



Explanatory statement

Draft transmission annual planning report guidelines

September 2018

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Request for submissions

The Australian Energy Regulator (AER) invites stakeholders to provide submissions on the draft transmission annual planning report (TAPR) guidelines in attachment A, along with the reasons provided in this explanatory statement.

We invite submissions by the close of business **15 October 2018**. We prefer stakeholders send submissions electronically to: AERInquiry@aer.gov.au.

We prefer all submissions be publicly available to facilitate an informed and transparent consultation process. We will therefore treat submissions as public documents unless otherwise requested.

We request parties wishing to submit confidential information to:

- clearly identify the information that is subject of the confidentiality claim; and
- provide a non-confidential version of the submission, in addition to a confidential one.

We will place all non-confidential submissions on our website at www.aer.gov.au. For further information regarding our use and disclosure of information provided to us, see the *ACCC/AER Information Policy*, June 2014 available on our website.

Please direct enquiries about this paper to AERInquiry@aer.gov.au or to Mark Wilson on (08) 8213 3419.

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Shortened forms

Shortened form	Extended form
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
COGATI review	Coordination of Generation and Transmission Investment review
DAPR	Distribution Annual Planning Report
DNSP	Distribution Network Service Provider
ENA	Energy Networks Australia
ESB	Energy Security Board
ISP	Integrated System Plan
KV	Kilovolt
MVA	Mega Volt Ampere
Mvar	Megawatt Volt Ampere Reactive
MWh	Megawatt hour
NEM	National Electricity Market
NER	National Electricity Rules
NSP	Network Service Provider
POE	Probability of Exceedance
RIT	Regulatory Investment Test
TAPR	Transmission Annual Planning Report
TNSP	Transmission Network Service Provider
VAPR	Victorian Annual Planning Report
VCR	Value of Customer Reliability

1 Overview

This explanatory statement sets out our reasons for the proposed transmission annual planning report (TAPR) guidelines, including how it incorporates stakeholder views. The TAPR guidelines will provide generators and large transmission customers practical and consistent information they need to make informed connection decisions and non-network service providers information on how they may be able to offer non-network solutions to identified transmission needs.

The combination of declining renewable generation costs, retiring thermal generation plant and government incentives is resulting in over 40,000 MW of proposed renewable generation connections to the transmission system.¹ At the same time, the declining cost of technology and communications is creating more opportunities for non-network service providers.

However, generators, large transmission customers and non-network service providers face the challenge of comparing different information types and detail across the TAPRs leading to increased costs and potentially inefficient investment decisions.

The TAPR guidelines will address some of the challenges by requiring transmission network service providers (TNSPs) to publish a consistent set of information, complementing the TAPR documents published on 30 June each year.

This explanatory statement sets out our reasoning for the draft TAPR guidelines, which require TNSPs to publish and keep available on their website the following key information:

- Historic and forecast demand at each connection point; and
- Information about the location and size of impending generator and load connections.

The draft TAPR guidelines provide data requirements that set out how this information should be prepared. However, they do not prescribe the format that the information should be released to the market. This is consistent with the system limitations template, which we published in June 2017 and which is also called the distribution annual planning report (DAPR) template.² The systems limitations template complements a distribution network service provider's (DNSP's) DAPR. Recognising the changing dynamics of the market, we are proposing not to prescribe the chapter headings, sections and specific sub-sections for each TAPR.

1.1 Consultation steps

We seek submissions by 15 October 2018 on this explanatory statement and the draft TAPR guidelines in attachment A. Table 1 further details our proposed consultation steps and timeframes.

Table 1: TAPR guidelines consultation timeframe

¹ AEMO, *Generation Information page*, 1 July 2018.

² AER, *Final decision: Distribution annual planning report template v1.0*. June 2017.

Milestone	Date
Consultation paper published	3 April 2018
Submission period on consultation paper closes	18 May 2018
Draft TAPR guidelines released	3 September 2018
Submissions period on draft TAPR guidelines closes	15 October 2018
TAPR guidelines released	December 2018

2 Background

We are required to publish TAPR guidelines under clause 5.14B.1 of the National Electricity Rules (NER). This obligation arose from the transmission connection and planning arrangements rule determination of May 2017.³ The TAPR guidelines aims to support the consistent provision of information by TNSPs across the National Electricity Market (NEM).

Our earlier work formed the basis for the rule change and had already encouraged TNSPs to start making efforts to take a more consistent approach to developing TAPRs. This work entailed collaborating with TNSPs in 2014 by holding an industry wide workshop to improve the quality of TAPRs, with a similar workshop convened with DNSPs in 2015. After this, we held one-on-one meetings with network service providers (NSPs) to outline our views of any shortcomings compared to the rule requirements (and to drive improvements through improvement action plans that each NSP agreed to).

