

Mothball Outage Reporting Rule Amendment Options & Recommendations Paper

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Introduction

Section 306.7 of the ISO rules, *Mothball Outage Reporting* (the “Mothball Rule”) outlines requirements to ensure that the temporary removal of a generator from the market is aligned with the Fair, Efficient, and Openly Competitive (“FEOC”) operation of the market, while also ensuring this removal does not result in unresolvable reliability issues. The Mothball Rule defines parameters for the temporary removal of all or a portion of a generator from service when economic conditions are forecast to make it unlikely to recover its expected avoidable costs.

The AESO has undertaken the review of the Mothball Rule at this time to meet a few key objectives:

1. **Meet commitment to conduct comprehensive consultation on expedited rule package:** In 2016, the Mothball Rule was introduced as an interim measure. The AESO committed to conducting a comprehensive review including a full stakeholder consultation process. While this consultation was delayed due to the design of the capacity market, the AESO is continuing its’ consultation on the Mothball Rule to meet its commitment to stakeholders and the AUC.
2. **Address concerns that have arisen since implementation and evaluation of expedited rule(s) in practice:** Various concerns have been raised with respect to transmission access, transparency, outage cancellation, and long lead time (“LLT”) that warrant further consideration.
3. **Ensure consistency and alignment across rules for physically removing capacity from the market:** After receiving feedback from stakeholders, the AESO included the review of the 36-hour maximum start-up time for LLT energy in this consultation as the relationship between different types of outages and LLT energy warranted consideration.
4. **Ensure mothball outage rule supports the long-term sustainability of the market:** With changes to Alberta’s generation fleet to meet the 2030 coal phase-out deadline, the integration of renewables, and increasing carbon taxes, there is a need for a robust framework to sustainably support the Alberta market.

The AESO has held two consultations in the past year to discuss key issues, and test alternatives with stakeholders. The first stakeholder session was held on December 1, 2020, while the second stakeholder session was held on April 29, 2021. The second stakeholder session discussed the following in-scope topics:

- Notification
- Transmission access
- 2-year maximum duration
- Reporting
- Mothball outage cancellation
- Long lead time (LLT)
- Subsequent mothball outages

Objective of this options paper

At stakeholder session 2, the AESO presented recommendations with respect to: notification, reporting, mothball outage cancellation, and LLT. These recommendations have not changed and more information on the AESO’s evaluation of the stakeholder feedback received can be found in Appendix 1 of this paper.

Following a review of stakeholder comments and discussion during stakeholder session 2, the AESO required further consideration of the remaining components of the rule development, namely transmission

access, mothball duration, and subsequent mothballs/extensions. The objective of this paper is to present the AESO’s analysis of these key issues and to outline various alternatives. Throughout the consultation and in this paper, the principles of fairness, open competition, cost causation, effective price signals, and stability apply to the AESO’s consideration of the issues raised regarding the Mothball Rule.

Principle	Application to Mothball Outages
Open Competition	<ul style="list-style-type: none"> Removal of capacity from the market is reported transparently to allow for a competitive market response Mothball outages do not create barriers to entry including barriers to efficient transmission access for new assets Mothball outages do not allow for the abuse of market power
Effective Price Signals	<ul style="list-style-type: none"> Long-Term Price Signals: there are clear, transparent signals on the need for new capacity Short-Term Price Signals: the pool price creates the right signals for orderly dispatch and efficient consumption
Cost Causation	<ul style="list-style-type: none"> Mothball outages do not create unnecessary costs for others
Stability	<ul style="list-style-type: none"> Mothball outages do not create undue uncertainty regarding market conditions or transmission utilization Mothball outages do not result in unresolvable grid reliability issues
Fairness	<ul style="list-style-type: none"> Asset owners are allowed the flexibility to make operational and economic decisions for their assets using information they deem appropriate The mothball outage rule is enforceable and enforcement is applied in a consistent manner

Based on the analysis and considerations presented, the AESO’s proposed option to address these issues is presented at the end of this paper. Stakeholders are asked to review this paper and to provide feedback through the comment matrix format provided in the Letter of Notice. The AESO will consider all comments received in determining next steps.

