

Stakeholder Comment Matrix



Proposed New ISO rule –Section 206.1, *Qualification of Capacity*

Period of Comment:	October 26, 2018	through	November 14, 2018	Contact:	Vincent Morales, Analyst
Comments From:	Pembina Institute			Phone:	403-284-6613 x117
Date [yyyy/mm/dd]:	2018/11/14			Email:	vincentm@pembina.org

Please include any suggestions for alternative rule wording and accompanying rationale in the table below. Cut and paste the existing rule wording into column one below and track in your changes.

Blackline of Suggested Rule Wording	Rationale
Qualification of an Asset for the Capacity Market 6(1) The ISO must, based on the application provided pursuant to subsection 2, be satisfied that: [...] (e) the asset is not energy efficiency;	
Qualification of an Asset for the Capacity Market 6(1) The ISO must, based on the application provided pursuant to subsection 2, be satisfied that: [...] (h) in the case of an energy storage facility, is or will be capable of maintaining energy production at the estimated uniform capacity value for the energy storage facility for a minimum of 4 hours;	

Blackline of Suggested Rule Wording	Rationale

Please provide your comments on the following (as set out in AUC Rule 017 s. 13(b-j)):

Item #		Stakeholder comments
1	whether you agree that Section 206.1, <i>Qualification of Capacity</i> relates to the capacity market and why or why not	<p>With respect to the energy efficiency exclusion in section 6(1)(e) – energy efficiency can provide capacity and therefore should be allowed to participate in the capacity market.</p> <p>With respect to the energy storage requirement in section 6(1)(h) - energy storage facilities that can supply capacity for less than four hours are still providing valuable capacity to the market and their shorter production periods can be valued accordingly. For example, an energy storage facility providing one hour of capacity would provide a quarter of the value of a storage facility providing four hours of capacity.</p> <p>For items 1-10, please also see</p> <ul style="list-style-type: none"> • part IV.B (paras. 92-101) of the accompanying Nov. 2 submission to the AUC, with respect to Pembina’s proposed change to section 6(1)(e) (energy efficiency exclusion). • part IV.C (paras. 102-107) of the accompanying Nov. 2 submission to the AUC, with respect to Pembina’s proposed change to section 6(1)(h) (pre-qualification requirement for energy storage facilities)
2	whether you agree that Section 206.1, <i>Qualification of Capacity</i> should or should not be in effect for a fixed term and why or why not	
3	whether you understand and agree with the objective or purpose of Section 206.1, <i>Qualification of Capacity</i> and whether, in your view, Section 206.1, <i>Qualification of Capacity</i> meets the objective or purpose	
4	how, in your view, Section 206.1, <i>Qualification of Capacity</i> affects the performance of the capacity market and the electricity market	
5	your views on any analysis conducted or commissioned by the AESO supporting Section 206.1, <i>Qualification of Capacity</i>	

Item #		Stakeholder comments
6	whether you agree with Section 206.1, <i>Qualification of Capacity</i> taken together with all ISO rules and in light of the principle of a fair, efficient and openly competitive market	
7	whether you would suggest any alternatives to Section 206.1, <i>Qualification of Capacity</i>	
8	whether you agree that the proposed provisional rule supports ensuring a reliable supply of electricity at a reasonable cost to customers and why or why not	
9	whether you agree that the proposed provisional rule supports the public interest and why or why not	
10	whether you have any additional comments	

Proposed New ISO rule –Section 206.6, *Base Auction and Rebalancing Auction*

Period of Comment:	October 26, 2018	through	November 14, 2018	Contact:	Vincent Morales, Analyst
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Please include any suggestions for alternative rule wording and accompanying rationale in the table below. Cut and paste the existing rule wording into column one below and track in your changes.

Blackline of Suggested Rule Wording	Rationale
Base Auction Timeline 2(1) The ISO must conclude a base auction no later than 36 <u>12</u> months prior to the start of the obligation period.	

Blackline of Suggested Rule Wording	Rationale

Please provide your comments on the following (as set out in AUC Rule 017 s. 13(b-j)):

Item #		Stakeholder comments
1	whether you agree that Section 206.6, <i>Base Auction and Rebalancing Auction</i> relates to the capacity market and why or why not	<p>The longer the period between the base auction and the start of the obligation period, the higher the risk of over-procurement. A longer period also limits the ability to correct the trajectory at the following auctions. The complexity of load forecasting has consistently led the AESO to overestimate the future growth of the Alberta Internal Load. Source: Andrew Leach, <i>AESO Outlook Forecasts of Alberta Internal Load</i>, 2018 (https://pbs.twimg.com/media/DFiKFfSWsAEFfqc.jpg).</p> <p>For items 1-10, please see also part IV.D (paras. 108-114) of the accompanying Nov. 2 submission.</p>
2	whether you agree that Section 206.6, <i>Base Auction and Rebalancing Auction</i> should or should not be in effect for a fixed term and why or why not	
3	whether you understand and agree with the objective or purpose of Section 206.6, <i>Base Auction and Rebalancing Auction</i> and whether, in your view, Section 206.6, <i>Base Auction and Rebalancing Auction</i> meets the objective or purpose	
4	how, in your view, Section 206.6, <i>Base Auction and Rebalancing Auction</i> affects the performance of the capacity market and the electricity market	
5	your views on any analysis conducted or commissioned by the AESO supporting Section 206.6, <i>Base Auction and Rebalancing Auction</i>	
6	whether you agree with Section 206.6, <i>Base Auction and Rebalancing Auction</i> taken together with all ISO rules and in light of the principle of a fair, efficient and openly competitive market	
7	whether you would suggest any alternatives to Section 206.6, <i>Base Auction and Rebalancing Auction</i>	

Item #		Stakeholder comments
8	whether you agree that the proposed provisional rule supports ensuring a reliable supply of electricity at a reasonable cost to customers and why or why not	
9	whether you agree that the proposed provisional rule supports the public interest and why or why not	
10	whether you have any additional comments	

Proposed New ISO Rules Terms and Definitions

Period of Comment: October 26, 2018 through November 14, 2018 **Contact:** Vincent Morales, Analyst
Comments From: Pembina Institute **Phone:** 403-269-3344 x117
Date [yyyy/mm/dd]: 2018/11/14 **Email:** vincentm@pembina.org

Please include any suggestions for alternative wording and accompanying rationale in the table below. Cut and paste the existing definition(s) into column one below and track in your changes.

Blackline of Suggested Definition Wording	Rationale
“obligation period” means a 126 -month period running continuously <u>either</u> from November 1 to October-April 31 of the following year <u>or from May 1 to October 31</u> .	Please see part IV.A (paras. 85-91) of the accompanying submission to the AUC.