Since that work, we have continued on a number of related reviews, including:

- In June 2016, we proposed a 'repex rule change'⁴, which was finalised by the Australian Energy Market Commission (AEMC) in July 2017. The repex rule change requires NSPs to provide information on all planned asset retirements in their annual planning reports and extends the regulatory investment tests (RITs) to replacement decisions.⁵
- In June 2017, following informal consultation with DNSPs and non-network providers, we published the system limitations template to improve the consistency and useability of DAPRs across the NEM. The system limitations template also improves the ability of non-network providers to identify and propose solutions to address identified network needs.
- Following the repex rule change, a number of NSPs requested guidance from us on how to undertake the risk assessment that is required to demonstrate efficient asset retirements. In October 2017, we held a workshop with all NSPs to outline our views on the new obligations. Since then, we have been developing an 'industry practice application note' on asset replacement planning. We plan to publish a draft version of this application note for comment in September 2018, before finalising this guidance later in 2018.
- In December 2017, we commenced a large-scale review of the RIT application guidelines. In July 2018, we published draft amendments to the RIT application guidelines. This proposed guidance encourages RIT proponents to provide transparent and user-friendly data to stakeholders, as well as to use their TAPRs and DAPRs to undertake early engagement on investment proposals.⁶

³ AEMC, *Rule determination: National electricity amendment (transmission connection and planning arrangements) rule 2017*, May 2017, pp. 108–10.

⁴ AER, *Request for rule change — Replacement expenditure planning arrangements*, 30 June 2016.

⁵ AEMC, *Rule determination: National electricity amendment (replacement expenditure planning arrangements) rule 2017*, 18 July 2017, p. i.

⁶ AER, *Draft RIT–T application guidelines*, July 2018, p. 57; AER, *Draft RIT–T application guidelines*, July 2018, p. 49.

The Australian Energy Market Operator (AEMO) has also recently published its inaugural Integrated System Plan (ISP).⁷ The ISP was recommended by the Independent Review into the Future Security of the NEM to facilitate the efficient development and connection of renewable energy zones across the NEM.⁸

Now that we have had the opportunity to review the ISP, we can work towards finalising these TAPR guidelines. Because of these reviews, we considered that consultation on the TAPR guidelines benefited from a small delay. While we acknowledge that this may result in less consistency in the 2018 TAPRs, we consider it is in the best interest of customers that we take a considered approach.

⁷ AEMO, *Integrated system plan for the National Electricity Market*, July 2018.

⁸ See recommendation 5.1 of the Commonwealth of Australia, *Independent Review into the Future Security of the National Electricity Market: Blueprint for the Future*, June 2017.

3 Consideration of stakeholder submissions

This section sets out how the draft TAPR guidelines account for the submissions we received on our consultation paper. These include submissions from:

- TransGrid;
- Energy Networks Australia (ENA);
- AEMO;
- Renew Estate and Wirsol; and
- Citipower, Powercor and United Energy.

We have provided a summary of and response to these submissions in Attachment B, and have also published these submissions on our website.⁹

The key areas of the TAPR guidelines that we received submissions on relate to:

- Information requirements;
- Interaction with ongoing reviews;
- Compliance costs; and
- Arrangements specific to Victoria.

3.1 Information Requirements

Stakeholders broadly supported having information requirements in the TAPR guidelines, as this will ensure consistency between what the TNSPs report.

We are proposing that TNSPs publish information on generator connections and keep this up to date. Our proposal to include this requirement recognises that:

- The growing number and types of generator connections will change the dynamics and location of new transmission investments. While State Governments and AEMO may already publish this information, it can be contradictory and outdated. As such, requiring TNSPs to publish this information and keep it up to date will assist future connections proposals to identify where there might be future congestion or where there may be an opportunity to save costs on connections.
- Renew Estate and Wirsol suggested that TAPRs should provide more information on network capability and developments for generation connections.
- AEMO supported more information on impending generator connections to allow prospective investors to identify where they may be an opportunity to share the cost of new network connections.

⁹ AER, *Transmission annual planning report guideline*, <https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/transmission-annual-planning-report-guideline/initiation>.

- While the specific detail of generation connections is subject to confidentiality requirements, State Governments typically publish the approximate location of impending connections, as per its urban planning obligations. In some cases, AEMO also publishes these approximate locations in its Electricity Supply Outlook.

We are also proposing that TNSPs publish the minimum and maximum fault levels. This recognises AEMO's recommendation that TNSPs publish system strength information in TAPRs. We recognise that some other system strength information may need to come from generators, including some of the information required to calculate short circuit ratios. We are happy to explore this option further with AEMO if the information is readily available to all TNSPs.

Consistent with the consultation paper, the draft TAPR guidelines request TNSPs publish historic information. We consider this information would be valuable, even after considering that TransGrid, AEMO and the ENA submitted that TAPR information should only be forward looking given the changing nature of the market. In contrast, we consider historic information can be valuable, including for informing forecasts. DNSPs are currently required to publish three years of historic information on each zone substation and provide this information readily to the market for a greater number of connection points. Each TNSP also uses the historic information to prepare its forecasts for identifying emerging constraints. As such, it would not be considered unreasonable to publish this historic information.

