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Central-West Orana Renewable Energy Zone Access Scheme Target Transmission Curtailment Level & Headroom Assessment Method

April 2024

Acknowledgement of Country

Energy Corporation of New South Wales acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and we show our respect for Elders past and present through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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Contents

Acknowledgement of Country	2
Glossary	5
1 Purpose	7
2 Background.....	8
2.1 Capacity profile	8
2.2 Curtailment framework.....	8
2.3 Aggregate maximum capacity cap	9
2.4 Target Transmission Curtailment Level (TTCL)	9
3 Role of Infrastructure Planner	10
3.1 Initial Allocation.....	10
3.2 Headroom assessment and further allocation of access rights.....	11
3.3 Collection and use of generator data.....	12
3.4 Forecast curtailment calculation process for access rights.....	15
3.5 Headroom calculation	17
Question and Answers.....	20
Question 1: Is there any update to the 4.37% target curtailment level method?	20
Question 2: Can any more information be provided on the curtailment break down at different hubs or different technologies?	20
Question 3: Will there be any protections/compensation to Proponents if curtailment exceeds the 4.37% TTCL?	21
Question 4: How do the forecast curtailment and headroom calculations treat stand- alone storage and hybrid projects given that they can either alleviate or worsen congestion depending on how they operate?.....	21
Question 5: Will the Infrastructure Planner or the Network Operator provide a tool/forecast for the bidders to calculate/use for Marginal Loss Factor (MLF) for the whole REZ that is “bankable”?.....	21
Question 6: How is the Infrastructure Planner planning to let the market know on headroom availability and the process for allocating access rights under headroom?.....	22
Question 7: Will different maximum capacities be applied to different periods of the day?	22

Important notice

Purpose of this Document

This document titled 'Central-West Orana Renewable Energy Zone Access Scheme Target Transmission Curtailment Level & Headroom Assessment Method' (this Document) may be updated by the Energy Corporation of New South Wales from time to time. This Document contains information that applies to the initial allocation, and any subsequent allocation or grant, of access rights for the Central-West Orana Renewable Energy Zone Access Scheme.

The purpose of this Document is further described in [Section 1](#).

No reliance

Some of the content contained in this Document is based on forecasts and modelling and involves the exercise of estimations, discretion and judgment. Forecasts and modelling are inherently uncertain and this Document is no guarantee of any particular outcome or necessarily considers all relevant scenarios or circumstances. No information in this Document is, or should be relied upon as, a promise or representation of any matter. EnergyCo expressly disclaims any and all liability for any loss or damage (whether direct, indirect or consequential and whether resulting from any representation, fault or negligence) suffered or incurred by any person relying on this Document or in connection with the content of this Document, including as a result of the exercise of any estimation, discretion or judgment by EnergyCo, or as the result of any omission, inadequacy or inaccuracy in the content of this Document.

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Glossary

Table 1: Glossary

Term	Definition
Access Rights	Access Right as defined in the Access Scheme Declaration.
Access Right Holder	The person who holds an Access Right granted under the Access Scheme Declaration.
Access Scheme Declaration	The Access Scheme Declaration titled 'Central-West Orana Renewable Energy Zone (Central-West Orana REZ) Access Scheme' declared by the Minister under the EII Act, Section 24(1), on 19 December 2022 and published in the New South Wales (NSW) Government Gazette on 23 December 2022, as amended from time to time.
AEMO Services	AEMO Services Limited (ABN 59 651 198 364).
Central-West Orana REZ	Central-West Orana Renewable Energy Zone.
Central-West Orana REZ Access Right	The Access Rights allocated under the Central-West Orana REZ Access Scheme and in accordance with the Central-West Orana REZ Access Scheme Declaration that authorises access to, and use of, the Access Rights Network. Central-West Orana Renewable Energy Zone.
EII Act	Electricity Infrastructure Investment Act 2020 (NSW).
EII Regulation	Electricity Infrastructure Investment Regulation 2021 (NSW).
EnergyCo	The Energy Corporation of New South Wales (ABN 13 495 767 706), a statutory authority constituted by s 7 of the <i>Energy and Utilities Administration Act 1987</i> .
Hybrid Project	A co-located hybrid infrastructure network infrastructure Project as defined in the Central-West Orana REZ Access Scheme Declaration.
Infrastructure Planner	Infrastructure Planner as defined in the EII Act, being EnergyCo for Central-West Orana REZ.