Outstanding issues from stakeholder session 2

Based on the outcome of the stakeholder session held in April 2021, the AESO has identified three areas that could benefit from further consideration and stakeholder input prior to finalizing a recommendation:

- **Transmission access:**
 - **Topic:** Generators on mothball outage currently maintain their Supply Transmission Service (“STS”) contract capacity and are included in the AESO’s connection studies on the basis that they could return to service within 3 months (minimum notification requirement for outage cancellation).
 - **Discussion highlights:** A couple of stakeholders raised that future market conditions should be taken into account when considering transmission access and mothball outages. Stakeholders proposed a new alternative to address the transmission access issue whereby STS capacity is reduced by a mothballed generator only if there is a new connection wishing to connect in the area and the generator wants to continue to be on mothball outage. This alternative is explored in more detail in the section below. There was also some discussion on whether the AESO’s Connection Process would be used should

a mothballed generator wishes to increase its STS capacity after a reduction. Stakeholders noted that the Connection Process involves a significant amount of red tape and regulatory burden.

- **Key considerations:** Current mothball provisions create uncertainty for connection projects and the inclusion of mothballed generators may result in more costly and/or lower quality connection alternatives for new projects. For some projects, if the studies show that congestion would result following the connection of a generator (factoring output assumptions for a mothballed generator with various sensitivities), these projects may have to choose to reduce their MW, be subject to a remedial action scheme, cancel their project, or possibly relocate elsewhere. Mothball outages may also drive unnecessary connection or system costs. Additionally, there is an added risk that if the mothball generator retires, projects in the area would need to be reworked. These risks may deter competition.
- **Maximum duration for a mothball outage:**
 - **Topic:** Currently there is a 2-year maximum duration stipulated within the rule.
 - **Discussion highlights:** A stakeholder commented that the determination of the correct maximum duration is dependent on the recommended transmission access solutions. Another stakeholder commented that a generator should be allowed to mothball for as long as they wish if transmission access is not an issue. Stakeholders and the AESO also discussed whether a maximum duration is required under the alternative proposed by a stakeholder to only reduce a mothballed generator's STS capacity if it wishes to stay on mothball when there is a new connection project that wants to connect in the area.
 - **Key considerations:** The maximum term should balance (1) flexibility for existing asset owners to remove generators from service during periods of low prices and (2) certainty for new projects and the efficient use of transmission capacity. While a longer maximum mothball outage duration and the ability to extend or take subsequent mothball outages would provide flexibility to mothballed generators to continue with its mothball outage, it does result in increased uncertainty regarding when a mothballed generator will return to service and can create barriers to entry and potentially higher costs for new projects as mothballed generators currently retain STS capacity. The converse also applies where reducing the maximum duration or prohibiting the extension of mothball outages and subsequent outages in whole or in part will increase certainty in the market and reduce barriers to entry and costs. However, flexibility for mothballed generators would also be reduced.
- **Subsequent mothball outages and extensions:**
 - **Topic:** Currently there is a 3 month return to service requirement between mothball outages. If a market participant wishes to extend a mothball outage, information must be provided to the AESO no less than 3 months before the extension is to take place. Under the current Mothball Rule, the AESO may issue a directive to cancel a mothball outage for reliability and/or supply adequacy reasons.
 - **Discussion highlights:** Many stakeholders opined that the current 3-month period between subsequent mothball outages is arbitrary. One stakeholder stated that the 3-month return to service between mothball outages is too short and suggested that the return to service time should be tied to the length of the original mothball outage. However, another stakeholder suggested that this solution would not work for seasonal type mothball outages and other use cases.

- **Key considerations:** This requirement seeks to prevent generators from going on long term mothball outages by requiring generators to incur costs to return to service before taking a subsequent mothball outage. This is intended to create an incentive to either (1) return to the market long-term or (2) retire.

At stakeholder session 2, various stakeholders pointed out that there is overlap in the considerations for the above three issues, and thus should be evaluated as a package. The AESO has evaluated the three issues together in the following sections, considering any interdependencies between the issues.

Summary of options for outstanding issues

Maximum duration

The maximum mothball outage duration is the maximum time a generator can be on a mothball outage before an action must be taken. This action can be the submission of an extension request, return to service, STS reduction, or STS termination.

In stakeholder session 2, the AESO presented that the maximum term should create a balance between (1) flexibility for existing asset owners to remove generators from service during periods of low prices and (2) certainty for new projects and the efficient use of transmission capacity.