Consistent with the consultation paper, the draft TAPR guidelines include similar data specifications. We consider this information valuable, as well as reasonable to provide. In contrast, TransGrid considered that the data specifications we proposed in the consultation paper would exceed the current information requirements for TAPRs under the NER. TransGrid further noted that some of that information could only be provided by a DNSP. In contrast, we note that AusNet Services, as part of its attachment to AEMO's 2018 Victorian Annual Planning Report (VAPR), published a document detailing all the information that would be required by the approach set out in our consultation paper. The information published by AusNet Services includes:¹⁰

- Network data:
 - Project name;
 - Location of constraint;
 - Element;
 - Load at risk; and
 - Existing element rating.
- Load data:
 - Load forecast.
- Risk data:
 - Maximum energy at risk; and

¹⁰ http://www.aemo.com.au/-/media/Files/Electricity/NEM/Planning_and_Forecasting/VAPR/2018/AusNet-Services-asset-renewal-plan-2018.pdf.

- Hours of load at risk.
- Economic data:
 - VCR used;
 - Expected unserved energy; and
 - Cost of unserved energy.
- Project data:
 - Preferred network solution;
 - Proposed timing; and
 - Existing generation at location.
- Network operational data:
 - Historic use of generation;
 - Emergency transfer capability;
 - Historic use of emergency transfer capability;
 - Historic load trace;
 - Historic asset utilisation; and
 - Historic outage at the location.
- Other data:
 - Fault rating;
 - Customer numbers and type at the location; and
 - Forecast load flow.

3.2 Interaction with ongoing reviews

In developing the draft TAPR guidelines, we have considered how this work will interact with ongoing reviews. In doing so, we have had regard to submissions from:

- TransGrid and AEMO that noted it was unclear how the TAPR guidelines will interact with AEMO's ISP and our RIT application guidelines.
- TransGrid that submitted we should consider the Energy Security Board's (ESB's) NEM data strategy.
- AEMO that submitted we should consider the AEMC's coordination of generation and transmission investment (COGATI) review.

In developing the draft TAPR guidelines, we have considered interactions with:

- The ISP: The ISP is a cost-based engineering optimisation plan that forecasts the overall transmission system requirements for the NEM and incorporates a range of plausible scenarios to forecast future electricity demand and supply. The inaugural ISP is largely consistent with the National Transmission Network Development Plans, with some additional information provided on renewable energy zones. It does not provide detailed

information sufficient for non-network proponents or new connecting generators or loads to make the decisions, as discussed earlier.

- RIT application guidelines: We recently released our draft RIT application guidelines.¹¹ While we are proposing amendments, we are not considering the appropriateness, effectiveness and efficiency of the RITs themselves. The RITs and RIT application guidelines do not set out the detailed information requirements to support the planning process prior to exploring a detailed investment decision.
- NEM data strategy: The ESB's data strategy is intended to establish a set of principles to maximise benefits and the long-term interests of consumers and coordinate the processes necessary for data custodians to collect, create, share and facilitate access to data in a consistent, efficient, effective and inclusive way.¹² We do not consider the data requirements in the draft TAPR guidelines would be inconsistent with the ESB's strategy. The NEM data strategy is not intended to facilitate delivery of new data repositories or platforms. Rather, the strategy seeks to set in place clear principles to guide how data is managed in the energy market.
- COGATI: We understand that the AEMC's COGATI review will focus on the broader frameworks and what potential changes to the NER may be required to prevent the regulatory framework from driving barriers to entry. Since this review does not have a focus on specific data requirements, we consider it will have a minimal impact on the TAPR guidelines.

3.3 Compliance Costs and user benefits

In our view, the costs of complying with the TAPR guidelines will be minimal with benefits to users outweighing those costs, and would not warrant special treatment under the regulatory arrangements. We hold this view because:

- The data the TAPR guidelines require is largely already collected, processed and/or published by TNSPs. As discussed in section 3.1, AusNet Services has already published the information proposed in our consultation paper. Our understanding from AusNet Services is that the information it supplied was largely already published and therefore relatively easy to collate and publish in the requested format. However, they noted that they did not conduct any market modelling which would have significantly added to the cost of producing the information. In our view, the information AusNet Services published appropriately balances releasing information in a form that can be readily replicated by other TNSPs, without having to exceed their current requirements and conduct detailed market modelling. As such, this work serves as an excellent basis on which we can develop our TAPR guidelines.
- While much of the information is already available, this information is often in PDF form. Since providing a like-for-like comparison between PDF documents is challenging, the TAPR guidelines aim to overcome this challenge.

¹¹ AER, *Draft RIT-T application guidelines*, July 2018; AER, *Draft RIT-D application guidelines*, July 2018.

¹² ESB, *NEM data strategy consultation paper*, 20 March 2018, p. 4.

- TNSPs face a lesser burden compared to DNSPs that have a similar requirement, which they have met without seeking additional costs.
- As Renew Estate and Wirsol identified, the TAPR guidelines may result in cost savings to TNSPs. Clearer information to help potential connection applicants gauge the cost and value of connections should reduce the number of frivolous and speculative connection applications that TNSPs have to consider. In turn, this would reduce costs for TNSPs and connecting parties.