BEFORE THE ALBERTA UTILITIES COMMISSION

AUC Proceeding 23757

AUC review of ISO capacity market rules

PEMBINA INSTITUTE'S SUBMISSION RE: REVIEW CRITERIA AND ISSUES FOR REVIEW

I. Introduction

1. This is a submission, on behalf of the Pembina Institute for Appropriate Development, addressing the three matters raised in the Commission's July 23, 2018 Notice (Exhibit #23757-X0002). Those matters are:
 - the components of the market design, and resulting ISO rules, that will and will not require exploration during the six-month provisional review process;
 - Dr. Cramton's report; and
 - the criteria for the Commission's provisional review of the AESO's rules.
2. The Pembina Institute is a non-profit, public interest organization whose central focus is on clean energy systems. In the electricity sector, Pembina's research and other work has focused on decarbonizing the grid. In Pembina's view, pursuing this goal not only serves provincial climate objectives, but also fosters a resilient, reliable, and affordable electricity supply. Decarbonizing the grid is especially important as more and more activities rely on electricity for energy. As other jurisdictions have shown, it is possible to have a large share of the electricity generation coming from non-emitting sources, if there is a diverse portfolio of generation, storage, and demand management resources. In most cases, this diverse portfolio is more cost-effective than one dominated by natural gas generation. A

diverse portfolio provides a range of valuable services to the grid, but many of these services remain unmonetized.¹

3. In Pembina’s view, a capacity market can assist grid decarbonization and diversification, only if:
 - it does not over-procure capacity, and
 - it provides fair and openly competitive access for all types of generation and demand-side capacity resources, rather than simply aiming to bolster revenues for gas generation.
4. Part II below addresses the criteria for the Commission’s “provisional” review, under section 20.22(5) of the Electric Utilities Act (EUA), of the AESO’s first set of capacity market rules. Part III addresses how the criteria (and onus and standard of review provisions) in that section relate to those for the Commission’s review of capacity market rules under section 20.21(2) of the act. Part IV lists the market design components (and accompanying rules) that, in Pembina’s view, warrant the Commission’s exploration in this proceeding. (Dr. Cramton’s report generally does not touch on these design components, so this submission does not discuss his report.)
5. For brevity, this submission uses “CM-1” to refer to the AESO’s first set of capacity market rules. This submission also uses “AESO” for all references in the EUA to the “Independent System Operator” (ISO) (except for direct quotes from the act).

II. Criteria for the Commission’s review of the CM-1 rules

6. Several parts of the EUA provide relevant review criteria. (For this discussion, the applicable “review” is the Commission’s provisional review under section 20.22. Part III below addresses the relationship between this provisional review and the Commission’s regular review under section 20.21.)

¹ For evidence of how decarbonizing the grid can contribute to reliability, see, e.g. Carl Linvill, Janine Migden-Ostrander, and Michael Hogan, *Clean Energy keeps the lights on* (Regulatory Assistance Project, 2014) (https://www.raonline.org/knowledge-center/clean-energy-keeps-the-lights-on/?sf_data=results&sf_s=Clean+energy+keeps+the+lights+on). For evidence of the cost-effectiveness of a diverse, low-carbon portfolio, see, e.g. Mark Dyson, Alex Engel, Jamil Farbes, *The Economics of Clean Energy Portfolios* (Rocky Mountain Institute, 2018) (<https://rmi.org/insight/the-economics-of-clean-energy-portfolios/>).

7. First, the Commission must ensure that the CM-1 rules serve the act’s specific purpose for the capacity market, and that the rules are consistent with the act’s definition of “capacity”.
8. Next, section 20.22(5)(a) allows the Commission to “provisionally approve” a CM-1 rule if the rule meets the criteria in paragraphs (i)-(iv) of that section. Several of these criteria are mirrored in the act’s statement of purposes (section 5) and in the act’s list of the AESO’s duties (section 17). These statements of purposes and duties, along with the legislative history of Bill 13, add still more evaluation criteria.
9. Section 20.22(5) also lists several pre-requisites for the Commission’s approval; these pre-requisites essentially provide additional review criteria.
10. These legislative criteria are discussed in part II.A below. Part II.B sets out several additional criteria that follow logically from, or as corollaries to, the legislative criteria.

A. The legislative criteria

The primary purpose of the capacity market and the definition of “capacity”

11. The Commission must review the CM-1 rules in light of the overall purpose of the capacity market, which is to obtain the “capacity” needed to meet the requirements of the “resource adequacy standard.”²
12. The act’s definition of “capacity” arguably provides another relevant criterion or, at least, an important guide for applying the criteria in section 20.22(5). Section 1(1)(d.2) of the act defines “capacity,” in the capacity market context, as the ability to “supply” electric energy “or reduce electric energy consumption”. Thus, the capacity market must enable both these types of “capacity”.

² Sections 17(1.01)(iii) and 41.44(1). Section 1(1)(ss) of the act defines the “resource adequacy standard” as that specified by the Energy Minister in regulations adopted under section 41.46 of the act. To date, the Energy Minister has adopted a resource adequacy standard by policy and not by regulation. See Alberta Energy, *Policy Direction for Alberta’s Capacity Market* (March 2018), 2nd unnumbered page (<https://www.energy.alberta.ca/AU/electricity/AboutElec/Documents/PolicyDirectionCapacity%20Market.pdf>). At this time, Pembina does not question the merits or legality of this standard.

The criteria in section 20.22(5)

13. As noted above, section 20.22(5)(a) provides for the Commission’s provisional approval of a CM-1 rule if the rule meets four sets of criteria (or seven criteria, in total), namely, if the rule
 - i. is not **technically deficient**,
 - ii. supports the **fair, efficient** and **openly competitive** operation of the capacity market,
 - iii. is in the **public interest**, [and]
 - iv. supports ensuring a **reliable supply** of electricity is available at **reasonable costs** to customers[.] (Emphases added.)

(The “public interest” criterion is discussed later in this part.)

14. In effect, the amount of electricity that constitutes a “reliable supply” is a function of the capacity market purpose stated above; namely, to provide the amount of capacity needed to meet the resource adequacy standard.
15. The act’s two-pronged definition of “capacity” provides a guide for the Commission’s consideration of the “fair, efficient and openly competitive” (FEOC) principle in paragraph (ii) above. For example, the capacity market must provide “fair” and “openly competitive” access to both generation and demand-side capacity resources.
16. Section 22.22(5) provides two other criteria for the Commission’s provisional approval of a CM-1 rule:
 - Under paragraph (a)(v), the rule must not conflict and be inconsistent with a capacity market regulation adopted by the Energy Minister, under section 41.46; and,
 - Under paragraph (b), the AESO must, in developing the CM-1 rule, comply with the Commission’s rules under section 20.9.

The AESO’s duties

17. The Commission must also consider whether the AESO, in developing the CM-1 rules, fulfilled its duties in section 17 of the EUA. As with the act’s list of purposes in section 5,

several of the AESO's section 17 duties echo, and therefore underscore the importance of, the review criteria in section 20.22(5)(a).³

18. Section 17(1.01)(ii) lists one other AESO duty in respect of the capacity market, which is to “assess the current and future energy needs of Alberta’s electricity customers in order to procure capacity to meet the requirements of the resource adequacy standard.” Thus, in reviewing the CM-1 rules, the Commission must consider whether the AESO conducted an adequate electricity needs assessment for calculating the amount of capacity to procure.

The act’s overall purposes, and other general purposes for the capacity market

19. The Commission must also ensure that the CM-1 rules are consistent with the EUA’s overall purposes, as stated in section 5 of the act. Therefore, those purposes also serve as criteria for the Commission’s review of the CM-1 rules.
20. Several of the act’s generic purposes are identical or nearly identical to several of the criteria in section 20.22(5)(a)(i)-(iv).⁴
21. In addition, Bill 13 added subsection (c.1) to section 5, relating specifically to the capacity market. The first purpose in this subsection is to provide for a capacity market that ensures a “reliable” electricity supply at “reasonable cost” to customers. Subsection (c.1) also calls for the development of rules to ensure that
 - the capacity market is “efficient” and based on “fair and open competition and is not distorted by unfair advantages” of market participants, and
 - the costs of procuring capacity are “reasonable” and distributed among customers “fairly” and so as to provide incentives for “economic efficiency”.⁵

³ Section 17(b) calls for the AESO to facilitate the operation of electricity markets in a manner that is “fair and open” and that gives “all market participants wishing to participate in those markets and to exchange electric energy a reasonable opportunity to do so”. Section 17(h) requires the AESO to direct the “safe, reliable and economic operation” of the grid. And section 17(1.01)(i) requires the AESO to establish and operate the capacity market in a manner that is “fair and open”.