The AESO recommends retaining the 2-year maximum duration. The current maximum duration of 2 years for a mothball outage aligns with the outage reporting requirements and maintains stability and fairness for mothballed generators as it provides them with a period where these generators may take a mothball outage without interruption. It also provides other market participants with reasonable certainty about when a generator may return to service or when transmission access becomes available. Analysis conducted by the AESO suggests that periods of low pool prices¹ since 1996 range from 2 to 6 years. These low pool price periods average 3 years in duration where the longest period of 6 years has been an anomaly. In each of these periods, uneconomic generators responded quickly to the pool price conditions by retiring or, recently, by taking a mothball outage. The AESO also notes that that a 2-year maximum mothball duration is sufficient for generators to make retirement and return to service decisions after the start of a period of low pool prices.

Transmission access, subsequent mothballs, and extensions

Under Section 29 of the *Electric Utilities Act*, the AESO must provide system access service to the transmission system in a manner that gives all electricity market participants wishing to exchange electric energy and ancillary services a reasonable opportunity to do so. The Alberta Utilities Commission (“Commission”) has confirmed that access to the transmission system, for all generators, is a reasonable opportunity and not a right.² However, the Commission has not specifically ruled on the issue of mothballed generators retaining STS capacity without utilizing it for an extended period.

The retention of STS capacity by a mothballed generator can create challenges for the AESO in providing new projects with the reasonable opportunity to connect to the transmission system without incurring costs

¹ Based on historical pool price trends, the AESO considered average yearly pool prices below \$70/MWh to be low for this analysis.

² [AUC Decision 2014-242](#), p. 158.

associated with connection upgrades. While the mothballed generators are operating within the rules, there may be an issue with providing efficient, fair, and reasonable access to the transmission system to new projects when there is generating capacity on mothball outage for extended periods of time with no guarantee of returning to service.

The following options explore different methods of mitigating the transmission access issue, weighing the advantages and disadvantages of each.

Option 1: No impact to STS

The first option is to continue with the current state and limit the length of time a generator is on a mothball outage, with no impact to a generator's STS agreement.

Any extension or modification to the volume of the mothball outage must be accompanied by an attestation from the market participant including that they are uneconomic for the period submitted. There are no limits to the number of extension requests. A generator must return for the minimum of 3-months before taking any subsequent mothball outages.

The advantage of this option is it is simple to implement as it is the current practice. Under this option, the mothballed generator retains its STS capacity for the term of its mothball outage. This is a disadvantage of this option as it may prevent new potentially more efficient generators from connecting to the system while there is a mothball outage in the area. This is exacerbated by the ability to extend mothball outages beyond the maximum mothball outage duration period. Overall, this could result in an inefficient use of the transmission system resulting in unnecessary system and connection costs for new projects if the mothball generator does not return to service after the maximum duration is reached.

Option 2: STS reduction after maximum mothball outage duration reached

The AESO notes that mothballed generators have an incentive to retain STS capacity and maintain the option to return to service under the current rule as there is no consequence or cost to them for maintaining this option. The issue with this is that it may result in uneconomic generators retaining STS capacity indefinitely, potentially acting as a barrier for new, economic generators from connecting to the system.

Option 2 involves the reduction of STS capacity by the volume of the mothball outage after the maximum mothball duration is reached. Mothballed generators that reduce their STS contract capacity would be required to go through the connection process again if they wish to return their generator to service from the mothball outage and restore their previous STS contract level. However, the generator's STS agreement would remain in place and the market asset would continue to exist with the mothball outage report capturing its mothballed status.

Another consideration for this option is how the AESO should treat the mothballed generator when conducting reliability assessments. Currently, the AESO can direct a unit to return from outage, mothballed or other, within 6 months. Under this option, the AESO would require information on return to service periods from the mothballed generator after the maximum duration period has been reached to be able to conduct reliability assessments, recognizing that the generator's return to service period will be impacted by the need for the mothballed generator to go through the Connection Process again to be able to return. Thus, return to service requirements for a mothballed unit without STS may differ from a mothballed unit with an STS agreement.

For distributed-connected generators (“DCGs”) that take a mothball outage, the distribution facility owners (“DFOs”) would be required to reduce the STS capacity for a DCG if it extends a mothball outage beyond the maximum duration period.

Under this option, an extension to a mothball outage would no longer impact transmission access as the STS is reduced and therefore the generator can essentially mothball for as long as it remains uneconomic to return to service. To take a subsequent mothball outage, the mothballed generator must have returned to service to service for at least the same length of time as their previous mothball outage for a minimum period of 3 months (in alignment with the notification period) and up to a maximum period of a year. This treatment of subsequent mothball outages allows for flexibility for generators that are required to mothball short term and adapt to changing market conditions but also provides certainty that a generator will return to service for a meaningful period of time.