On this basis, we do not consider the cost of meeting the TAPR guidelines will be significant. As such, we do not agree with TransGrid's view that the cost of providing the required information is in the order of \$500,000 per annum and that TNSPs be allowed an increase in their revenue allowance in the same way that an allowance was provided for the regulatory information notice.

3.4 Victorian arrangements

The draft TAPR guidelines should not impose an additional burden on DNSPs. In forming this view, we explored concerns raised by CitiPower, Powercor and United Energy that the TAPR guidelines would need to reflect their unique requirements since the Victorian DNSPs already prepare connection point forecasts. Having explored these concerns, we can confirm that the information AusNet Services supplies entails collating information that the Victorian DNSPs already publish. From our understanding, the draft TAPR guidelines will not impose any additional information or modelling requirements on DNSPs.

4 Proposed guideline information

There are only around 300 transmission connection points in the NEM with associated transmission lines. Therefore, the volume of information required to be published by TNSPs is significantly less than the information DNSPs must publish as part of the System Limitations Template, which is restricted to information on emerging limitations.

Our initial thinking is that TNSPs should publish, and keep up to date, 3 years of historical information for connection points and transmission lines. This will assist connecting generators and large customers understand how their connections might affect the network and what and how large any augmentations would need to be to facilitate their connections.

We also propose that certain information be published on emerging limitations of the transmission network to support non-network service providers deliver alternative options to address the identified need.

We also propose that information on emerging limitations be specific and targeted depending on whether the limitation will occur at a connection point or on a transmission line. This information only needs to be released if there is an emerging constraint or impending asset retirement that will lead to a network investment to assess a consequent network need.

New connection information must be updated as soon as practicable. The draft TAPR guidelines requires at least annual updating of this information, but we would encourage more frequent updating of this information via website links.

We also propose that the information be published in a structured form that is easily machine read. It will not be in the form of prescriptive chapter headings, sections and specific sub-sections that a TAPR must contain. Our requirements are set out in the draft TAPR guidelines, which can be found at Attachment A.

Sections 4.1.1 to 4.1.3 set out the information that we propose TNSPs publish.

4.1.1 Transmission Connection Point

Connection Point ID

Name of the transmission connection point and TNSP unique ID.

Connection Point Location

Latitude and longitude of the transmission connection point.

Constraint type and driver

Information must be supplied on what technical or legal requirement is giving rise to the constraint, where applicable. This must specify whether it is driven by capacity, reliability, power quality, operational, stability (that is, voltage stability, transient stability, oscillatory stability), reactive support, compliance, asset condition and performance, market benefit,

environmental, safety or other, and whether it is an augmentation investment or driven by asset retirement.

Customer number and type connected to connection point

This must be expressed as total number of customers that are connected to the connection point broken down by industrial, commercial and residential.

Load forecast

The 10% Probability of Exceedance (POE) and 50% POE peak demand forecasts as well as the forecast daily demand profile expressed in MVA.

Historic load trace

This must be provided for the past 3 years and deliver information at a minimum 30 minute intervals, expressed in MW and MVA.

Historic plant rating

This is the summer and winter ratings for the past 3 years at that connection point.

Historic plant headroom

This must be provided for the past 3 years expressed as the difference between the summer and winter ratings and the 30-minute load flowing through that connection point. It will highlight how the asset ratings has changed over the past and how it has affected the loading.

Limitation asset

Information must be supplied on the specific asset(s) leading to the constraint, where applicable.

Maximum load at risk per year

Expressed in MVA, where applicable.

Hours of load at risk total per annum and on the peak day

Expressed as the number of hours the constraint is expected to last and how long the solution is required for, including a load duration curve where applicable.

Expected unserved energy

Expressed as MWh per annum, where applicable.

Economic cost of constraint

Expressed in \$ millions. For example the annual cost of unserved energy is the product of the weighted Value of Customer Reliability and expected unserved energy (where applicable).

Preferred network solution

This will inform the non-network provider of what sort of network investment the TNSP is contemplating to address the need, a description of the project scope and cost (\$ millions).

Proposed timing

This is the timing for delivery of the solution. It will provide the non-network provider sufficient information on when it must install its solution.

Value of Customer Reliability

Expressed as \$/MWh (weighted by customer type).

Unplanned Outages

This must include unplanned outage date, cause, duration and quantified consequence for the past 3 years.

Fault level

Maximum and minimum fault level expressed in MVA.

4.1.2 Transmission line segment

Transmission line ID

Name of the transmission line and TNSP unique ID.

Transmission Line Location

Latitude and longitude of the connection points at the beginning and end of the transmission line segment, and connection point IDs.

Constraint type and driver

Information must be supplied on what technical or legal requirement is giving rise to the constraint, where applicable. This must specify whether it is driven by capacity, reliability, power quality, operational, voltage stability, transient stability, oscillatory stability, reactive support, compliance, asset condition, performance, market benefit, environmental, safety or other, and whether it is an augmentation investment or driven by asset retirement.