⁴ Section 5(a) calls for an “efficient Alberta electric industry structure”; section 5(b) calls for a “competitive” power pool to enable an “efficient” electricity market based on “fair and open competition,” allowing parties to exchange electricity in the power pool on “non-discriminatory terms”; section 5(c) calls for rules enabling an “efficient” electricity market based on “fair and open competition” and not “distorted by unfair advantages”; and, section 5(h) aims to provide incentives for “efficiency”.

22. By referring to the same criteria or principles as those in section 20.22(5)(a) (and section 17), these section 5 purpose statements reinforce the importance of the criteria in section 20.22(5)(a).
23. This repetition of criteria (in sections 5, 20.22, and 17), is not surprising, because these criteria are central to deregulated energy markets. For example, the Alberta Court of Appeal has referred to the “critical role that competition is designed to play in the restructured electric energy industry” in Alberta.⁶ According to that court, “competition” is the
- touchstone running through all aspects of the legislative scheme governing the electrical industry now in effect in Alberta. Accordingly, in interpreting relevant legislation ... this core objective must necessarily inform and guide that analysis.⁷
24. In the legislative debates on Bill 13, the bill’s sponsor, co-sponsors and supporters referred repeatedly to competition as an important feature of the capacity market.⁸
25. And in response to opposition members’ concerns that the capacity market would not be subject to the overall FEOC principle, Hon. Dang—the bill’s co-sponsor—stated that the bill
- clearly brings the capacity market under fair, efficient, and openly competitive requirements, or FEOC, *and that’s clear throughout the act....* The government is

⁵ In introducing Bill 13 in the Legislature for second reading, Hon. McLean referred to these criteria, in the amendment to section 5, as “core principles of the capacity market”. Alberta Hansard, May 2, 2018, p. 746.

⁶ *ATCO Electric Limited v. Alberta (Energy and Utilities Board)*, 2004 ABCA 215 (CanLII), at para. 24.

⁷ *Ibid.* The AESO itself refers to “enabling broad competition” as a desirable feature of the capacity market. AESO, Comprehensive Market Design – Final Proposal (“CMD”), Section 1, p. 1 (www.aeso.ca/market/capacity-market-transition/comprehensive-market-design/). Similarly, Alberta Energy’s August, 2017 capacity market policy refers to “competitive forces,” and the FEOC principle more generally, as the foundational principles for the capacity market. Alberta Energy, *Powering Alberta’s Future – Policy Direction for Alberta’s Capacity Market Future* (“*Powering Alberta’s Future*”), pp. 3, 5, and 6 (<https://open.alberta.ca/publications/policy-direction-for-alberta-s-capacity-market-framework-powering-alberta-s-future>).

⁸ See, e.g., Alberta Hansard, May 2, 2018, p. 746 (Hon. McLean, noting that the capacity market “makes room for competition” and noting that the market’s “core principles” include operating the market in a way that is “openly competitive”) and p. 750 (Hon. Dang, noting that a capacity market “makes room for competition”); May 3, 2018, p. 810 (Hon. Schreiner, noting that a capacity market is a “welcome concept for competition”).

committed to FEOC, and the bill reflects that. *It's actually written into the bill throughout, in multiple places.*⁹

26. Section 5 lists two other overall purposes that are not mirrored in section 20.22(5)(a). One is to “continue a flexible framework” so that industry decisions about the need for and investment in electricity generation are guided by competitive market forces.¹⁰ The other is to “enable customers to choose from a range of services in the Alberta electric industry developed by a competitive market”.¹¹
27. The Commission arguably must keep these two purposes in mind when reviewing the CM-1 rules.
28. The legislative history of Bill 13 also refers to providing “sustainable” electricity, and promoting “innovation” and a “diverse” mix of capacity technologies, as among the key functions or benefits of a capacity market (in addition to ensuring reliability and affordability).¹² These three functions are arguably inherent in, or at least closely related to, at least three of the other criteria—efficiency, reliability, and reasonable cost—and, thus, provide still more bases for the Commission’s review of the CM-1 rules.

The “public interest”

29. As noted above, the “public interest” is one of the seven review criteria in section 20.22(5)(a). (It is also an over-arching standard for the Commissioners’ general exercise of their functions, as stated in section 6(1)(a) of the Alberta Utilities Commission Act, S.A. 2007, c. A-37.2.)
30. The legislative history of Bill 13 underscores the importance of this criterion for the Commission’s oversight of the AESO’s rules. Minister McLean, when introducing Bill 13 in the Legislature for second reading, noted that Bill 13 will “enhance public interest

⁹ Alberta Hansard, May 31, 2018, p. 1400 (emphasis added).

¹⁰ EUA s. 5(d). The AESO also recognizes the importance of flexibility. AESO, *Alberta’s Wholesale Electricity Market Transition Recommendation* (“Market Transition”) p. 4 (noting that a capacity market can “[m]aintain market incentives to preserve efficiency and flexibility”) (www.aeso.ca/market/capacity-market-transition/).

¹¹ EUA s. 5(e). Emphases added.

¹² For references to sustainability, see Alberta Hansard, May 2, 2018, pp. 746 (Hon. McLean, introducing Bill 13 for second reading) and p. 751 (Hon. Dang); May 3, 2018, p. 810 (Hon. Schreiner); June 7, 2018, p. 1575 (Hon. Schreiner).

oversight of the market rules development and approval process”. She also noted that the AESO “will need to satisfy the Commission ... [that t]he market rules are in the public interest....”¹³

31. By its plain meaning, the “public interest” is very broad. For starters, it implicitly subsumes all of the other criteria in section 20.22(5)(a) of the EUA, and provides for a balancing of those criteria if and when they are in conflict.
32. However, the public interest also subsumes all other relevant factors. The scope of relevant factors is itself broad, though not unlimited. As the Alberta Court of Appeal has explained, [g]iven the amorphous nature of the standard, the public interest will vary with the circumstances and the context in which it arises.... In addition, the shape and contour of the public interest standard is necessarily dependent on the legislative framework in effect.¹⁴
33. The relevant “circumstances and context” arguably include both the legislative and policy frameworks for the Commission’s public interest considerations. As relevant here, Alberta’s Climate Leadership Plan and related policies are chief among the relevant policies for the Commission’s public interest consideration of the CM-1 rules. One of the related policies is the Alberta Jobs Plan which notes that the transition from coal to renewable energy has an “important role to play in building a strong, diversified economy.”¹⁵
34. The legislative history of Bill 13 confirms the linkage between the capacity market and the province’s climate change and related policies. When introducing the bill for first reading, the Energy Minister referred to the capacity market as one of several changes to “continue

¹³ Alberta Hansard, May 2, 2018, p. 746.