Term	Definition
Initial Allocation	Allocation of Maximum Capacity under Access Rights up to the initial Aggregate Maximum Capacity Cap of 5.84 GW. Under the Central-West Orana REZ Access Scheme Declaration, the Infrastructure Planner may determine that the Initial Allocation has been completed if the Aggregate Maximum Capacity Cap of approved projects granted Access Rights under the Initial Allocation exceeds 90% of the Initial Aggregate Maximum Capacity Cap, or if it does not reasonably expect significant further Access Rights may be granted under the Initial Allocation.
Minister	NSW Minister for Energy.
REZ	Renewable Energy Zone or REZ as defined in the EII Act.

1 Purpose

An access scheme has been declared in the Central-West Orana Renewable Energy Zone (REZ) access scheme declaration (**Central-West Orana REZ Access Scheme Declaration**).¹ The Energy Corporation of New South Wales (**EnergyCo**) is the appointed Infrastructure Planner for the Central-West Orana REZ under the *Electricity Infrastructure Investment Act 2020 (EII Act)*². The Infrastructure Planner of the Central-West Orana REZ is the appointed administrator of the access scheme under the Central-West Orana REZ Access Scheme Declaration.³ The Infrastructure Planner has functions under the *Electricity Infrastructure Investment Regulation 2021 (EII Regulation)* that include:

- to assess and determine the grant or increase of access rights to participants in the access scheme;⁴ and
- to assess, calculate, forecast, determine and implement technical matters for the access scheme, including in relation to maximum capacities applying during different periods.⁵

This Document summarises:

1. How the Infrastructure Planner intends to apply the Target Transmission Curtailment Level (TTCL) and aggregate maximum capacity cap under the Central-West Orana REZ Access Scheme when:
 - allocating access rights to the access rights network;⁶ and
 - determining the aggregate maximum capacity available for the allocation of access rights through calculation of the headroom assessment.
2. The information sought from proponents⁷ to support the application of the TTCL and aggregate maximum capacity cap.
3. Responses to frequently asked questions on TTCL and headroom under the Central-West Orana REZ Access Scheme.

¹ The access scheme declaration in respect of the Central-West Orana REZ made by the Minister under section 24(1) of the EII Act on 23 December 2022 as amended from time to time.

² EnergyCo has been appointed as the Infrastructure Planner for Central-West Orana REZ under the *Renewable Energy Zone (Central-West Orana) Order 2021* made by the Minister on 28 October 2021 as amended from time to time and in accordance with section 63 of the EII Act.

³ See clause 21 of the Central-West Orana REZ Access Scheme Declaration.

⁴ Clause 6(1) of Schedule 1A of the EII Regulation.

⁵ Clause 10 of Schedule 1A of the EII Regulation.

⁶ 'Access rights network' has the meaning given in the Central-West Orana REZ Access Scheme Declaration.

⁷ Where access rights are allocated under an application process, 'Proponents' has the same meaning as Applicant in EnergyCo's Application Process Guidelines. Where access rights are allocated under a competitive tender process, 'Proponents' has the meaning given in AEMO Services Tender Guidelines.

To the extent of any inconsistency between this Document and the Central-West Orana REZ Access Scheme Declaration, the Central-West Orana REZ Access Scheme Declaration prevails. Terms used in this Document have the meaning given in the Central-West Orana REZ Access Scheme Declaration unless otherwise defined.

2 Background

The Central-West Orana REZ Access Scheme is a limited physical connections model with limitations on the size, nature and operation of generation and storage projects connecting to the access rights network. This model is designed to provide investor confidence by physically restricting the capacity of projects that can be granted access rights using a targeted level of transmission curtailment.

Terms and conditions of the Central-West Orana REZ Access Scheme are specified in the Central-West Orana REZ Access Scheme Declaration.