Historic load trace

This is the greater value of load measured at either end of the line. This will inform the non-network user of how the load has flowed through the network. This must be provided for the past 3 years and deliver information at a minimum 30 minute intervals and must highlight load switching and load shedding.

Historic plant rating

This is the summer and winter ratings for the past 3 years.

Historic plant headroom

This must be provided for the past 3 years, expressed as the difference between the asset summer and winter ratings and the 30 minute load flowing through that element. It will highlight how the asset rating has changed over the past and how it has affected the loading on the line.

Maximum load at risk per year

Expressed in MVA, where applicable.

Hours of load at risk total per annum and on the peak day

Expressed as the number of hours the constraint is expected to last and how long the solution is required for, including a load duration curve where applicable.

Expected unserved energy

Expressed as MWh per annum, where applicable.

Economic cost of constraint

Expressed in \$ millions. For example, the annual cost of unserved energy and is the product of the weighted Value of Customer Reliability and expected unserved energy, where applicable.

Preferred network solution

This will inform the non-network provider what sort of network investment the TNSP is contemplating to address the need, a description of the project scope and cost (\$ millions).

Proposed timing

Anticipated solution delivery timing. This will provide the non-network provider sufficient information on when it must install its solution.

Unplanned Outages

This must include unplanned outage date, cause, duration and quantified consequence for the past 3 years.

4.1.3 New Connections

Proposed generator connections

This must include information on the proposed generator size and technology and approximate location for every connection enquiry and application. This will enable other connecting parties to understand the potential congestion implications of their pending connection from existing connection applications.

Proposed load connections

This must include information on the proposed load size and forecast duration curve and approximate location for every connection enquiry and application. This will enable other connecting parties to understand the potential congestion implications of their pending connection from existing connection applications.

A Draft TAPR guidelines

Field Name	Rule	Data Type	Units	Other information
Connection Point ID	TGCP001	Text		Only relates to constraints occurring at Connection Points.
Constraint primary driver	TGCP002	Text		Choose one of: capacity; reliability; asset condition; performance; safety; environment; power quality; voltage
Connection Point Location	TGCP003	float	Decimal degrees	
Residential customers affected	TGCP004	Integer	Total number of customers affected	
Residential customers affected	TGCP005	Integer	% of total customers affected	
Asset rating	TGCP006	Series	YYYY; MVA	Forecast 10-year asset rating
Forecast Demand	TGCP007	Series	YYYY ; MVA	Forecast 10-year maximum demand, 10% and 50% POE
Voltage level	TGCP008	Integer	kV	Highest operational voltage level of the assets involved in the constraints
Maximum Load at risk	TGCP009	Series	YYYY; MVA	For all years constraint is forecast to occur
Energy at risk	TGCP010	Series	YYYY; MWh	For all years constraint is forecast to occur without recourse to detailed market modelling
Preferred network investment	TGCP011	Text		Brief description: Free text
Preferred network investment capital cost	TGCP012	Text	\$ (real)	
Preferred annual network investment operating cost	TGCP013	Integer	\$ (real)	Annual operating costs (including overheads, risk allowance and contingency allowance if included)
Preferred network investment cost accuracy	TGCP014	Integer	%	

Proposed timing	TGCP015	Integer	MM/YYYY	
Demand reduction required to defer investment by 1 year	TGCP016	Integer	MVA	
Annual Deferral Value	TGCP017	Integer	\$ (real)	Using an appropriate VCR as an input
Load transfer capability	TGCP018	Series	MVA	
Historic load trace	TGCP019	Series	HH:MM DD/MM/YYYY MVA	30 minute intervals; 3 years historic information; uncleaned
Historic plant rating	TGCP020	Series	HH:MM DD/MM/YYYY MVA	30 minute intervals, 3 years historic, uncleaned
Outages	TGCP021	Integer	YYYY; MVA	
Primary plant fault rating	TGCP022	Integer	MVA	
Economic cost of constraint	TGPC023	Float	\$/MWh	
VCR	TGPC024	Float	\$/MWh	

Transmission line segment

Field Name	Rule	Data Type	Units	Other information
Transmission Line ID	TGTL001	Text		
Constraint primary driver	TGTL002	Text		Choose one of: capacity; reliability; asset condition; performance; safety; environment; power quality; voltage
Location of constraint (start)	TGTL003	Integer	Decimal degrees	
Location of constraint (end)	TGTL004	Integer	Decimal degrees	
Asset ID	TGTL005	Text		
Asset rating	TGTL006	Series	YYYY; MVA	Forecast 10-year asset rating
Forecast Demand	TGTL007	Series	YYYY ; MVA	Forecast 10-year maximum demand, 10% and 50% POE
Voltage level	TGTL008	Integer	kV	Highest operational voltage