¹⁴ *ATCO Electric Limited v. Alberta (Energy and Utilities Board)*, 2004 ABCA 215 para. 134. *Ibid.* at 141 (noting that the public interest is “redefined to comport with the context in which the interest arises....”).

¹⁵ *Alberta Jobs Plan – Building an Economy for the Future*, p. 8 (www.alberta.ca/documents/Alberta-Jobs-Plan-2016.pdf). That document estimates that achieving the 30% target for renewables by 2030 will bring in \$10.5 billion in new investment which in turn will create at least 7,200 new jobs for Albertans. *Ibid.*

moving forward with ... [a] transition” to a “low-carbon future”. She reiterated later that Bill 13 will help “prepare for a low-carbon future”.¹⁶

35. Similarly, the Alberta Government has made it clear that one of the purposes of transitioning to a capacity market is to “support Alberta’s transition from coal generation to renewable energy.”¹⁷
36. In its discussion of the “public interest” criterion, the AESO’s submission does not specifically refer to the province’s climate and related policies.¹⁸ However, the AESO has previously recognized the relevance of carbon policy in the design and implementation of a capacity market. This recognition was evident in the AESO’s 2016 report on electricity market transitions. This report noted at the outset that the energy-only market achieved its original objectives, but that “[m]ore recently ... an additional objective has emerged for the energy sector. Achieving a lower-carbon, sustainable electricity system is now policy.”¹⁹ In that report, the AESO stated that it is “playing a critical role in helping the government implement elements of the Climate Leadership Plan (CLP) related to electricity,” but that the climate plan’s key initiatives raise the question of “how Alberta’s current electricity market may need to evolve in order to support ... [the policy’s] new objectives.”²⁰ The report also lists, among “desired outcomes” for an energy market transition, to continue fulfilling “other key objectives (reliability, reasonable costs),” with “greater portions of energy consumed coming from low-carbon or renewable sources” and “under increased renewable energy targets or the incorporation of new technology supporting low carbon and low-emission electricity production.”²¹

¹⁶ Alberta Hansard, Apr. 19, 2018, p. 606 and May 30, 2018, p. 1322. See also *ibid.*, May 3, 2018, p. 810 (Hon. Schreiner, noting that Bill 13 is “about ... preparing for a low-carbon future”).

¹⁷ Government of Alberta, *Electricity capacity market* (www.alberta.ca/electricity-capacity-market.aspx).

¹⁸ AESO Submission, paras. 52-57. But see *ibid.* para. 57 (noting the AESO’s expectation that the Commission will apply the public interest criterion in light of the legislative scheme, and other legislative criteria, “as well as other factors that may be argued to be relevant to the public interest concept”).

¹⁹ Market Transition, p. 1.

²⁰ *Ibid.*, p. 8.

²¹ *Ibid.*, p. 21. See also *ibid.*, pp. 3 (noting that a capacity market will “enabl[e] the transition to a cleaner, lower-carbon electricity system over the coming years.”), 6 (in part 2.1.2, titled: “The shift to cleaner electricity systems,” noting that the “transition to a cleaner generation mix ... begins with jurisdictions evaluating and adapting their electricity structures to achieve more stringent environmental objectives and integrate new technologies and fuel types.”), and 21 (noting, as among “desired outcomes”: “Resiliency of market to environmental policy: Ability of market structure to continue to deliver other key objectives (reliability, reasonable costs) under changing, potentially more stringent environmental policies”).

37. Similarly, the AESO’s final comprehensive market design notes that the capacity market “will be consistent with the lower-carbon electricity system of the future.”²² While recognizing the relevance of carbon policy, the AESO’s reference to a “lower” carbon system understates the policy objective. In Pembina’s view, Alberta’s electricity system will need to have a very low carbon component, to help fulfill objectives for reducing greenhouse gases.
38. In short, the Commission cannot begin to think about whether the AESO’s capacity market design and rules are in the “public interest” without considering how they fit with the province’s objectives for reducing carbon emissions and diversifying the economy, by transitioning from carbon-based energy sources.
39. These objectives are principal “public interest” concerns, at present. However, Pembina agrees with the AESO that it is important to design the capacity market so that it is sufficiently flexible to address other key government policies as they arise. In its 2016 report, the AESO listed as among the “desired outcomes” of an energy market transition the “[a]bility to incorporate ‘social’ drivers: Electricity system or industry can be used to achieve other social objectives.”
40. In its 2016 report, the AESO surmised that a capacity market could provide more flexibility than an energy-only market to accommodate new government policies.²³ Pembina does not share the AESO’s view that a capacity market can provide *more* flexibility than an energy-only market. However, Pembina agrees with the AESO that the ability to provide flexibility is an important benchmark for assessing the capacity market’s design. Thus, in considering whether the CM-1 rules are in the public interest, the Commission should consider whether the rules achieve this desired flexibility.

²² CMD, Section 1, p. 1.

²³ Market Transition, pp. 22, 24 and 41 (stating that an energy-only market is the “least flexible in dealing with government policy adjustments” whereas a capacity market is “sufficiently robust to ensure reliability while delivering on existing policy objectives, and can accommodate future policy evolution”), p. 27 (stating that a capacity market “provides enough flexibility to respond to changing economic environments and makes it easier than ... [an energy-only market] to target specific social objectives by creating ‘carve-outs’ or specific criteria in the capacity market”).

41. In sum, the EUA—read as a whole and together with the legislative history of Bill 13—provides several criteria for the Commission’s review of the CM-1 rules. These criteria are summarized below:

- The amount of capacity the AESO intends to procure must ensure a reliable supply of electricity at reasonable costs to customers; in particular, the amount should be sufficient to meet the resource adequacy standard, and must be based on an assessment of Alberta’s current and future electricity needs.
- Because “capacity” consists of both generation and demand-reducing technologies, the capacity market should allow both sectors to participate on an equal footing.
- The capacity market should be fair, efficient and openly competitive, and in the public interest. The latter calls for alignment with the province’s objectives to transition to a low-carbon electricity system.
- The capacity market should be flexible and promote technology innovation, should enable consumers to access a range of services and diverse technologies, and should promote a sustainable energy system.
- The capacity market should not be technically deficient.
- The capacity market should satisfy regulations adopted under section 41.46 of the EUA.
- In developing the CM-1 rules, the AESO should have satisfied the Commission’s rules.

B. Corollaries to the legislative criteria

42. Several additional criteria follow as natural or logical corollaries to the legislative criteria identified above. (The criteria below are written as prescriptive or normative principles.)
- i. The capacity market should not result in an over-procurement of capacity.
 - ii. The construction of new generation should not be viewed as a proxy or benchmark for reliability.
 - iii. All resources that can contribute to capacity (reliability) should be allowed to participate in the capacity market on a non-discriminatory basis relative to other market participants.