Two alternatives will be analyzed under this option in relation to the treatment of STS contract capacity:

- A. STS capacity reduced immediately after maximum mothball duration is reached
- B. STS capacity reduced when transmission access is required after maximum mothball duration is reached

Alternative A: STS capacity reduced immediately after maximum mothball outage duration is reached

In respect of the first alternative, a mothballed generator can retain STS capacity while it is on a mothball outage. However, the STS capacity will be reduced immediately upon reaching the maximum mothball duration period.

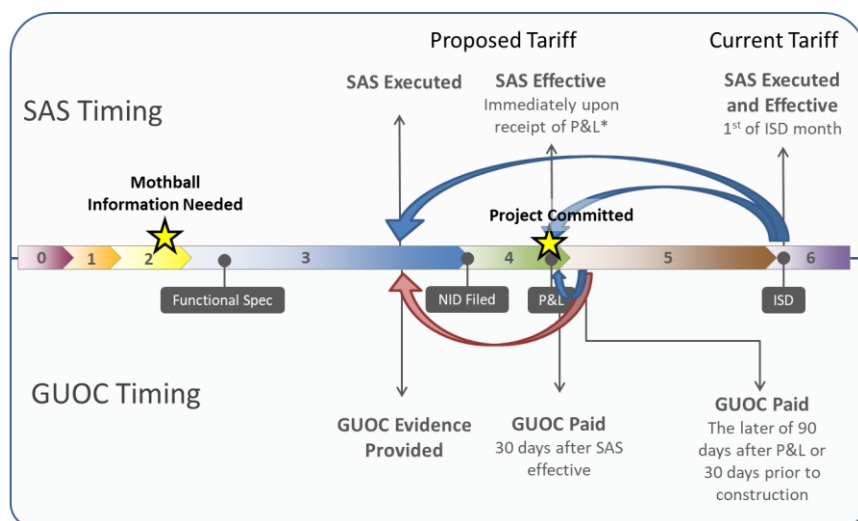
The advantage of this option is that it provides certainty for a new developer regarding when STS capacity would be available. It also provides certainty to the market and the AESO on the status of the mothballed generator. The disadvantage is that the reduction in STS capacity might result in the pre-mature retirement of the mothballed generator. Although this may be appropriate in certain circumstances if the mothballed generator had no intention of returning to the market, this may also result in a generator taking the decision to retire sooner than it would if such a restriction did not exist. Additionally, a mothballed generator may not be creating transmission access issues in an area but will be required to reduce its STS capacity after reaching the maximum mothball duration.

Alternative B: STS capacity reduced when transmission access is required after maximum mothball duration is reached

This alternative entails the reduction of a generator’s STS contract when transmission access issues are identified during the AESO’s connection studies. This alternative was supported by several stakeholders at the stakeholder session held in April 2021.

This alternative has the advantage of impacting a mothballed generator only when transmission access is constrained due to a new generator wishing to connect. If there is no new connection, the generator is free to remain on a mothball outage for as long as it remains uneconomic.

A complication arising out of this alternative is that the period for when a new investor would be required to decide on investment, pay for system studies and Generating Unit Owner’s Contribution (“GUOC”) does not align with when an incumbent would be required to make a mothball decision regarding its STS capacity. The system studies that take into consideration the STS capacity of mothballed generators occurs much earlier than when a developer is required to make their decision to build. See below for a visual of when mothball information is required (Stage 2) vs when a new project is committed (Stage 4).



There is very little certainty that a connection project is legitimate until the project owner pays its GUOC payment, which occurs in Stage 4 of the connection process (under the new bulk and regional tariff design). However, information on whether the mothballed generator will return to service or retire is required at the time the connection studies are underway, which occurs in Stage 2 of the connection process. Therefore, the certainty on whether a mothballed generator will return to service or not is required before the connection project has committed.

For this alternative to work, a mothballed generator would receive notification from the AESO at Stage 2 of the Connection Process that it must decide to return to service or reduce its STS capacity by the declared return to service time if the maximum mothball duration has already been reached. The decision must be made by the mothballed generator in a timely manner after the notice is given by the AESO regardless of whether the new project materializes or not.