				level of the assets involved in the constraints
Maximum Load at risk	TGTL009	Series	YYYY; MW	For all years constraint is forecast to occur without recourse to detailed market modelling
Energy at risk	TGTL010	Series	YYYY; MWh	For all years constraint is forecast to occur
Preferred network investment	TGTL011	Text		Brief description: Free text
Preferred network investment capital cost	TGTL012	Text	\$ (real)	
Preferred annual network investment operating cost	TGTL013	Integer	\$ (real)	Annual operating costs (including overheads, risk allowance and contingency allowance if included)
Preferred network investment cost accuracy	TGTL014	Integer	%	
Proposed timing	TGTL015	Integer	MM/YYYY	
Demand reduction required to defer investment by1 year	TGTL016	Integer	MVA	
Annual Deferral Value	TGTL017	Integer	\$ (real)	Using an appropriate VCR as an input
Historic load trace	TGTL018	Series	HH:MM DD/MM/YYYY MVA	30 minute intervals; 3 years historic information; unclesaned
Historic asset rating	TGTL019	Series	HH:MM DD/MM/YYYY MVA	30 minute intervals, 3 years historic, unclesaned
Outages	TGTL020	Integer	MVA	
Economic cost of constraint	TGTL021	Float	\$/MWh	
VCR	TGTL022	Float	\$/MWh	

New Connections

Field Name	Rule	Data Type	Units	Other information
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Associated generator size	TGNC001	Integer	MW	
Associated generator location	TGNC002	Integer	Decimal degrees	
Associated generator type	TGNC003	Text		
Connection Status	TGNC004	Text		Enquiry or application
Associated load size	TGNC005	Integer	MW	
Associated load location	TGNC006	Integer	Decimal degrees	
Associated load duration curve	TGNC007	Series	HH:MM DD/MM/YYYY MVA	30 minute intervals; 10 years forecast
Connection Status	TGNC008	Text		Enquiry or application

B Summary of Submissions

	ENA	TransGrid	AEMO	AER Response
Transmission Connection Point				
Location - latitude and longitude	<p>The AER must take into account the trade-off between the goal of consistent and consolidated information to non-network providers with the heightened risks of security concerns (sabotage).</p> <p>ENA are aware that similar information is publicly available in the Network Opportunity Maps (NOM).</p>	<p>The collation of specific network asset data raises security concerns. Sufficient information already provided in network map in TAPR.</p>	<p>Clarity is required on type of transmission connection point, i.e. load and/or generation connection points. Connection point locations are available through AEMO's interactive Map.</p>	<p>Information already publicly available and provided by TNSPs through the NOM and AEMO's interactive map (both load and generation connection points).</p>
Customer number and type	<p>ENA considers this is of limited value. TNSPs must rely on DNSPs to provide this information, with DNSPs not obligated to do so. This would require a Rule change to obligate DNSPs to provide this information.</p> <p>DNSPs may have sector information in residential, commercial and industrial at a zone substation and distribution feeder level more readily. To task TNSPs with combining these data will be time consuming, especially in meshed networks.</p> <p>ENA understands that a customer class breakdown was originally proposed for the DAPR System limitations template, but</p>	<p>This information is unlikely to be useful to interested parties.</p> <p>TNSPs must rely on DNSPs to provide this information – they are not obligated. This would require Rule change to oblige DNSPs to provide this information to TNSPs.</p>	<p>Clarity is required on whether total number of customers that are connected by industry, commercial residential is in reference to load customers.</p>	<p>Non-network businesses have previously indicated to the AER that they require this information to identify size of potential opportunity. DNSPs now provide this information in their DAPR guideline/System limitations template.</p>

was not pursued.

<p>Load forecast: 10% POE 50% POE</p> <p>Forecast daily demand profile</p>	<p>Similar information is provided in TAPRs in MW. ENA members have identified that this is similar to requirements as part of meeting Schedule 5.7, but going beyond, in seeking multiple probability of exceedances (POEs) and MVA information.</p> <p>There also appears to be a need for willing collaboration between TNSPs and DNSPs in obtaining some of this information.</p> <p>To create forecast daily demand profiles appropriate for publication would involve significant work. These profiles would need to include summer and winter air-conditioning load, non-weather dependant load growth (which could be positive or negative), roof-top PV, batteries, electric vehicles (EVs) and customer behavioural changes on a half hourly basis.</p> <p>Sample historical traces could be a simpler option.</p>	<p>TransGrid already provides this in MW and MVA. This would rely on information from DNSPs to calculate the MVA (see point above).</p> <p>This is granular information best provided by DNSPs. TNSPs rely on DNSPs to provide load profile information, and it has not been provided when requested in the past.</p>	<p>Clarity is required on 'forecast daily demand profile'. This information represents a significant amount of data when considering the number of load transmission connection points in the NEM and a daily profile for each over the year (that is for 365 days). AEMO suggest that publishing profiles of historical maximum and minimum demand days for each connection point. These profiles can be used by stakeholders to forecast their own connection point daily profiles by either using their own forecast or using AEMO's or the DNSPs' forecasts.</p> <p>AEMO publishes Victorian connection point forecasts separately from the TAPR. Clarity is required on whether the TAPR can reference this document to avoid duplication.</p>	<p>Agreed. Forecast daily load profile will not be requested. The historic load trace will assist non-network providers to develop representative forecast load profiles.</p>
<p>Historic load trace</p>	<p>This is not likely to be that useful. It is generally backward looking, and ENA understands that it is already publicly available through AEMO.</p> <p>If it is pursued, there will be an express need for significant qualifications, (e.g. connection/retirement of generators can radically change annual flows) and should</p>	<p>This information is not useful for planning purposes as it looks backward not forward.</p> <p>This is already available at a transmission level from AEMO's Operations and Planning Data</p>		<p>Historical information is used by all NSPs to forecast load growth and for network planning. We believe that this information should be published and can readily be published by the</p>