- iv. The capacity market should minimize shifting long-term risks from investors to consumers.
 - v. The costs of the capacity market should be allocated to preserve the energy market signals.
 - vi. The capacity market should avoid undercutting the market signals provided by the province's carbon pricing system.
 - vii. The capacity market should avoid disincentivizing the renewables generation that the province aims to incentivize through the Renewable Electricity Program, and other renewables programs under the Climate Leadership Plan.
43. These additional criteria are closely related to each other, as well as to the legislative criteria discussed above. Viewed by itself, the “reliability” criterion has no upper limit on capacity procurement. However, the need to avoid over-procurement (criterion (i) above) is implicit in the “reasonable cost” and “efficiency” criteria. The AESO itself recognizes over-procurement as a “downside” risk.²⁴ Over-procurement may also jeopardize carbon reduction objectives by incentivizing the construction of unnecessary gas generation which in turn could reduce incentives for investment in renewables.
44. Criteria (ii) and (iii)—avoiding using new generation as a proxy for reliability, and non-discrimination among capacity resources—are implicit in the EUA’s broad definition of “capacity” (covering both supply-side and demand-side resources).
45. These two criteria are also implicit in the act’s reasonable cost and FEOC criteria. New generation may not be necessary and may not be the least costly and most efficient way to achieve reliability. Favoring new generation may also deter open competition among all possible sources of capacity; similarly, it may diminish consumers’ range of choices and discourage flexibility and technological innovation.
46. These criteria are also consistent with the AESO’s view that the capacity market should not be designed simply to encourage new generation, and should encourage a diverse range of

²⁴ In its 2016 Market Transition report (p. 19), the AESO noted, as a “disadvantage” of capacity markets, that “[f]orecasting error” may lead to over-procurement “resulting in higher costs than necessary for consumers for short periods of time (3-5 years).” See also *ibid.*, p. 27 (noting, as a “downside” of a capacity market as compared to an energy-only market, that “higher than necessary volumes of capacity may be purchased due to forecast error”). The report notes that this risk can be mitigated “somewhat” by holding rebalancing auctions close to the contract start period and by limiting the length of the contract period. *Ibid.*, p. 27. Pembina supports the AESO’s adoption of these two design components.

sources that can contribute to capacity. In its 2016 report, the AESO noted the need for investments in new firm generation “or equivalent but alternative sources of firm supply such as demand response, etc.” The AESO’s report also listed, as among the “desired outcomes”:

Compatibility with increased cogeneration, energy efficiency, micro and distributed generation: Ability of market structure to continue to deliver other key objectives (reliability, reasonable costs) while potentially supporting increased volumes of cogeneration, energy efficiency programs, and micro and distributed generation.²⁵

47. The AESO’s 2016 report also noted that “some technologies such as hydro, and emerging technologies such as storage and price-responsive load, might be able to participate in a capacity market, thus providing reliability certainty while allowing market participation and achieving environmental performance objectives.” Likewise, the report noted that a capacity market “would provide an opportunity for a wide range of industrial and commercial loads to earn capacity revenue by providing supply adequacy in the form of demand response.”²⁶
48. Criterion (iv) above—the capacity market should not reallocate long-term risks from investors to consumers—is consistent with the “reasonable costs” and “fairness” criteria in the EUA and with long-standing judicial perspectives on risk allocation in Alberta’s deregulated electricity market. For example, in *ATCO Electric v AEUB, 2004 ABCA* at paras. 155-56, the Alberta Court of Appeal noted that

risk is an integral part of competition. If there were no consequences flowing from bad business decisions, what would be the incentive to make good ones? Therefore, the fact that a utility is at risk for some loss, whether under a negotiated settlement or otherwise, is arguably very much in the public interest.... Restructuring was never intended to confer on utilities all the benefits of a restructured electric energy system and impose on consumers all the burdens. So in the end, a fair allocation of risk as

²⁵ Market Transition, p. 21.

²⁶ Market Transition, pp. 2, 21, 26 and 36.

between consumers and utilities not only strikes an appropriate balance amongst competing interests, it also promotes the overall public interest.”²⁷

49. Not surprisingly, the AESO’s 2016 report also uses this criterion. Under the heading “Reasonable cost to consumers,” the report lists as among the “desired outcomes”:

Does not fundamentally alter the market: Investment risks should primarily fall on generators; private investment should be encouraged.²⁸

50. Finally, criteria (vi) and (vii) are rooted in the province’s climate leadership and related low-carbon energy policies which, in turn, drive considerations of the “public interest.”

51. The AESO’s 2016 report recognizes these principles in its listing of the following “desired outcomes”:

- **Compatibility with carbon pricing:** Ability of market structure to continue to deliver other key objectives while not counteracting intended price signal from carbon pricing.
- **Compatibility with future expansion of renewable energy and new technology:** Ability of market structure to continue to deliver other key objectives (reliability, reasonable costs) under increased renewable energy targets or the incorporation of new technology supporting low carbon and low-emission electricity production.²⁹

²⁷ See also *FortisAlberta Inc. v. Alberta (Utilities Commission)*, 2015 ABCA 295, para. 132 (citing a “leading author on public utilities regulation” for the principle that “public utilities are protected against arbitrary action of commissions, but not from normal 'business hazards' or from the operation of 'economic forces' [fn omitted]. Nor must the principle of prudent cost recovery be an absolute guarantee against extraordinary events that are beyond the control of ratepayers or regulators.”). In the gas market context, the court explained that “[t]he Alberta Utilities are not running charities for the benefit of their ratepayers. But equally, Alberta ratepayers are not running charities for the benefit of the Alberta Utilities.” *ATCO Gas & Pipelines Ltd v. Alberta (Utilities Commission)*, 2014 ABCA 397, para 116.

²⁸ Market Transition, p. 22 (emphasis in original). Pembina agrees with this outcome except that it should apply not just to generators, but to all participants in the capacity market. See also AESO Submission, para. 32(h) (claiming that the market design provides for the “allocation of risk, primarily to investors”).

²⁹ *Ibid.*, p. 21.

III. The differences between the Commission’s review of the AESO’s capacity market rules under sections 20.21 and 20.22

52. The Commission’s July 23, 2018 notice requested the parties to address “the interpretation of Section 20.21(2) and Section 20.22(5) of the Electric Utilities Act and how the criteria listed in those sections may be understood to work together.”
53. Pembina agrees with the AESO that the Legislature intended to provide the same review criteria for the Commissions’ review of the AESO’s capacity market rules under section 20.21, as for the Commission’s review under section 20.22.³⁰ However, Pembina disagrees with the AESO’s position, based on the sections’ onus and standard of review provisions, that the Commission can forego conducting a “detailed and comprehensive” provisional review of the CM-1 rules.
54. Parts III.B and C below discuss these issues in more detail. To understand how the two sections’ review criteria (and burdens and standards of proof) work together, part III.A discusses how the sections’ two review processes relate to each other functionally. (This discussion essentially adds several details and functions to the concise summary in paragraphs 1-3 of the AESO’s Submission.)

A. The review functions under sections 20.21 and 20.22

55. Section 41.42 of the EUA provides a logical starting point for understanding this functional relationship. Section 41.42 is part of Part 2.2—titled “Capacity Market”—which was added to the EUA by Bill 13.
56. The core of this new part is section 41.42(1), which requires the AESO to “make rules establishing the capacity market and for the operation of the capacity market.” Under section 41.42(6), the AESO’s capacity market rules generally do not take effect unless they are approved by the Commission. (There is an exception to this requirement, in section 20.6, for “expedited” rules.) This requirement for Commission approval is consistent with section 20.2 of the act, which generally requires Commission approval for all AESO rules.

³⁰ Oct. 31, 2018 Letter from Keith F. Miller, Stikeman Elliott (“AESO Submission”), para. 37 (Ex. 23757-X0116).