This approach allows a generator to be mothballed for any duration if it is not impeding entry and only requires the reduction of STS capacity or the generator to return to service if a new project intends to connect in the area. While there is a risk that the new project gets cancelled, this is a risk that the mothballed generator understands when undertaking a mothball outage.

In addition, connection projects, transmission builds, and generator retirements result in continually changing conditions which makes it difficult for the AESO to determine with certainty whether a mothballed generator is creating barriers to entry and whether a reduction in STS capacity is required. The AESO must be careful to not impose restrictions that will increase costs and uncertainty for existing generators to mitigate a concern that may create a barrier to entry.

Option 3: STS contract termination after maximum mothball outage duration reached

Option 3 is to terminate the STS contract after a generator fails to return after the maximum mothball outage duration is reached with no allowance for extensions. The termination of the STS contract means that the generator would no longer have an STS agreement in place. As a result, the generator would be delisted and would no longer be in the market. If the generator decides to return to service after the STS contract has been terminated, it would be required to go through the Connection Process again among other potential regulatory requirements. For DCGs that take a mothball outage, the DFO would be required to terminate the STS capacity for a DCG if it extends a mothball outage beyond the maximum duration period.

Under this option, the generator would no longer impact transmission access as the STS is terminated and therefore the generator can essentially mothball, outside of the market, until it is economic to re-enter the market.

If the mothballed generator returns to service before the maximum mothball outage duration is reached it must have returned to service for at least the same length of time as their previous mothball outage for a minimum period of 3 months (in alignment with the notification period) and up to a maximum period of a year before it can take a subsequent mothball outage. This treatment of subsequent mothball outages allows for flexibility for generators that are required to mothball short term and adapt to changing market conditions but also provide certainty that a generator will be in service for a meaningful period of time.

This option provides the most certainty to new developers in relation to its ability connect in an area as well as in the market since the mothballed generator is unlikely to return. The major disadvantage to this option is that it does not satisfy the principle of fairness as it reduces the flexibility of mothballed generators to make operational and economic decisions. This option may also induce the early retirement of a generator even in cases where no transmission access issues are apparent which does not foster effective long-term price signals. STS termination is more burdensome than STS reduction as the generator would have to go through the Connection Process again as well as meet other potential regulatory requirements. This would increase the costs for a generator to return from a mothball outage.

Option 4: Payment for mothball outage extensions beyond maximum mothball outage duration

Option 4 was suggested by a stakeholder at the stakeholder session held on April 2021. The aim of this option is to enforce a payment on a generator that requests an extension to the mothball outage period beyond the maximum duration of 2 years. However, the generator would be entitled to a refund if they returned to service. The idea is a mothball extension and retaining the STS capacity would not be a free option and a cost of some sort would be imposed on the generator if it fails to return to service and use the contracted STS capacity.

In order to take a subsequent mothball outage, the mothballed generator must have returned to service to service for at least the same length of time as their previous mothball outage for a minimum period of 3 months (in alignment with the notification period) and up to a maximum period of a year. This treatment of subsequent mothball outages allows for flexibility for generators that are required to mothball short term and adapt to changing market conditions but also provide certainty that a generator will be in service for a meaningful period of time.

The advantage of this option is it creates more certainty of a generator returning on a specified date. However, there are many disadvantages to this option. It is not clear how the payment amount should be determined under this option and what the payment represents (a payment through the energy market, a transmission payment, or a penalty). The AESO believes that the listed payment options are not feasible. A payment through the energy market is impractical and unprecedented. The AESO generally cannot levy penalties to a market participant unless the penalty is part of a commercial agreement between the AESO and the market participant. A payment for transmission is not permitted under the *Transmission Regulation* as transmission related costs must be recovered through the ISO tariff.

Also, the issue of fairness and ensuring a level playing field is a potential concern as any up-front fees may potentially be less of a burden to large companies with better credit ratings over smaller companies and would create an uneven playing field. This option also does not resolve the transmission access issue that arises due to a mothball generator retaining the STS capacity. This option is a very complex approach to

manage system access for generators that are proving to be uneconomic for periods of time longer than the maximum duration. For these reasons the AESO does not believe this option to be feasible.

Summary of options

To summarize, the AESO has explored the following options to address the outstanding issues. These are outlined in the table below.