2.1 Capacity profile

The Infrastructure Planner, after providing sufficient notice and consultation, may grant an access right to an eligible project, or increase the maximum capacity of an approved project, using different maximum capacity amounts for different capacity periods within a 24-hour day (a maximum capacity profile).⁸

A capacity period refers to an intra-day period notified by the Infrastructure Planner in accordance with subclause 7(5) of the Central-West Orana REZ Access Scheme Declaration, and which may vary for days during different seasons. Until a notification is made, the capacity period for the Central-West Orana REZ is a single 24-hour day.⁹

2.2 Curtailment framework

Under the Central-West Orana REZ Access Scheme, the limited physical connections model is given effect by providing that the Infrastructure Planner may only:¹⁰

- grant an access right;
- approve an increase in the maximum capacity of an approved project; or
- approve a material change in the project characteristics of an approved project,

if it is satisfied that the grant or approval will not cause:

⁸ Clause 7(5) of the Central-West Orana REZ Access Scheme Declaration.

⁹ Definition of 'capacity period' and clause 7(6) of the Central-West Orana REZ Access Scheme Declaration.

¹⁰ Clause 7(3) of the Central-West Orana REZ Access Scheme Declaration.

- the aggregate maximum capacity of all approved projects during any capacity period to exceed the **aggregate maximum capacity cap** for that capacity period, or
- the forecast curtailment on the access rights network (as calculated in accordance with Schedule 3 of the Central-West Orana REZ Access Scheme Declaration) to exceed the **TTCL**.¹¹

The two key metrics in the “curtailment framework” are the aggregate maximum capacity cap and the TTCL. These metrics and how they operate are explained below.

2.3 Aggregate maximum capacity cap

The aggregate maximum capacity cap is a limit on the aggregate maximum capacity of all approved projects during a capacity period. The aggregate maximum capacity cap is calculated by adding each project’s maximum capacity in megawatts (MW) for which it holds access rights as specified in the access rights register.

Under the Central-West Orana REZ Access Scheme, the initial aggregate max capacity cap in all capacity periods is 5.84 GW.¹² This figure could be increased by the Infrastructure Planner after the initial allocation and following a headroom assessment (see [Section 3.2](#)).¹³

2.4 Target Transmission Curtailment Level (TTCL)

The TTCL for the initial term of the Central-West Orana REZ Access Scheme is 4.37%.¹⁴

The TTCL is a limit on forecast curtailment calculated under the Central-West Orana REZ Access Scheme and is not a guarantee of actual curtailment outcomes, as detailed further in this section.

Forecast curtailment represents the forecast technical curtailment of aggregated approved projects due to the transfer capacity of the access rights network for a given reference year. This is expressed as a percentage, where:

$$\text{Forecast curtailment (\%)} = \frac{\text{forecast curtailed electricity}}{\text{forecast potential sent out generation}}$$

¹¹ Where the Central-West Orana REZ access scheme sets a network element forecast curtailment on a network element then the grant of access rights must also not result in a network element forecast curtailment on a network element exceeding the TTCL, if the Infrastructure Planner has notified a target network element curtailment level for a network element under subclause 9(2) of the Central-West Orana REZ Access Scheme Declaration.

¹² Clause 8(1) of the Central-West Orana REZ Access Scheme Declaration.

¹³ Clause 8(2) and (3) of the Central-West Orana REZ Access Scheme Declaration.

¹⁴ Clause 9(1) of the Central-West Orana REZ Access Scheme Declaration.

Within the aggregate maximum capacity cap, access rights may only be granted where the eligible project's expected capacity profile does not cause the modelled forecast curtailment on the access rights network in a given reference year to exceed the TTCL.¹⁵

There are three important caveats to the TTCL:

1. **The forecast curtailment only considers curtailment driven by the transfer capacity of the access rights network and is aggregated for all projects across a full reference year.** It does not consider curtailment that may occur due to technical constraints outside the REZ, economic curtailment or an individual project location on the access rights network.
2. **Individual projects may experience a higher or lower level of actual curtailment.**
3. **Proponents will need to perform their own due diligence and modelling as curtailment outcomes will not be promised or compensated.** Access rights will not change the National Electricity Market Dispatch Engine (NEMDE) process and Access Right Holders can still be curtailed due to constraints. This could result in Access Right Holders being affected by constraints differently from one another.

3 Role of Infrastructure Planner

3.1 Initial Allocation

The initial allocation covers the grant of access rights within the initial aggregate maximum capacity cap.¹⁶

For the initial allocation of access rights the Infrastructure Planner may grant access rights or an increase in maximum capacity to a proposed project after conducting an application process.¹⁷ For subsequent granting of access rights the Infrastructure Planner may grant access rights or increase maximum capacity to a proposed project upon recommendation of the Consumer Trustee.¹⁸

As at Section 2.1, the Infrastructure Planner must ensure the grant of access rights will not cause the forecast curtailment on the access rights network to exceed the TTCL.