the data be deemed non-confidential, such data may not be outage corrected, which to undertake properly would be a significant labour intensive burden.

Management System (OPDMS), and it would not be efficient to replicate data in the TAPR.

TNSPs.

<p>Historic primary plant ratings</p>	<p>Such information could be useful to non-network providers. However, there are legitimate concerns over the amount of effort involved in, and eventual benefit from, providing more detail.</p> <p>AEMO already publishes current ratings for both (operational) transmission line and transformers, and this information provides up to date network ratings.</p>	<p>This information is not useful for planning purposes as it looks backward, not forward. Primary plant ratings at a transmission level are already published by AEMO on their public website and it would not be efficient to replicate the data in the TAPR.</p>	<p>The AER should clarify whether this information is for all primary plant at every transmission connection point. It should also clarify the benefit to stakeholders on having all historic primary plant information in the TAPR, including disconnections, circuit breaker ratings and age. AEMO suggests that publishing major components would be of more value to stakeholders at connection points where network limitations have been identified. AEMO also notes that in Victoria, asset information sits with the relevant asset owner. Therefore, the TAPR guidelines/NER will need to state that requirements for this type of information should be provided to AEMO from each declared transmission system operator (DTSO).</p>	<p>Since there are not many transmission connection points and given this information is already published, it will not be unreasonable for TNSPs to publish in the requested format.</p> <p>Even if the TNSP is not the owner, it will still have the information readily available.</p>
<p>Value of customer reliability (VCR)</p>	<p>This information only appears relevant to areas of potential network constraints. ENA members rely on VCR estimates from other organisations, including AEMO and IPART. It is not apparent that such information would be in a NSP's tool- kit.</p> <p>EBA notes a pending Rule change</p>	<p>This information is only relevant to areas of potential network constraints.</p> <p>TransGrid uses VCR estimates from other organisations, including</p>	<p>Clarity is required on whether this information is to be requested for every connection point. AEMO suggest that publishing VCRs at locations where a limitation has been identified would provide more value to stakeholders rather than for every connection point.</p>	<p>Noted. However most planning criteria still references the VCR, therefore it is likely that this information is used by the TNSPs in some manner to inform their</p>

proposal submitted by the COAG Energy Council to the AEMC for the AER to establish VCRs.

IPART and AEMO.

TransGrid notes that there is a current Rule change request from COAG for the AER to publish VCR in future, and it would not be efficient to replicate data in the TAPR.

planning decisions.

Outages

This information is already provided to the AER under its service target performance incentive scheme (STPIS) requirements.

TNSPs should only be required to include outages on their transmission network, as TNSPs do not have information on all the distribution outages. TNSPs may only be informed of distribution planned outages when the impact is expected to have an effect on their transmission network.

This information is only relevant to areas of potential network constraints.

TransGrid notes that this information is already provided to the AER in relation to STPIS requirements.

Request clarity on whether this information is for planned and/or unplanned outages, as well as how the AER defines a material impact to the market. AEMO suggests that more value would be provided to stakeholders by publishing unplanned outages that had customer and material market impacts. In Victoria, outage information sits with the relevant asset owner. Therefore, the TAPR guidelines/NER will need to state that any requirements for this information should be provided to AEMO from each DTSO.

We note these submissions and clarify that information relevant to only unplanned outages is requested as it would be more useful for stakeholders.

Primary plant asset age

This information is not useful of itself. Age is one of a number of indicators of asset condition/serviceability. It is not as important as the estimated remaining life (noting that this would be a significant undertaking itself). For most TNSPs asset age alone does not form the basis for

This information is not useful in the planning process, as planning is not undertaken based on age. TransGrid already provides a range of information on asset age as part of the

We have removed this requirement.

investment decisions.

The AER's repex rule change proposal means that repex will now be included in the TAPR. This will provide information to non-network service providers and other stakeholders on upcoming asset replacements.

regulatory information notice.

Primary plant fault rating

It is not clear why this would be useful at this stage for non-network service providers. A number of members provide either the lowest fault minimum primary plant rating at a substation level or the lowest fault rating of circuit breakers at each existing connection point in their TAPRs.

TransGrid shares this information on a project by project basis. Publishing this information in the TAPR is unlikely to provide any value to a wider audience.