Table 1: Summary of options considered relating to transmission access, maximum duration, subsequent mothball outages, and extensions

	Option 1	Option 2	Option 3	Option 4
Transmission access once maximum mothball duration reached	No impact to STS	STS reduced by amount on mothball outage either (A) immediately or (B) when transmission access is required	STS terminated	Payment to extend a mothball outage
Maximum duration	2 years			
Subsequent mothballs	Requires notice to the AESO at least 3 months prior to the start of the mothball outage	Time between subsequent mothball outages aligned with length of previous mothball outage (minimum of 3 months, maximum of 1 year)		
Extensions	Requires notice to the AESO at least 3 months prior to the start of the mothball outage extension	Not applicable as the generator can be mothballed as long as the generator is uneconomic subject to transmission access treatment once maximum duration is reached as noted in (A) above or if transmission access is required for a new connection as noted in (B) above	Not applicable as the generator can be mothballed as long as the generator is uneconomic subject to STS termination once maximum duration is reached	Permitted if payment is made to the AESO for the extension

Recommendation for outstanding issues

Based on the AESO's consideration and analysis of the options presented above, the AESO believes that Option 2, the reduction of STS capacity best addresses the issues relating to transmission access, maximum duration, and subsequent mothballs.

Two alternatives were presented within Option 2 in relation to when STS capacity must be reduced. The AESO is currently in the process of evaluating which alternative is most feasible from an implementation perspective. Alternative A involves the automatic reduction of STS capacity after the maximum mothball outage duration is reached. Alternative B involves the reduction of capacity only in the case that there is a new project that requires STS capacity in the area after the maximum duration has been reached.

Under this option, the AESO recommends that the maximum duration remain at 2 years, where maximum duration is the period in which a generator can be on mothball outage without facing a reduction to its STS capacity. The AESO is also recommending that a mothballed generator must have returned to service for at least the same length of time as their previous mothball outage for a minimum period of 3 months, up to a maximum period of a year in order to take a subsequent outage. Extensions are not applicable as the mothballed generator may mothball for as long as it is uneconomic to return to service under this option. If the generator remains on mothball outage beyond the maximum duration its STS may be reduced. At that point, the asset can remain on mothball outage until it becomes economic with reduced STS capacity under alternative A or remain on mothball outage until a new connection project wants to connect in the area where it then needs to decide to return to service or reduce its STS capacity under alternative B.

Both alternatives address the ambiguity around transmission access, and the AESO would like to consult with stakeholders around the feasibility/reasonableness of these alternatives. As such, specific questions have been added to the comment matrix referenced in the Letter of Notice. The AESO appreciates any feedback or information stakeholders can share regarding these alternatives.

Conclusion & next steps

Through this consultation the AESO has landed on recommendations for the topics that were identified as in scope in stakeholder session 2 based on the set of principles outlined during the consultation process. This Options & Recommendations Paper discusses and presents recommendations for the transmission access, mothball duration, and subsequent mothball outage/extensions issues. The notification, reporting, mothball outage cancellation, and LLT issues that were also considered in scope on the Mothball Rule consultation have been previously discussed and are summarized in Appendix 1 below. As part of the next steps, the AESO has developed a comment matrix to gather feedback on the recommendations and options presented within this paper. Stakeholders will be provided the opportunity to comment within the prescribed comment period specified in the matrix. The AESO appreciates stakeholder participation on this consultation to date and is looking forward to hearing stakeholders' perspectives on the recommendations and options presented within this paper.

Appendix 1

Recommendations based on discussions from stakeholder session 2

The AESO has developed the following recommendations for some components of the Mothball Rule review based on the discussion and feedback provided through the comment matrices and during stakeholder session 2. The table summarizes final recommendations for four topics identified as in scope in this consultation. These recommendations were presented in stakeholder session 2.

Table 2: Summary of recommendations from stakeholder session 2

Topic	Recommendation
Notification	Maintain the existing 3-month notification requirement
Reporting	Mothball outages should be reported separately by the AESO
Mothball outage cancellation	Align timing for outage cancellation with the declared return to service time
Long Lead Time	Apply the maximum 36-hour start-up time for both LLT Type 1 and Type 2 assets

The topics, discussion highlights, and recommendations are listed below.