The method for calculating the forecast curtailment is outlined in Section 3.4.

¹⁵ Clause 7(3)(b) of the Central-West Orana REZ Access Scheme Declaration.

¹⁶ In limited circumstances the Infrastructure Planner can determine that the initial allocation is completed before access rights up to the initial aggregate maximum capacity cap have been allocated – see clause 7(4) of the Central-West Orana REZ Access Scheme Declaration.

¹⁷ Clause 7(1)(a)(ii) of the Central-West Orana REZ Access Scheme Declaration.

¹⁸ Clause 7(1)(a) of the Central-West Orana REZ Access Scheme Declaration. AEMO Services Limited has been appointed as the Consumer Trustee under section 60 of the EII Act.

In calculating the forecast curtailment under the Central-West Orana REZ Access Scheme, the Infrastructure Planner must, amongst other things:

- determine an expected capacity profile for a relevant project based on information that the Infrastructure Planner considers will assist it in accurately forecasting the project's likely future generation profile including, without limitation:
 - representative information for the relevant plant type from AEMO modelling inputs;
 - market modelling;
 - the project's own forecast generation profile;
 - the project characteristics; and
- select a reference year for the purposes of the calculation of forecast curtailment.¹⁹

The Infrastructure Planner will exercise this discretion through the generation traces requested of projects as part of the application process or competitive tender process for access rights. These specifications are outlined in Section 3.3.

3.2 Headroom assessment and further allocation of access rights

The Infrastructure Planner may determine that the initial allocation is complete when:

- the aggregate maximum capacity in any capacity period of approved projects granted access rights under the initial allocation exceeds 90% of the initial aggregate maximum capacity cap in that capacity period; or
- the Infrastructure Planner does not reasonably expect that significant further access rights may be granted within the initial maximum capacity cap.²⁰

The Infrastructure Planner is to notify the Consumer Trustee and Access Right Holders and publish a notice on its website when the initial allocation is complete.²¹

After the initial allocation of access rights, and at least every two years for the next six years, the Infrastructure Planner must undertake a headroom assessment.²² The headroom is the increase in aggregate maximum capacity in a capacity period that could be allocated without resulting in forecast curtailment on the access rights network exceeding the TTCL. When making a headroom assessment, the Infrastructure Planner is to calculate the extent that additional maximum capacity

¹⁹ Clause 6 of Schedule 3 of the Central-West Orana REZ Access Scheme Declaration.

²⁰ Clause 7(4) of the Central-West Orana REZ Access Scheme Declaration.

²¹ Clause 7(4) of the Central-West Orana REZ Access Scheme Declaration.

²² Clause 10(1)(b) of the Central-West Orana REZ Access Scheme Declaration.

could be granted under access rights in all relevant capacity periods without forecast curtailment exceeding the TTCL.²³

It may be possible to increase the aggregate maximum capacity cap without breaching the TTCL due to:

- an increase in the transfer capacity of the access rights network, either due to augmentations to the access rights network or between the boundary point of the access rights network and the regional reference node;
- impact of storage projects on the generation profile of projects connected to the access rights network; or
- differences between expected capacity profiles of projects and capacity profiles post commissioning.

The headroom calculation methodology is outlined in Section 3.5.

The Infrastructure Planner may decide that the amount of additional maximum capacity made available after a headroom assessment should be less than the headroom calculated under a headroom assessment.²⁴

The Infrastructure Planner must notify the Consumer Trustee and Access Right Holders of the proposed headroom and proposed increase to the aggregate maximum capacity cap (among other metrics).²⁵ The Consumer Trustee and Access Right Holders may make a written submission in response to the draft headroom assessment before the final headroom assessment is published.²⁶

The Infrastructure Planner may then grant access rights up to the new aggregate maximum capacity, ensuring the granting of access rights to a project will not cause forecast curtailment to exceed the TTCL or breach the new aggregate maximum capacity cap.

3.3 Collection and use of generator data

The Infrastructure Planner will consider the generator data requested during an application process for access rights and may conduct further due diligence to assess the quality of the submitted information. This may include, in the case of an approved project, collecting and using any historical available capacity and sent out generation.