57. Under section 20.22(4), once the AESO has filed its CM-1 rules, the Commission has six months to review the rules and decide whether to “provisionally approve” some or all of them (under the criteria in section 20.22(5)).
58. Under section 20.23(1), the Commission must then essentially re-review any CM-1 rule the Commission provisionally reviewed under section 20.22. The Commission must complete this second review within 24 months after the AESO originally filed the rule with the Commission. (In other words, the act sets an 18-month limit on the Commission’s re-review, following the six-month period for the Commission’s initial, provisional review.) And the Commission must conduct this re-review according to the review process set out in section 20.21.
59. In sum, section 20.22 provides for the Commission’s first, provisional review of the CM-1 rules, while section 20.21 is for the Commission’s re-review of those rules. In the Commission’s words, the 18-month re-review process (under section 20.21(2)) provides a “second judicious review” of the AESO’s capacity market rules.³¹
60. However, the section 20.21 review applies in two other circumstances. Under section 20.22(2), after the AESO files the CM-1 rules, the Commission “shall make an order setting out which of those rules, if any, it will consider for provisional approval under this section.” On its face, this section appears to give the Commission broad discretion to use section 20.21 to review all or some of the CM-1 rules in the first instance—that is, instead of provisionally reviewing them first under section 20.22.³²
61. And under section 20.22(4)(c), even when the Commission elects to review a CM-1 rule under the provisional approval process in subsection 20.22(2), the Commission may still decide, within six months, to change its mind and forego considering that rule under that review process. However, the Commission may choose this option for a rule only if it believes that the rule is “not essential for the establishment or operation” of the capacity market.
62. In sum, section 20.21 provides for

³¹ AUC, Ruling on request to extend the provisional capacity market rules process, p. 9 (Ex. 23757-X0098).

³² As quoted above, this section uses the non-discretionary word “shall,” but that term refers to the Commission’s issuance of an order indicating which review process the Commission decides to take; the word “shall” doesn’t limit the Commission’s discretion in choosing between these processes.

- the Commission’s re-review of the CM-1 rules, after the Commission provisionally reviews them under section 20.22, and
 - the Commission’s review of all or some of the CM-1 rules, in the first instance—that is, as an alternative to either starting or completing a provisional review under section 20.22.
63. Of course, section 20.21 also applies to the Commission’s review of any capacity market rules the AESO files, after the first set of rules.
- B. The criteria in sections 20.21(2) and 20.22(5)**
64. Section 20.21(2) starts by stating that the Commission “may approve an ISO rule . . . only if the Commission is satisfied” that the rule meets the criteria listed in that section. The section lists the same criteria, in the same order, as those in section 20.22(5)(a), but splits them up between paragraphs (a) and (b). Paragraph (a) lists the first three criteria (not technically deficient, FEOC, and public interest), as criteria for the Commission’s approval of an “ISO rule”. Paragraph (b) then lists the last two of the five sets of criteria (reliability at reasonable cost, and consistency with capacity market regulations) specifically for the Commission’s review of capacity market rules.
65. Section 20.21(2) then adds another criterion, in paragraph (c), that the AESO’s development of the filed rule complied with the Commission’s rules under section 20.9. As noted above, section 20.22(5)(b) has an identical criterion, for the Commission’s provisional review of a CM-1 rule.
66. What accounts for the Legislature’s differing drafting approaches between sections 20.21(2) and 20.22(5)? In Pembina’s view, the Legislature split up the five sets of criteria in section 20.21(2) because it intended the last two of the five sets to apply only to the Commission’s review of capacity market rules. By contrast, the Legislature meant the first three of the five sets of criteria, as well as the criterion in paragraph (c), to apply to all rules, including the capacity market rules.
67. Under this interpretation, the Commission must use the same five sets of criteria for its review of capacity market rules, whether the Commission’s review is under sections 20.21(2) or 20.22(5). This interpretation makes sense, given the close functional relationships between the reviews under those sections.

68. This interpretation is also consistent with the act’s statement of purposes for the capacity market, in section 5(c.1). As discussed in part II.A above, those purposes include the FEOC principle which is listed in paragraph (a) of section 20.21(2). (Similarly, section 20.21(3) expressly refers to the FEOC principle, as a criterion for the Commission’s retroactive application of a newly approved capacity market rule to existing market participants.)
69. In addition, as noted in part II.A above (para. 25), the legislative history of Bill 13 makes it clear that the Legislature intended the capacity market rules to be subject to the FEOC principle. This intent requires reading the criteria in paragraph (a) as applicable to the Commission’s review of capacity market rules.
70. Under a more literal reading of section 20.22(2), the capacity market rules are only subject to the two criteria in paragraph (b). Under this reading, the criteria for the Commission’s six-month provisional review under section 20.22(5) would be more rigorous than those for the Commission’s regular review under section 20.21(2). For example, the Commission could approve capacity market rules under section 20.21(2) even if the rules were technically deficient, and even if the AESO’s development of the rules failed to satisfy the Commission’s rules under section 20.9.
71. This outcome makes no sense. Therefore a strict reading of section 20.22(2) is unwarranted.
72. In sum, the sets of criteria in sections 20.21(2) and 20.22(5) work together as one, in that they are identical, for the Commission’s review of capacity market rules under those sections. As previously noted, the AESO agrees with this interpretation.

C. The onus and standard of review provisions in sections 20.21(2) and 20.22(5)

73. Section 20.21(4) states that the “Independent System Operator has the onus of satisfying the Commission with respect to the matters referred to in subsection (2).” By contrast, section 20.22 is silent with respect to whether the AESO, or any other party, has the burden of proof.
74. It is not certain that the Legislature intended to remove the burden of proof from the AESO for a provisional review: in her introduction of Bill 13 for second reading in the

Legislature, Minister McLean stated that the AESO “will need to satisfy the Commission” that the capacity market rules are in the public interest.³³

75. As a practical matter, it is unclear how the overall burden of proof could *not* be on the AESO, unless the standard of review required the Commission to *presume* that the AESO’s rules met the legislative criteria.
76. As for the standard of review, section 20.21(2) allows the Commission to approve an AESO rule (including a capacity market rule), only if the Commission is “satisfied” that the rule meets the applicable criteria. By contrast, section 20.22(5) allows the Commission to provisionally approve a CM-1 rule if it “appears” to the Commission that the applicable criteria have been met.
77. On its face, the word “appears” implies a lower comfort level than “satisfied,” so the former is a less stringent standard than the latter. This approach makes some sense, given that the Commission’s review under section 20.22(5) is only “provisional” in nature.
78. However, the “appears” standard requires far more than a rubber stamp.

Under the EUA, the Commission must determine whether, in adopting the capacity market rules, the AESO has fulfilled its legislative duties. The legislative criteria discussed in part II.A above raise inherently technical and complex issues. Ensuring that the AESO’s rules even “appear” to meet these criteria arguably still requires a high level of scrutiny. The Commission may still need to conduct a “detailed and comprehensive” review, contrary to the AESO’s interpretation of section 20.22 (AESO Submission, para. 40).

IV. The capacity market components of concern to Pembina

79. As noted in part I above, the Commission’s July 23, 2018 notice requested each party to identify those capacity market design components and resulting AESO rules that “will not require discussion” in the provisional review proceeding, and those that “will require exploration” in the proceeding. (For brevity, and unless otherwise noted, Pembina refers below to the market design components and resulting rules, collectively, as the market design “components”.)

³³ Alberta Hansard, May 2, 2018, p. 746.