- **Notification:**
 - **Topic:** Review the 3-month notification requirement to take a mothball outage, and the ability to request a waiver for shorter notice.
 - **Discussion highlights:** Most stakeholders who responded were supportive of maintaining the 3-month notification requirement. A stakeholder recommended that the notification period align with the return to service time. Most stakeholders supported the ability to request a waiver. Stakeholders supported the use of waivers only for limited circumstances such as unforeseen economic harm, to allow for commercial/operational flexibility, and only if there was sufficient time for an economic assessment to be made.
 - **Recommendation:** Maintain the existing rule requirement. A minimum of 3 months' notice is required for the AESO's reliability assessments, and the waiver provision enables shorter notification if required. 3 months provides sufficient notification for a competitive market response. That is, modifications to planned generation and transmission outages can be made in response to a mothball outage notification.
- **Reporting:**
 - **Topic:** Whether current mothball outage reporting provides the market with sufficient transparency.
 - **Discussion highlights:** Most stakeholders who responded were supportive of reporting mothball outages separately from planned outages as transparency is key for a FEOC market. One stakeholder did not support separate mothball outage reporting as they were concerned about the information being commercially sensitive and that outage records should be aggregated where possible.
 - **Recommendation:** Information on mothball outages will be reported separately in an aggregated fashion to ensure transparency for the market. The AESO also recommends

reporting the return to service time for mothball outages. Most market participants have publicly reported mothball outages or asked the AESO to do so on their behalf which suggests the information is typically not commercially sensitive. Any concerns regarding commercial sensitivity of the information are mitigated by the AESO's proposal of aggregating the information.

- **Long Lead Time:**

- **Topic:** Review the maximum 36-hour start-up time for LLT energy, currently only applicable to Type 1 LLT energy.
- **Discussion highlights:** The discussion was added to the scope of the Mothball Rule consultation due to stakeholder feedback that the relationship between different types of outages and LLT energy should be considered. Several stakeholders who responded were supportive of the 36-hour maximum start-up time for all LLT energy. A stakeholder did not see the need to differentiate generators on LLT from mothball outages while another stated that it was unclear how LLT interacts with outages or mothball. A stakeholder commented that LLT start up would create a seams issue with other outage reporting.
- **Recommendation:** Apply the maximum 36-hour start-up time for both LLT Type 1 and Type 2 energy. This will create alignment of start-up requirements for all LLT energy and market participants have not demonstrated a need for a longer start-up time for LLT energy.

- **Mothball outage cancellation:**

- **Topic:** Alignment of AESO and market participant mothball outage cancellation notification periods.
- **Discussion highlights:** Most stakeholders who responded were supportive of aligning mothball outage cancellation notification with the declared return to service time as it would provide greater transparency and safeguard against market manipulation. A stakeholder recommended a 2-year commitment upon cancellation. Another stakeholder did not see any benefit in aligning the notification periods.
- **Recommendation:** Align timing for mothball outage cancellation with the declared return to service time. The maximum return to service time will remain at 6 months and if the return to service time changes, market participants must notify the AESO as soon as practical.

Appendix 2

Additional considerations

Below are the AESO's comments on some of the discussion and outstanding questions received from stakeholders over the course of the Mothball Rule consultation.

Mothball outage vs planned outage

Mothball outage means a reduction in the available capability of a source asset which is anticipated. It occurs because of deliberate manual action and is not a planned outage. A planned outage is primarily taken for physical reasons, i.e., the facility is unavailable either partially or fully as part of regular maintenance, construction, commissioning, or testing.

The main difference between a mothball outage and a planned outage is that a mothball outage is solely for the purpose of economic considerations. Nevertheless, the decision to go on a planned outage may also include economic considerations. For example, an operator may choose to defer maintenance which could result in a derate or impact availability and it could be argued that there is an economic impact. Other economic considerations are that planned outages may be timed for pool price, and scheduling availability of personnel and parts. However, these economic impacts could be tied back to the generator's availability which is a physical characteristic. A mothball is an outage that is taken strictly to deal with avoided costs and not running a generator to avoid losses. To take a mothball outage, a mothballed generator must meet this narrow definition of a generator that must prove that it cannot recoup avoidable costs.

In addition, a mothballed generator differs from a LLT asset as a LLT asset does not avoid any costs other than variable costs and must be available to comply with directives. A LLT asset is an asset that requires more than 1 hour to synchronize to the system or has varying start-up times for portions of its capacity that requires more than 1 hour to deliver.

Legacy treatment

Any generators mothballed under the current Mothball Rule will not be impacted by any proposed changes for the remainder of its mothball period. The new rule will be effective for any changes or requests after the implementation date of the rule. That is, any previous mothball outage that occurred or is currently in place at the time of the implementation date will not be affected, yet any requests such as extensions will be considered under the new rule.