Proponents must provide a generation trace for each connection point proposed to be allocated an access right. Table 1 outlines the characteristics of the data that will be requested from access right applicants, and their application to the calculation of forecast curtailment for the granting of access rights.

²³ Clause 10(2) of the Central-West Orana REZ Access Scheme Declaration.

²⁴ Clause 10(3) of the Central-West Orana REZ Access Scheme Declaration.

²⁵ Clause 10(4) of the Central-West Orana REZ Access Scheme Declaration.

²⁶ Clause 10(5) of the Central-West Orana REZ Access Scheme Declaration.

Table 2: Characteristics of generation traces that may be requested from proponents

Characteristic	Decision	Rationale and application
Probability of Exceedance (PoE)	Proponents will provide 50% PoE traces (P50)	<ul style="list-style-type: none"> aligns with the level of generation certainty of the AEMO (ISP) traces used to calculate the TTCL.²⁷ a common measure and level of certainty familiar to the market. provides the most likely level of generation and may avoid unnecessarily limiting the amount of maximum capacity that may be granted under access rights compared to using a lower probability of exceedance (i.e. assuming higher generation).
Reference Year	The Infrastructure Planner will use the year of median forecast curtailment (out of three specified data years) as the reference year for comparison with the TTCL.	<ul style="list-style-type: none"> projects will provide three half-hourly traces, based on weather data from three specified data years. selecting the median year provides a “likely” level of curtailment and may enable a less conservative granting of access rights than the year of highest forecast curtailment. the data years will be communicated with each access right application process or competitive tender process.
Technology type	Proponents will provide traces individual component of the project separately (e.g. a hybrid solar project would provide one trace for solar and one trace for storage)	<ul style="list-style-type: none"> the Infrastructure Planner will also create a trace that represents expected behaviour of each storage project or storage component of a hybrid project.

²⁷ The TTCL was calculated using the VRE traces used for AEMO’s ISP. See the Question and Answers section at the end of this document.

Characteristic	Decision	Rationale and application
Degradation assumptions	Degradation should be excluded from the provided traces	<ul style="list-style-type: none"> different projects may make different assumptions about degradation. Excluding degradation allows for a more accurate comparison between projects.

3.4 Forecast curtailment calculation process for access rights

The Infrastructure Planner must calculate the forecast curtailment for the combination of projects that are being considered for granting of an access right and projects which have already been granted an access right in any previous process to allocate access rights, to ensure the granting of access rights to a project does not cause forecast curtailment on the access rights network in a given reference year to breach the TTCL.²⁸ During allocations where the competitive tender process applies, the Consumer Trustee will also consider the forecast curtailment when considering which projects to recommend for access right allocation.

The Infrastructure Planner will undertake the following steps to calculate forecast curtailment and determine if a project (or group of projects) can be granted access rights without causing forecast curtailment to breach the TTCL:

1. Determine expected capacity profiles for each project

The Infrastructure Planner will determine an expected capacity profile for each connection point, both for projects applying for access rights, and (after the initial allocation) for any projects that have already been granted access rights. The trace will be half hourly generation in megawatt-hours (MWh), determined at P50 level of certainty and for the specified financial years. The relevant years will be communicated with each access right allocation or competitive tender process.

The Infrastructure Planner may determine an expected capacity profile for each project that it considers reflects a likely generation profile for that project. Based on information including:

- generation traces submitted by proponents as part of the access rights application or competitive tender process;
- AEMO ISP variable renewable energy traces; and
- recorded traces for projects already connected to the access right network.

Proponents will submit generation traces for the weather dependant components of the project (e.g. wind and solar). When considering the generation traces submitted by proponents, a due diligence process may be undertaken to assess the quality of the submitted traces.

For storage and load projects, and the storage and load components of hybrid projects, the Infrastructure Planner will create expected profiles taking into account the expected capacity profiles of other proposed and connected projects.

²⁸ Clause 7(3)(b) of the Central-West Orana REZ Access Scheme Declaration.

For hybrid projects, the Infrastructure Planner will add the traces determined for each project component at the same point of connection, to create one trace for that connection point.

2. Create an aggregated half hourly generation profile for the group of projects

For each half hour period in each data year, the Infrastructure Planner will sum the expected capacity profiles for projects being considered for access rights and any projects which have already been granted access rights. This will create a half hourly aggregated capacity profile of the potential forecast generation connected to the access rights network that could be sent out if the access rights network had infinite transfer capacity.

