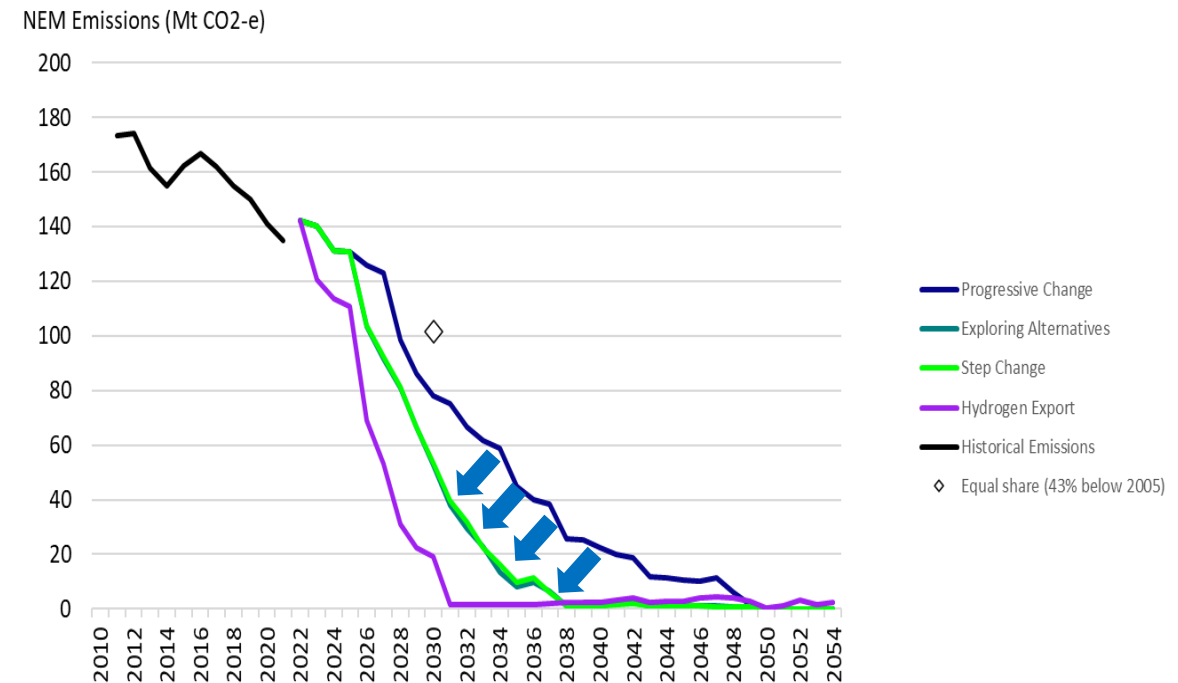


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# Another potential approach incorporating VER into RITs

- Include VER as an additional constraint/input in each market modelling (ISP) scenario
- No impact if VER < scenario's implied carbon values
- Will impact scenarios if VER > implied carbon values
  - Likely to result in different NEM emissions levels in with and without network project cases (beyond intertemporal differences)
  - These differences could be valued at VER
- Runs risk of altering narrative of market modeling (ISP) scenario
  - “Drag” less ambitious scenarios towards more ambitious scenarios
  - Reduces value of having different views on temperature/emissions targets/budgets (or uncertainty)



# Outline

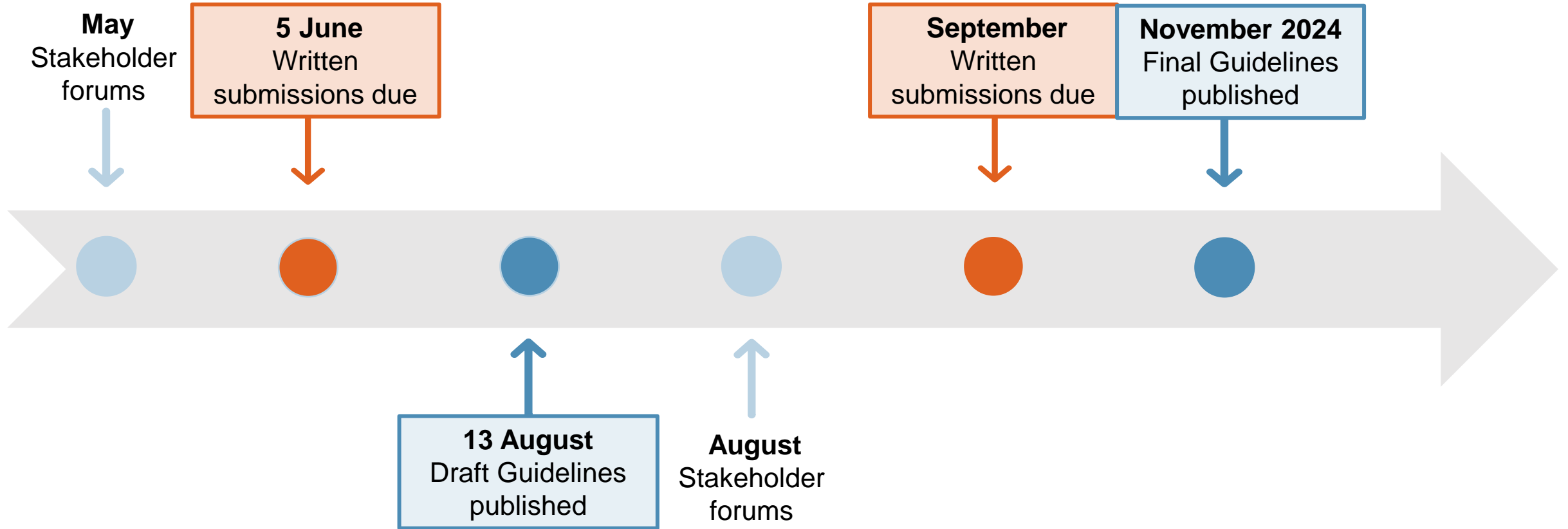
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# Guiding principles

- Materiality
  - Project proponent to determine and demonstrate whether value of emissions reduction is to be assessed as a class of market benefit
    - Including at various stages of supply chain (e.g. embodied emissions of equipment, electricity generation emissions)
- Consistency
  - If VER assessed as a class of market benefit, then VER must be included in Base case and Investment case
- Value of VER must not be double counted in any cost benefit analysis or calculations
  - E.g. by not adding VER to cost base of generators when calculating change in generation cost, and the also as annual difference in emissions between two cases

# 4 Next steps

# Next Steps



5 Q&A

# Consultation paper questions

- How should emissions reduction benefits be included in the RIT and cost benefit analysis guidelines?
- Do you have any views on the option to include the VER in the inputs to market modelling as a cost (\$/MWh) on fossil-fuel generators in terms of both its application and the potential outcomes from its application?
- Do you have any views on the implications of the current carbon budget methodology remaining in place at the ISP input stage while the VER contributes to the assessment of the relative net benefit of different development pathways and investment options?
- Are there alternative approaches to estimating an emissions reduction benefit, and if so, what are the advantages and disadvantages of those approaches?
- Which additional material factors should be considered in modelling emissions? How should data to support these factors be sourced? Should the AER consider including specific guidance on any of the other factors?



# Thank you for attending today

Please email your submissions by Wednesday 5 June:  
[RITguidelines@aer.gov.au](mailto:RITguidelines@aer.gov.au)

Please feel free to reach out with any questions:  
[RITguidelines@aer.gov.au](mailto:RITguidelines@aer.gov.au)