80. Pembina is concerned about four components of the AESO's capacity market design and, thus, believes that these four components require further exploration in the provisional review. The components are:

- The exclusion of seasonal capacity commitments (annual obligations only)
- The exclusion of energy efficiency resources from the scope of eligible capacity market participants
- The prequalification requirement that storage assets must be able to continuously produce for four hours
- The three-year forward period before the start of the obligation period

These four components are discussed in parts IV.A-D below.

81. Based on preliminary discussions with the representative of the coalition of renewable energy parties, Pembina also shares the concerns raised by that coalition—particularly that the AESO's methodology will over-estimate the amount of capacity that needs to be procured. Therefore, Pembina incorporates the coalition's concerns by reference in this submission.

82. At this time, Pembina does not believe that the components other than those listed above (including those raised in the renewables coalition's submission) require discussion in the provisional review proceeding. However, if the Commission has its own components of concern, Pembina encourages the Commission to invite the parties to address these. Pembina may also want to address any other components that other parties flag for further exploration.

83. This submission is necessarily based on the current circumstances. Any of three future events—the Energy Minister's forthcoming adoption of capacity market regulations, the AESO's filing in 2019 of its final proposed version of the draft capacity market rules, and the AESO's adoption of cost allocation rules—may generate additional concerns.

84. Finally, because of the short time between the Commission's ruling on costs and the deadline for this submission, Pembina has not yet had an adequate chance to engage its expert Mr. Robert Gramlich. Once he has a chance to review the AESO's market design and rules, Pembina may request the Commission's permission for Pembina to raise additional concerns.

A. Exclusion of seasonal capacity commitments

85. The AESO’s capacity market does not allow “seasonal capacity commitments (annual obligations only).”³⁴ This design feature means that, to participate in the capacity market, a capacity resource must be able to supply electricity (or reduce electricity demand)—when called on by the AESO to do so—at any time during an entire contract year.
86. Pembina requests that the Commission consider requiring the AESO to allow resources to participate in the capacity market through seasonal obligations. In Pembina’s view, some seasonal assets can help meet peak loads in a given season at lower cost and, in some cases, more reliably, than non-seasonal assets. The AESO’s annual obligation approach will not capture these market values.
87. As a general principle of efficiency, a resource that can provide one service should not be required to provide a different service.
88. There is a continuum of market design from crude to granular. Alberta’s wholesale market is granular. Relying on annual capacity commitments moves to the crude end of the design spectrum. Seasonal commitments are more in the middle of the spectrum. They’ll enable the capacity procurement to more accurately match demand. Preventing over-procurement will prevent further erosion of the wholesale market.
89. The AESO’s approach will reduce the participation of renewable energy and energy storage resources (as well as energy efficiency). PJM experienced this outcome when it removed seasonal obligations from its capacity market.³⁵
90. This outcome cuts against the clean energy objectives inherent in the public interest and it restricts competition, so it is inconsistent with the FEOC principle. Excluding seasonal obligations also prevents the capacity market from being flexible, and from promoting diversity and innovation.

³⁴ CMD, Section 1, p. 5; Proposed New Capacity Market Terms and Definitions, p. 2 (defining “obligation period” as a “12-month period running continuously from November 1 to October 31 of the following year.” All references to the AESO rules (and definitions) are to the draft rules and definitions published at: <https://www.aeso.ca/assets/Uploads/Consolidated-Proposed-New-ISO-Rules-for-the-Capacity-Market.pdf>.

³⁵ PJM Seasonal Capacity Resources Senior Task Force, *Problem Statement* (2016) (<https://www.pjm.com/-/media/committees-groups/task-forces/scrstf/20160404/20160404-item-01-problem-statement.ashx>).

91. The AESO justified this annual obligation approach by explaining that a seasonal obligation “could introduce” several “complexities.”³⁶ Pembina questions whether these “complexities” are raised to indirectly justify allocating investors’ risks to consumers. At any rate, in Pembina’s view, the “complexities” of splitting a single obligation period into two are over-stated.

B. Exclusion of energy efficiency resources from the capacity market

92. In its capacity market design, the AESO stated that energy efficiency resources “will not be eligible for participation in initial capacity auctions.”³⁷

93. In Pembina’s view, this exclusion is inconsistent with all or most of the legislative criteria discussed in part II above, and with the Government of Alberta’s clean energy and economic diversification policies. In fact, Pembina questions whether the AESO can lawfully exclude energy efficiency from the capacity market, given that the EUA’s definition of “capacity” (in section 1(d.2)) expressly includes the “ability to ... reduce electric energy consumption.”

94. The energy efficiency exclusion is also inconsistent with the Government of Alberta’s own vision for the capacity market. In its November 2016 announcement, the government stated that a capacity market would benefit consumers by, among other things, “[a]ccommodating energy-efficiency initiatives better than Alberta’s current system.”³⁸ Similarly, in a December 2016 presentation, the government listed, as among its expectations for the capacity market design, that energy efficiency “should be included in auction”.³⁹

95. The government’s support for energy efficiency followed from the AESO’s own apparent support for that sector. In its 2016 Transitions report, the AESO referred to “[c]ompatibility with ... energy efficiency” as among the desired outcomes for a capacity

³⁶ *CMD Final Rationale*, part 3.1, p. 1 (www.aeso.ca/market/capacity-market-transition/comprehensive-market-design/).

³⁷ CMD section 1, p. 2. This exclusion is in Rule 6(1)(e) of section 206.1.

³⁸ Government of Alberta, “Consumers to benefit from stable, reliable electricity market,” media release, November 23, 2016 (www.alberta.ca/release.cfm?xID=44880BD97DCDC-D465-4922-25225F9F43B302C9).

³⁹ Government of Alberta, *Electricity Transition Panel Session* (Dec. 2, 2016), ppt slide #14 (www.energy.alberta.ca/AU/electricity/AboutElec/Documents/ShareholderElectricityTransitionPanelSession2016.pdf).

market.⁴⁰ In a later section, under the heading “Desired outcome: reasonable cost to consumers,” the AESO noted that both the PJM and New England capacity markets “have been able to attract sufficient new investments in” several resources, including “energy efficiency”.⁴¹

96. The report then addressed energy efficiency in a separate subpart of part 4.8, titled “Coordination with CLP [Climate Leadership Plan] Electricity Objectives”. In that subpart (4.8.3), the AESO started by explaining that there is no “fundamental conflict” between energy efficiency initiatives in Alberta and a capacity market. The subpart concluded that a capacity market “could potentially be an effective tool in achieving Alberta’s energy efficiency goals by providing a method of compensation for efficiency gains.” The AESO also noted that allowing energy efficiency and other demand resources to participate “should reduce market clearing prices, with potential benefits of lower capacity costs to consumers.”⁴²
97. Other sources confirm the AESO’s conclusion that demand resources reduce consumer costs. For example, in a 2014 study, the authors stated, as “[b]asic economic theory,” that including energy efficiency and other demand resources in capacity markets “should lead to reductions in market clearing prices, with attendant benefits to consumers.” The study then concluded that the available evidence confirmed this theory for the New England market, and seemed to confirm it for the PJM market (the evidence was more limited for the latter, so it was more difficult to draw firm conclusions).⁴³

⁴⁰ Market Transitions, part 4.3, p. 21. The report expanded on this desired outcome, with the following: Ability of market structure to continue to deliver other key objectives (reliability, reasonable costs) while potentially supporting increased volumes of cogeneration, **energy efficiency programs**, and micro and distributed generation volumes.” *Ibid.* (emphasis added).