3. Calculate the generation in each half hour that is curtailed (unable to be sent out) due to the transfer capacity of the REZ

For each half hour period in each data year, the Infrastructure Planner will determine the generation that exceeds the transfer capacity of the access rights network.

Only curtailment due to the transfer capacity of the access rights network is considered. Curtailment due to economic bidding behaviour, project location or curtailment beyond the access rights network is not considered.

4. Add up the forecast curtailed generation for each year

For each data year, the Infrastructure Planner will sum the forecast curtailed generation in each half hour to determine the annual forecast curtailed generation.

5. Express this as a percentage of the potential sent out generation for each year

Under the Central-West Orana REZ Access Scheme Declaration, forecast curtailment is defined by the following formula:

$$\text{Forecast curtailment (\%)} = \frac{\text{forecast curtailed electricity}}{\text{forecast potential sent out generation}}$$

For each data year, the Infrastructure Planner will calculate the forecast curtailment by expressing the total annual forecast curtailed generation as a percentage of the total annual generation that could be sent out if not limited by the transfer capacity of the access rights network.

6. Select the median year as the reference year and compare against the TTCL

The Infrastructure Planner will select the year (out of the specified data years) with median forecast curtailment as the reference year for comparison with the TTCL. If the TTCL is not exceeded, the group of projects seeking access can be granted access rights providing the aggregate maximum capacity cap is also not exceeded.

In addition to assessing forecast curtailment for the grant of access rights, during a competitive tender process the Infrastructure Planner will also provide advice on forecast curtailment to the Consumer Trustee during the tender process to inform the shortlisted projects recommended for granting access rights.

Subject to above, access rights will be granted until the initial allocation of 5.84 GW of maximum capacity is reached.

After the initial allocation is exhausted and before subsequent processes for the allocation of access rights, or if an augmentation to the network occurs, the Infrastructure Planner will conduct a headroom assessment, to determine if the aggregate maximum capacity cap can be increased and more access rights granted.

3.5 Headroom calculation

The initial allocation is exhausted when the aggregate maximum capacity of projects granted access rights exceeds 90% of the initial aggregate maximum capacity cap, or when the Infrastructure Planner does not reasonably expect that significant further access rights may be granted.²⁹

Once the initial allocation is exhausted, and at least every 2 years thereafter for the next six years, the Infrastructure Planner must perform a headroom assessment. Please refer to section 3.2 for more information.

The Infrastructure Planner will undertake the following steps to calculate potential headroom and determine if the aggregate maximum capacity cap can be increased for the Central-West Orana REZ.



1. **Create a half hourly “whole of REZ” expected generation trace, by summing the P50 generation traces of projects which have already been granted access rights.**

The Infrastructure Planner will use its discretion to determine expected capacity profiles for projects which have been granted access rights. As some projects may be commissioned, and others may have just been granted access rights, these expected capacity profiles may be a mix of recorded and expected generation. If measured profiles are available for commissioned projects, the Infrastructure Planner will select a reference year(s) aligning with the year of recorded data from the commissioned projects.

Further information will be provided to generators before any headroom assessment is conducted.

2. **Develop generic wind and solar expected capacity factor profiles for the Central-West Orana REZ.**

These profiles will be used to represent generation from potential future projects. They will be half hourly traces of the capacity factor (from 0 to 1) of a generic wind (or solar) project, which can be multiplied by the chosen nameplate capacity of additional wind (or solar)

²⁹ Clause 7(4) of the Central-West Orana REZ Access Scheme Declaration.

generation to provide a generation trace for the additional capacity. The capacity factors do not consider curtailment due to bidding practices but reflect the potential output given the weather in that half hour.

These traces may be developed from an average of the expected capacity factor profiles of projects that have received access rights in the Central-West Orana REZ, using measured data where available, or from AEMO ISP capacity profiles for the Central-West Orana REZ. They will be developed for the reference year(s) selected in Step 1.

As the behaviour of storage projects is expected to be driven by market price signals, the Infrastructure Planner will not consider a generic storage trace to represent potential future storage capacity and will calculate headroom only considering potential wind and solar generation.

