

RESPONSE #4758 SUBMITTED ON 05/21/2021 05:12:25 PM

Tranche two regulations issues paper consultation submission form

Your details

Submission type	Organisation
If Other, please describe	No answer given
Author name	Patrick Creaghan
Organisation	ATCO
Author title	Managing Director and Chief Operating Officer
Phone	No answer given
Email	
Stakeholder group	Generation or storage infrastructure provider
If Other, please describe	No answer given

Questions**Chapter 4 – Energy Security Target**

Question 1: Should the Energy Security Target Monitor define the method to determine the derating factor or should the method be defined in the regulations? If not by the derating factor, how else should the regulations address the probabilistic nature of semi-scheduled generators in the context of the deterministic Energy Security Target?	No answer given
Question 2: Should the regulations prescribe any other matters for inclusion in the Energy Security Target Monitor's report? If so, what are they?	<p>An additional matter that should be included in the report is the minimum operational (grid) demand threshold and an assessment of whether there are operational challenges for network stability and reliability, in particular voltage, system strength and inertia during low or negative demand periods.</p> <p>The increasing adoption of renewable energy and rapid penetration of solar PV has seen a significant and sharp drop in demand from the grid during the middle of the day. At the same time the exit of the coal fleet will reduce the amount of systems strength and inertia available to the grid during these low demand or even negative demand periods. The Energy Security Board has indicated in its most recent paper, Post 2025 Market Design Options – A</p>

paper for consultation Part A, that the ability to balance the system under falling minimum demand is now a growing challenge, particularly in states with high penetration of solar resources.

While the percentage of renewable energy penetration in NSW as a proportion of generation is lower than other States, it can only be expected that this proportion will increase in the future with the retirement of coal generation and technology improvements. The Energy Security Board has already identified falling minimum demand as an issue in South Australia, Queensland and Victoria.

Given the objective of the Energy Security Target as a signal to energy market participants, changes in minimum demand may require market incentives for investment in dynamic load services, such as pumped hydro or hydrogen production, that can provide demand response and use energy at the times that are most valued.

Chapter 5 – Electricity Infrastructure Investment Safeguard

Question 3: To what extent are the requirements for carrying out competitive tenders of Long Term Energy Service agreements appropriate? Are there any other requirements that should be considered?

The introduction of Long Term Energy Service Agreements has been a key factor in providing ATCO with investment certainty in the Central West Pumped Hydro project and we are pleased to see the progress to develop tendering principles. Given the development lead time for, and significant cost of, pumped storage projects, clarity on the tender framework is urgently needed to provide investors the confidence to continue investing in early stage development.

The principles for the Consumer Trustee to carry out competitive tenders for Long Term Energy Service Agreements appear appropriate from a firm capacity perspective, but do not appear to encourage provision of essential system services that are currently provided by the coal fleet and which will need to be replaced post retirement of the coal fleet.

Additionally, the tender process presents an opportunity for the NSW Government to consider the unique attributes of different generation technology and incentivise preferred technology to create an optimal mix of technology to best address future electricity needs. For example, the high upfront capital cost, lengthy developmental processes and long asset life of pumped hydro projects could be acknowledged in the tender process, as the technology offers significant economic, social and environment benefits once developed. The need for essential system services is acknowledged in the proposed tender principles and should be explicitly considered in the Consumer Trustee's assessment of tender responses. In particular, voltage stability and system strength should be requirements as part of the need for essential system services. System security services that can be provided by pumped hydro and should therefore be expressly considered when allocating LTSEAs include:

- Spinning Reserve (Synchronous Condenser Operation)
- Black Start Generation
- Automatic Generation Control
- Voltage and Power Factor Correction
- Frequency regulation and load following
- Bulk Energy Storage on daily cycles
- Intermittent operation
- Immediate pumping response
- Immediate generation response

Question 4: Do you agree with the matters the Consumer Trustee must take into account when preparing the Infrastructure Investment Objectives Report? Are there any other matters that should be taken into account?

ATCO agrees with the matters identified to be taken into account by the Consumer Trustee in preparing the Infrastructure Investment Objectives Report. In particular, the need for essential system services is recognised and will influence the timeliness and mix of investments. Pumped hydro can enhance power system reliability and reduce the scale of transmission investment by affecting thermal limits, voltage stability and system strength.

Question 5: In what circumstances should the Consumer Trustee prefer long duration storage over firming infrastructure to meet the reliability standard?