⁴¹ *Ibid.*, p. 27. The AESO later noted that, in the New England market, the amount of capacity from energy efficiency had more than doubled in the prior seven years (to 1,538 MW); in the PJM market, energy efficiency had nearly doubled in the prior five years (to 1,117 MW). *Ibid.*, p. 39 at note 48.

⁴² *Ibid.*, p. 39.

⁴³ Neme, C., Energy Futures Group, and Cowart, R., Regulatory Assistance Project. (2014) *Energy Efficiency Participation in Electricity Capacity Markets – The U.S. Experience Montpelier*, (VT: The Regulatory Assistance Project), pp. 10-12 (www.raponline.org/document/download/id/7303). For example, the study found that demand resources including energy efficiency reduced clearing prices in the New England market by 18%. *Ibid.*

98. This study also concluded, based on “[a]ll available evidence to date,” that energy efficiency’s participation in these two capacity markets had been “as or more reliably delivered than generation and demand response resources.”⁴⁴
99. Allowing energy efficiency to participate in the capacity market also reduces the risk of over-procurement, is consistent with the FEOC principle, and promotes market flexibility, diversification, and technology innovation. It is also in the public interest, given energy efficiency’s prominent role in the government’s climate leadership plan.
100. In section 2.1.5 of its CMD Rationale, the AESO justified its exclusion on the ground that “further study” was required to address the “complexities” inherent in including energy efficiency in Alberta’s capacity market. The AESO explained that these “complexities” are specifically with respect to determining a capacity value and assessing performance for energy efficiency. The AESO then stated that energy efficiency “will be eligible for future participation,” “consistent with the AESO’s design criteria for pursuing staged implementation where appropriate.”
101. In Pembina’s view, the AESO has over-stated the challenges of including energy efficiency in the capacity market. (Dr. Cramton’s report does not address the energy efficiency exclusion.) Energy efficiency has a long track record in the PJM and New England capacity markets, so those experiences can readily be leveraged here. The managers of these markets have developed detailed, and very similar, measurement and verification manuals that the AESO can refer to.

C. Pre-qualification requirement for energy storage assets

102. The AESO’s capacity market design allows energy storage assets to participate in the market. However, to “pre-qualify” for a capacity auction, a storage asset “must demonstrate 4 hour continuous discharge capability at its estimated UCAP level.”⁴⁵
103. Pembina supports allowing energy storage to participate in the capacity market. Pembina’s support is based on the FEOC principle, and because energy storage fits well in a diverse, stacked portfolio of capacity resources which, collectively, promote a low-cost, reliable electricity supply.

⁴⁴ *Ibid.*, p. 12.

⁴⁵ CMD, Section 1, pp. 1, 2. This requirement is in AESO Rule 6(1)(h), section 206.1.

104. However, Pembina requests that the Commission consider revoking the four-hour discharge capability requirement as a pre-qualification requirement for energy storage assets.
105. In Pembina’s view, a wide range of storage assets might contribute capacity. Not all such assets can discharge for at least four continuous hours, yet they still have some capacity value. Therefore, the AESO’s four-hour prequalification requirement will restrict energy storage’s participation in the capacity market. This outcome will then reduce the benefits of energy storage for cost and reliability.
106. In its CMD Rationale (section 2.1.10), the AESO stated that allowing storage assets to participate in the capacity market “increases overall market competition, provided that their reliability value is appropriately reflected.” The AESO then explained that the four-hour prequalification requirement for energy storage would “ensure sufficient reliability value” from storage assets. The AESO further explained that the four-hour period is based on the “historical observation of the average duration of system stress events, i.e. recent emergency energy alert declarations have lasted on average 4 hours.” (Dr. Cramton’s report does not address this pre-qualification requirement.)
107. Pembina generally agrees that, the longer a storage asset can continuously discharge (at its estimated UCAP level), the greater the asset’s reliability value and, therefore, the more revenue it should receive in the capacity market. However, the AESO’s four-hour discharge minimum is an arbitrary cutoff. Storage assets with less than four-hour discharge durations still have some value—and individual lower-value assets have additional value as building blocks for a diverse portfolio. It is more efficient to use building blocks of smaller resources that can be stacked with each other, rather than relying on larger blocks that must be used at once. Thus, a stack of smaller blocks can provide sufficient capacity during a four-hour “emergency alert” more efficiently than a smaller number of larger resources.

D. Three year forward capacity auction period

108. The AESO’s capacity market design uses a forward capacity auction based on a three-year forward period. (The AESO will start using a three-year time frame after a transition phase

with shorter forward periods.) A forward period is the time between a capacity auction and the beginning of the obligation period corresponding with that auction.⁴⁶

109. The AESO choose a three-year forward period because, in its view, three years is long enough to achieve the benefits of a forward auction, namely the orderly entry and exit of capacity assets. At the same time, while supply and demand conditions are less certain three years forward, they can still be forecasted with reasonable accuracy.... The three-year forward period strikes a balance between allowing enough lead time for capacity assets to complete construction after clearing the capacity market and managing uncertainty about future demand, and supply conditions. While a longer forward period would enable larger capacity assets more flexibility before making significant financial commitments, and a shorter forward period would reduce market uncertainty, a three-year forward period provides an appropriate balance of the aforementioned considerations.⁴⁷
110. In Pembina's view, a three-year forward period risks over-estimating demand and reduces the ability to correct for over-procurement from inaccurate load forecasting. With a three-year forward period, the market does not react to the reality of the day, but to a forecast years ahead. Market signals are then distorted by a forecast likely to be inaccurate and unrepresentative of the actual market.
111. The AESO has a track record of over-forecasting loads, so there is a real risk of over-procurement.⁴⁸ (Pembina ascribes this track record, not to incompetence or bad faith, but to the AESO's desire to fulfill its core function of ensuring a reliable electricity supply.)
112. With over-procurement, customers face higher costs than necessary to maintain reliability. Based on the experience in other capacity markets, the longer the forward period, the longer the delay and the harder it is to ameliorate these higher costs.

⁴⁶ CMD, section 1, p. 5 and section 5.1.1., p. 1. Rule 2(1), Section 206.6.

⁴⁷ CMD Rationale, part 5.1.1, pp. 1-2. Pembina refers the Commission to part 5.1.1 of the CMD Rationale for the AESO's full explanation.

⁴⁸ Andrew Leach, *AESO Outlook Forecasts of Alberta Internal Load*, 2018 (<https://pbs.twimg.com/media/DFiKFfSWsAEFfqc.jpg>).

113. For these reasons, a three-year forward period shifts too much risk from investors to consumers. This outcome is contrary to the risk allocation, reasonable costs, market signal preservation, and efficiency criteria noted in part II above.
114. In Pembina's view, the Commission should consider directing the AESO to reduce the three-year forward period to one-year.

* * * * *

115. The EUA allows the Commission to approve the AESO's capacity market rules *only* if they appear to meet a broad suite of criteria which inherently require careful consideration of complex, technical, policy and legal issues.
116. Pembina welcomes the Commission's inclusive approach toward participation in the proceeding and urges the Commission to be similarly inclusive as to the scope of issues for exploration. Pembina requests that the Commission pay particular attention to concerns about over-procurement and about the market design components, like those discussed in part IV above, that frustrate the development of a diverse portfolio of low carbon, low cost capacity resources.

Respectfully submitted,



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