3. Calculate the maximum available headroom

An optimisation routine will be used to calculate the maximum available headroom. The aggregate maximum capacity will be increased beyond the initial allocation through the addition of generic additional wind and solar generation. The optimisation routine will:

- change the additional capacity (MW) of generic wind and generic solar
- keep the forecast curtailment in the selected reference year below the TTCL
- seek to maximise the aggregate maximum capacity (the sum of the maximum capacities of the projects which have been granted access rights, and the capacity of additional generic wind and solar).

In each iteration of the optimisation routine, the routine will:

- choose a capacity (MW) of additional generic solar and wind generation
- the Infrastructure Planner will start each headroom assessment with 0 MW of additional wind and solar.
- add expected capacity profiles for the generic solar and wind to the aggregate expected generation profile of the access rights network
- the generic half hourly expected capacity factor profiles for wind and solar will be multiplied by the chosen capacity (MW) of generic wind and solar respectively, and the resultant expected capacity profile added to the aggregate expected generation profile of the projects that have been granted access rights, to create a potential expected generation profile for the access rights network.
- calculate the annual forecast curtailment
- the annual forecast curtailment will be calculated following the steps outlined in steps 3-6 in Section 3.4
- compare with the TTCL
- the annual forecast curtailment will be compared against the TTCL, to determine if chosen amounts of generic additional wind and solar generation will breach the TTCL.
- chose the next iteration of capacity (MW) of generic wind and solar

- based on the comparison with the TTCL, the model will choose new capacity (MW) of generic wind and solar and run the process again. It will continue to iterate until it has maximised the aggregate maximum capacity, while keeping forecast curtailment below the TTCL.

Once the optimal MW of generic additional wind and solar have been determined, the headroom is then calculated as

$$\text{Headroom} = \text{MW Generic Solar} + \text{MW Generic Wind} + \sum \text{MW projects with access rights} - \text{initial aggregate maximum capacity cap}$$

4. Calculate headroom for other combinations of solar and wind capacity

The headroom calculated in Step 3 is the maximum headroom that could be declared. However, this is dependent on a specific combination of wind and solar capacity, which may not reflect the economically optimal combination of wind and solar connected to the access rights network, or the proportions of projects in development. As a result, the Infrastructure Planner may decide not to increase the aggregate maximum capacity cap by the full amount of headroom calculated. To inform this decision, the Infrastructure Planner will also calculate the headroom for other capacity combinations of generic solar and wind generation.

The Infrastructure Planner will calculate headroom following the same method, but imposing other restrictions on the optimisation routine to align with potential generation mixes, such as:

- the generation mix of known projects that are in development
- the economically optimal generation mix that was modelled for the calculation of the TTCL
- high wind and high solar scenarios

The Infrastructure Planner will consider both the maximum headroom and the headroom calculated from other potential generation combinations when determining the extent to which the aggregate maximum capacity cap for the access rights network can be increased.

Notification and response to headroom assessment, please see the [Access Scheme declaration 10\(5\)](#)

Question and Answers

Question 1: Is there any update to the 4.37% target curtailment level method?

The TTCL was calculated considering the forecast technical curtailment on the access rights network during the period when the Central-West Orana REZ is fully operational. The assumed installed generation was developed by modelling the economically optimal wind and solar generation build out throughout the state and considering what the model built in the Central-West Orana REZ during the chosen time period. This generation build out is based on the same assumptions as the ISP and does not consider storage.

Under the Central-West Orana REZ Access Scheme Declaration, the TTCL will remain the same for the initial term of the access scheme. The TTCL was tested with the market and deemed to be a reasonable level of curtailment.

The Infrastructure Planner may revise the TTCL after the initial term of the access scheme (being 20 years from the electrification of the first network element of the access rights network³⁰), after notifying the Consumer Trustee, Access Right Holders and publishing a notice on its website.³¹

Question 2: Can any more information be provided on the curtailment break down at different hubs or different technologies?

The TTCL represents a forecast of curtailment levels for use in the allocation of access rights but does not represent a promise on actual curtailment outcomes.

Under the Access Scheme, the Infrastructure Planner may stipulate a target network element curtailment limit for a specific network element, however at this point in time the Infrastructure Planner has not stipulated a target network element curtailment limit in the access rights network. As such, the Infrastructure Planner will not provide information on expected curtailment on different network elements.