Long-duration storage should be preferred in the circumstances, where it addresses thermal limits, voltage stability and system strength, not just the reliability standard. The unique characteristics of pumped hydro, as a specific type of firming infrastructure needs special consideration. The provision of long duration storage in meeting the reliability standard and providing system security services include specific advantages:

- Provision and storage of over 8 hours of energy is crucially important in a transitioning energy market. This long duration storage is needed to address reliability issues including fuel security and weather fronts. It is relatively unaffected by extreme weather events and can provide consistency during extreme ambient temperatures affecting generation availability.
- Improves power system reliability by providing dispatchable generation capability to assist in meeting peak power demands including when no Variable Renewable Energy (VRE) generation is available
- Provides dispatchable energy storage, synchronous inertia and fast frequency response over a significant lifetime (>50 years), responding to variations in supply and demand within minutes, with no degradation in efficiency or storage capacity over the asset life to support the intermittent and variable dispatch of VRE generation
- Storage capability complements the intermittent nature of wind and solar generation by shifting energy from periods of high VRE generation to periods of low VRE when additional supply may be required
- Improves network stability and reliability by providing a source of demand during periods of peak VRE generation
- Lower carbon footprint than other thermal based firming infrastructure

Furthermore, Australia's hydrogen industry is at the cusp of large scale commercial production and as the cost competitiveness of hydrogen against alternate fuels improves, opportunities for it to be utilised for long duration storage and firming are possible. This clean fuel has the potential to play a major role in storage as well as a fuel for generation.

Chapter 6 – Classification of Renewable Energy Zone (REZ) network infrastructure

Question 6: Are there any other considerations that should be taken into account in classifying REZ network infrastructure in regulations, including the need for, and scope of, sub-classifications?

There is a need for pumped hydro to be defined in regulations, as part of the types of network infrastructure impacting on the Renewable Energy Zone (REZ) because pumped hydro could be inside and outside the REZ boundaries.

ATCO's Central West Pumped Hydro project will support increased utilisation of the REZ by acting as both a source of demand when the REZ has high generation and a source of supply when the VRE is low. This is a very significant stability benefit for the system and should be compensated for in the framework, but should not be expected to contribute to the costs of the REZ infrastructure upfront.

Question 7: What types of network infrastructure could be subject to economic regulation under Part 5 of the EII Act?

No answer given

Supporting information

If you have additional information you would like to provide to support your views, please provide it here

No answer given

If you have additional documents to provide to support your views, please upload them here

ATCO Response to NSW Tranche 2 Regulations FINAL.pdf

Confidentiality and submission publication preferences

Would you like all or part of your submission to be confidential? **No**

Would you like your submission to be anonymous and these personal details redacted? **No**

Attached Files



ATCO Response to NSW Tranche 2 Regulations FINAL.pdf

<https://nswdpietfaforms.net/uploads/get/efa08f4181a82ba5e9f71bb840b935ee-ATCOResponsetoNSWTranche2RegulationsFINAL.pdf>
(<https://nswdpietfaforms.net/uploads/get/efa08f4181a82ba5e9f71bb840b935ee-ATCOResponsetoNSWTranche2RegulationsFINAL.pdf>)

21 May 2021

Ms Kate Norris
Acting Director Energy Data Analytics and Roadmap Implementation
NSW Department of Planning, Industry and Environment
Locked Bag 5022
PARRAMATTA NSW 2124
via email Electricity.Roadmap@dpie.nsw.gov.au

Dear Ms Norris

Re: ATCO Tranche Two Issues Paper Submission

Thank you for the opportunity to respond to the Tranche Two Issues Paper on development of regulations to support the Electricity Infrastructure Investment Act 2020 published in April 2021. This submission outlines ATCO's response to selected questions in the paper for stakeholder input.

Summary

ATCO considers that the Tranche Two regulations are an opportunity to:

- Identify minimum demand to provide market signals to support investment in long duration storage technology, such as pumped hydro and hydrogen
- Define long duration storage and acknowledge the benefits to essential system services and security
- Preference technologies in the LTESA tender process that will support essential system services, such as pumped hydro, and contribute to development of the optimal technology mix

ATCO makes this submission from the perspective of a new investor to the NSW energy market seeking certainty to progress potential further investments. ATCO acquired an interest in the 325MW pumped storage hydropower facility (Central West Pumped Hydro) located in Yetholme near Bathurst at the beginning of this year. Clarity in the regulatory policy framework is essential as we complete our analysis of the project. One of the key issues impacting on the project has been the access to water and resolution of this matter is needed for progress.

Our responses to selected questions are detailed below.

Question 2 - Should the regulations prescribe any other matters for inclusion in the Energy Security Target Monitor's report? If so, what are they?