We have clarified that this relates to fault current level. This is consistent with AEMO's recommendation that TNSPs publish system strength information in TAPRs.

Primary plant reactive capability

It is not clear why this would be useful at this stage for non-network service providers.

TransGrid shares this information on a project by project basis. Publishing this information in the TAPR is unlikely to provide any value to a wider audience.

We have removed this requirement.

Transmission Line

Line ID

This is currently provided in the network map in either the NOM or TAPRs.

This information is already provided in the network map, which is an existing requirement of the TAPR.

We note that this information is already published. It will not be unreasonable for TNSPs to publish this in the requested format.

Location: latitude and longitude	<p>The ENA is mindful of security concerns, the NOM provides sufficient approximate information.</p>	<p>The collation of specific network asset data raises security concerns. Sufficient information is already provided in network map in TAPRs.</p>	<p>This information is already publicly available and provided by TNSPs through the NOM and AEMO's interactive map, and therefore should not raise security concerns.</p>
Conductor type, rating, year of installation	<p>The ENA is unclear if this information would be useful. The conductor type is only one factor in the rating of a feeder, and ratings information is already published via AEMO's operational data portal.</p> <p>Potentially, the overall rating of the transmission circuit is sufficient. The provision of ratings under certain nominated conditions would come with qualifications that the actual applied rating can change dynamically depending on operating conditions (e.g. weather, current loading, etc.).</p>	<p>Transmission line ratings are already publicly available. AEMO publishes this information on its website (unlike DNSPs), and it would not be efficient to replicate data in the TAPR. Conductor type and year of installation provides a level of detail that is not required.</p>	<p>We note that this information is already published. Therefore, it will not be unreasonable for TNSPs to publish in the requested format.</p>
Historic load trace	<p>This information is not very useful, noting that this will show power flows, not load. Also, AEMO already provides this data.</p> <p>It could be possible to extend provision of NOM data to cover line flows (not load). However, this information would need to be heavily caveated (e.g. connection or retirement of generators can radically change flows from one year to the next). If</p>	<p>This information is not useful for planning purposes as it looks backward not forward.</p> <p>In most cases, transmission line flows will not reflect specific loads, but rather power flows between different</p>	<p>Non-network businesses have indicated to the AER in the past that they require this information to identify size of potential opportunity.</p>

the data is not confidential, it could be provided at a significant resource cost, particularly if it needs to be outage corrected.

Historical data on transmission lines would be dependent on the historical generation (energy) market, which is currently transitioning.

parts of the network. This is already available from AEMO's OPDMS system, and it would not be efficient to replicate data in the TAPR.

Emerging Limitations

<p>Limitation location</p>	<p>This information is already available in the body of the TAPR under the relevant sections. In the DAPR, this is provided as a table due to the number of limitations.</p> <p>The below information is considered as part of the investment assessment process and is either provided already, or can be incorporated into the TAPR relatively easily.</p> <p>It should also be noted that investments are also driven by factors other than reliability (e.g. safety and environmental factors, market benefits, etc.).</p>	<p>This information is considered as part of the investment assessment process and is either provided already, or can be incorporated into the TAPR with relative ease.</p> <p>Note: investments are also driven by other factors other than reliability for example safety and environmental factors and market benefits.</p>	<p>AEMO already publishes this information in its VAPR. Clarity is required on the level of detail requested for consistency across all TAPRs (e.g. by connection points impacted, equipment that is constrained, etc.).</p>	<p>We note these submissions and clarify that the level of detail is requested for consistency across all TAPRs. Given this type of information is already published, it will not be unreasonable for TNSPs to publish this information in the requested format.</p>
<p>Maximum load at risk per year</p>	<p>Already provided, where relevant. However, it would be beneficial for the AER to clarify what time-period this is required to cover. Is it assumed over the typical planning period (minimum 10 years) or not?</p>		<p>This is only relevant for constraints caused by increasing load, which is unlikely to be the case going forward. AEMO requests the AER clarify that this information is only required for those constraints caused by increasing demand.</p>	
<p>Hours of load</p>	<p>Already provided to some degree as part of</p>			

at risk per annum and on peak day	Schedule 5.7.	
Expected unserved energy	Already provided, where relevant as part of Schedule 5.7.	
Economic cost of constraint	ENA notes that investments are also driven by other factors e.g. safety and environmental factors. The AER should clarify whether it is seeking NSPs to quantify all drivers as costs.	
Preferred network solution	This information is already provided, but will not necessarily have been provided in all cases.	Identifying a preferred network solution in the TAPR suggest that the TNSP is required to pre-empt a RIT-T outcome. This does not align with the objective of the TAPR. AEMO suggests that it would be more beneficial for stakeholders to provide this information during the RIT-T process where a network need has been identified.
Proposed timing	This information is already provided, but will not necessarily have been provided in all cases.	It is unclear whether proposed timings refers to the timing of the forecast constraint or the timing of the preferred network solution. If this refers to the preferred network solution, then this information would be better suited to the RIT-T process.