The Infrastructure Planner understands that the technology mix in the REZ is an important consideration for the proponents to assess curtailment for different technologies. While the proponents are expected to undertake their own due diligence to assess curtailment, they may be able to use information that the Consumer Trustee may publish during each tender such as the capacities of different technologies seeking access rights, where the Consumer Trustee is running a competitive tender process for the allocation of access rights.

³⁰ See definition of 'initial term' in the Central-West Orana REZ Access Scheme Declaration. Note the current term is 33 years.

³¹ Clause 9(1) of the Central-West Orana REZ Access Scheme Declaration.

Question 3: Will there be any protections/compensation to Proponents if curtailment exceeds the 4.37% TTCL?

The TTCL is an indicator based on current modelling and does not represent a promise of actual curtailment outcomes. As such, there will not be any compensation in a situation where a project experience greater curtailment than the TTCL. However, the TTCL governs the Infrastructure Planner's power to grant access rights through a process that models transmission curtailment on the access rights network at a point in time.

The TTCL does not reflect the expected curtailment of any individual project connecting to the access rights network, which will also be subject to any technical curtailment driven by factors beyond the boundary of the access rights network as well as economic curtailment. The access right is not intended to wholly remove locational price signals for generators, but rather to give projects enough information to accurately assess these risks.

Question 4: How do the forecast curtailment and headroom calculations treat stand-alone storage and hybrid projects given that they can either alleviate or worsen congestion depending on how they operate?

The calculation of the TTCL was based on solely wind and solar projects, as these technologies have readily available regionally specific expected generation profiles. As the behaviour of storage and other dispatchable technologies is in part driven by price signals and the bidding behaviour of projects around them, a generic storage trace cannot be developed.

For the purposes of calculating forecast curtailment and recommending access rights, the Infrastructure Planner will conduct economic market modelling to create a trace for each stand-alone storage project and any storage component of a hybrid project. This will consider projects which are seeking or already have access rights.

For the purposes of granting access rights, the Infrastructure Planner may conduct further due diligence on the traces used by the Infrastructure Planner in the application process or by the Consumer Trustee during the competitive tender process. Subject to due diligence, these traces will be used as representative of the project to calculate the forecast curtailment as outlined in Section 3.4. For hybrid projects, all traces of project components behind the same connection point will be added to create a trace for that connection point with an upper limit set at the maximum capacity of the project.

Question 5: Will the Infrastructure Planner or the Network Operator provide a tool/forecast for the bidders to calculate/use for Marginal Loss Factor (MLF) for the whole REZ that is "bankable"?

No, these are matters for generators to consider and analyse as needed in making informed decisions. Generators connected to the access rights network will be settled at the existing regional reference node (RRN) and projects (connection points in relation to which access rights are held) will have individual MLFs determined by AEMO under the NER. No regulations modifying the NER approach to the determination of MLFs are proposed.

The proponents should also note that stage 1 of the proposed Hunter Transmission Project (HTP) will add 5 GW of network capacity with double circuit 500kV line between Bayswater and Eraring substations, providing capacity for the Central-West Orana, New England and Hunter Central Coast (HCC) REZs. As per the published Network Infrastructure Strategy (NIS), this project is essential to alleviate downstream network constraints when the total power transmitted from Central-West Orana, New England and HCC REZs exceeds 3 GW. Stage 1 of HTP is expected to be energised in 2027.

AEMO has indicated there is consideration of the creation of a new system strength node (SSN) at Wollar. As per AEMO's definition, an SSN is a physical location on the transmission network of a System Strength Service Provider, at which AEMO must determine system strength requirements and apply those requirements for power system security purposes under Chapter 4 of the NER.

As such, the proponents should note the difference between SSN and a RRN as there will be no change to the existing process for market settlement.

Question 6: How is the Infrastructure Planner planning to let the market know on headroom availability and the process for allocating access rights under headroom?

The Infrastructure Planner will conduct a headroom assessment when the initial allocation is exhausted. Following the initial allocation, any headroom available will be published on the Infrastructure Planner's website in line with the requirements under the Central-West Orana REZ Access Scheme Declaration.³²

Question 7: Will different maximum capacities be applied to different periods of the day?

The Infrastructure Planner does not intend to introduce multiple capacity periods for the initial allocation. However, different maximum capacities in different periods may be introduced in the future following a consultation process. Once introduced, different aggregate maximum capacity caps would apply across different time-of-day periods.

³² Clause 10(4) of the Central-West Orana REZ Access Scheme Declaration.