An additional matter that should be included in the report is the minimum operational (grid) demand threshold and an assessment of whether there are operational challenges for network stability and reliability, in particular voltage, system strength and inertia during low or negative demand periods.

The increasing adoption of renewable energy and rapid penetration of solar PV has seen a significant and sharp drop in demand from the grid during the middle of the day. At the same time the exit of the coal fleet will reduce the amount of systems strength and inertia available to the grid during

these low demand or even negative demand periods. The Energy Security Board has indicated in its most recent paper, *Post 2025 Market Design Options – A paper for consultation Part A*, that the ability to balance the system under falling minimum demand is now a growing challenge, particularly in states with high penetration of solar resources.

While the percentage of renewable energy penetration in NSW as a proportion of generation is lower than other States¹, it can only be expected that this proportion will increase in the future with the retirement of coal generation and technology improvements. The Energy Security Board has already identified falling minimum demand as an issue in South Australia, Queensland and Victoria.

Given the objective of the Energy Security Target as a signal to energy market participants, changes in minimum demand may require market incentives for investment in dynamic load services, such as pumped hydro or hydrogen production, that can provide demand response and use energy at the times that are most valued.

Question 3 – To what extent are the requirements for carrying out competitive tenders of LTSEAs appropriate? Should any other requirements, if any, be taken into account?

The introduction of Long Term Energy Service Agreements has been a key factor in providing ATCO with investment certainty in the Central West Pumped Hydro project and we are pleased to see the progress to develop tendering principles. Given the development lead time for, and significant cost of, pumped storage projects, clarity on the tender framework is urgently needed to provide investors the confidence to continue investing in early stage development.

The principles for the Consumer Trustee to carry out competitive tenders for Long Term Energy Service Agreements appear appropriate from a firm capacity perspective, but do not appear to encourage provision of essential system services that are currently provided by the coal fleet and which will need to be replaced post retirement of the coal fleet.

Additionally, the tender process presents an opportunity for the NSW Government to consider the unique attributes of different generation technology and incentivise preferred technology to create an optimal mix of technology to best address future electricity needs. For example, the high upfront capital cost, lengthy developmental processes and long asset life of pumped hydro projects could be acknowledged in the tender process, as the technology offers significant economic, social and environment benefits once developed.

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¹ Clean Energy Australia Report 2021, Clean Energy Council, p10

- Immediate pumping response
- Immediate generation response

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Question 6 – Are there any other considerations that should be taken into account in classifying REZ network infrastructure in regulations, including the need for, and scope of sub-classifications?

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ATCO's Central West Pumped Hydro project will support increased utilisation of the REZ by acting as both a source of demand when the REZ has high generation and a source of supply when the VRE is low. This is a very significant stability benefit for the system and should be compensated for in the framework, but should not be expected to contribute to the costs of the REZ infrastructure upfront.

About ATCO

Established in Canada in 1947 and now a \$22 billion global company, ATCO has a long history of partnering with communities and indigenous groups, energising industries, and delivering customer focussed infrastructure solutions.

With almost 60 years' experience in Australia - having entered the market in 1961 - ATCO understands the Australian environment and is a trusted, long-term partner of many large and respected Australian companies.

Leveraging a 70+ year legacy of power generation, transmission and distribution networks operation and maintenance in Canada, ATCO has been providing gas-fired power generation in Australia for more than 20 years and is actively investigating investments across the entire energy value chain, including renewable generation, transmission, distribution and storage infrastructure for the national electricity market. ATCO is eager to apply its international expertise and experience in electricity, natural gas, water, storage and structures to its continued operations across Australia.

Experienced in building, owning and operating pipeline infrastructure globally, ATCO has successfully managed the Western Australian natural gas distribution network since 2011, and will apply its global capability and know-how to expand into solutions across transmission, storage and processing. In mid-2020, ATCO was selected, as a partner to rebuild Puerto Rico's electricity system; with a plan to modernise and operate the system for the next 15 years.

ATCO has invested in alternative and renewable energy solutions for 30 years. ATCO will continue to respond to disruption in the energy sector through investing in a range of projects that utilise new technologies and business models to provide energy solutions for a low carbon future. Activities in this area include renewable generation, microgrids, storage and hydrogen.

ATCO is a global leader in providing modular solutions to the community; from regional mining developments through to urban infrastructure development and provides a diverse range of services and products throughout various markets in Australia.

If you have any questions or would like to discuss any of these issues further please contact me or Ben Bolot, Executive General Manager Business Development on [REDACTED].

Yours sincerely



J.D. Patrick Creaghan
Managing Director & Chief Operating Officer