Supply Surplus

RECOMMENDATION PAPER

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1. Executive Summary

The purpose of this paper is to provide recommendations on the short term and long term solutions for managing supply surplus conditions. The options for updating the rules and procedures are described in the Supply Surplus Discussion paper.[1] Supply surplus recommendations are limited to those that can be made within the existing market design.

Only stakeholder comments on the discussion paper that are directly related to supply surplus have been addressed herein. For all stakeholder comments on the discussion paper and associated AESO comment-responses, please refer to the AESO's website.[2]

The AESO is working on the short term and long term solutions simultaneously. Short term solutions are necessary to ensure that a level playing field is maintained in the energy market; the long term solutions required are more complex and therefore require further consultation.

Recommendations

Recommendations in this paper focus on improvements to the curtailment order that is found in Operating Policy and Procedure 103. There will be no exemption for wind generators and co-generators. It is necessary to include all generation types in supply surplus procedures to ensure a level playing field between all generators. The rules should consider and, to the extent possible, accommodate the different characteristics of each generation type without unduly favoring one type of generation over another.

Generators are curtailed to their minimum stable generation (MSG) level under emergency situations.

The AESO recommends that the application and definition of MSG be updated. The AESO requires further detail on the operational limitations of generators before a recommendation on the revised MSG definition is provided. A workgroup involving the AESO and stakeholders has been established to outline requirements for the revised definition of MSG.

The AESO recommends the implementation of a Voluntary Generator Curtailment request (VGCR). The VGCR allows generators to voluntarily curtail supply as a step within the supply surplus procedures. Including a VGCR is similar to successful protocols in supply shortfall procedures in which the AESO requests generators to provide supply if they have the ability.

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[1] Supply Surplus Discussion Paper, April 29, 2010: www.aeso.ca > Market > Market Policy Implementation > Supply Surplus.

[2] www.aeso.ca and follow the path Market > Market Policy Implementation > Supply Surplus.

The AESO recommends allowing exports within T-2 as part of supply surplus procedures. It is a low cost solution that is easy to implement and is consistent with successful practices in supply shortfall procedures where the AESO increases import Alberta Transfer Capability (ATC).

The Voluntary Generator Curtailment Program (VGCP) is a market based solution for managing supply surplus conditions, in which participants voluntarily enter an offer to curtail when the price is at $0. Generators that remain on-line would pay for the cost of VGCP. Although the AESO has noted many benefits for the implementation of VGCP in section 4.3.1.3, the AESO does not recommend the implementation of the VGCP at this time. The VGCP may be a complex solution that may not be required; the AESO believes that the other recommendations noted in this paper will be sufficient in managing supply surplus conditions.

Section 5 of this paper outlines the recommended procedure to be followed during supply surplus conditions. The procedure provides the recommended order to be followed and incorporates the improvements recommended within this paper.

To provide participants with an indication of the potential for supply surplus conditions a web based supply surplus report similar to the current supply adequacy report will be created.

2. Purpose

The purpose of this paper is to provide recommendations on the short term and long term solutions for managing supply surplus conditions. Supply surplus recommendations are limited to those that can be made within the existing market design.

The consultation is limited to supply surplus solutions. Market rules for wind participation in the energy market will be explored within the wind integration consultation that is ongoing and market rules for intertie participation in the energy market will be addressed within the intertie framework consultation.

The AESO welcomes feedback on all areas outlined in this recommendation paper.

3. Introduction / Background

The supply surplus rules were re-examined as part of the Market and Operational Framework (“MOF”) for Wind due to the projected increase of wind generation in upcoming years. Stakeholders that participated as part of the MOF for Wind

indicated that further and broader consultation was required. As a result of this feedback from stakeholders the AESO initiated a supply surplus rule review through a discussion paper dated April 29, 2010.

The supply surplus discussion paper explored a short term solution for managing supply surplus conditions while initiating discussion on the longer term options. It also included further background on previous supply surplus consultations, the rule history, an assessment of the existing rules, and detail on the future and historical contributing factors to supply surplus conditions. Please refer to the discussion paper for further information on these topics.

This supply surplus recommendation paper provides the recommendations for updating the supply surplus rules and procedures.

The recommendations are based on:

- a review of the existing rules, policies and procedures, which is provided as part of the Supply Surplus discussion paper;
- the proposed recommendations within the MOF for Wind recommendation paper[3] and subsequent stakeholder comments;[4]
- stakeholder comments on the discussion paper;[5]and
- research of other markets, which is also provided as part of the Supply Surplus discussion paper.

The supply shortfall procedures found in Operating Policy and Procedure 801[6] have been used as a guide for supply surplus recommendations.

The recommendations presented in this paper respect policy and legislation and consider the fair, efficient and openly competitive (FEOC) operation of the market. Please refer to the discussion paper for the sections of the Electric Utilities Act (EUA) and Alberta's Electricity Policy Framework[7] that apply to the supply surplus initiative.

[3] AESO Recommendation Paper, Implementation of Market and Operational Framework for Wind Integration in Alberta, March 2009.

[4] Stakeholder comments on the MOF for Wind recommendation paper are available on the AESO's website at www.aeso.ca and by following the path Market > Market Policy Implementation > Wind Power Integration > Implementation of Market and Operational Framework.

[5] Stakeholder comments on the discussion paper are available on the AESO's website at www.aeso.ca and by following the path Market > Market Policy Implementation > Supply Surplus.

[6] Operating Policy and Procedure (OPP) 801 is available on the AESO's website at www.aeso.ca and by following the path Rules and Standards > ISO Rules > Current Operating Policies and Procedures > ISO OPP Table of Contents.

[7] Alberta's Electricity Policy Framework: Competitive-Reliable-Sustainable, June 6, 2005, is available by accessing the following link: http://www.energy.alberta.ca/Electricity/pdfs/AlbertaElecFrameworkPaperJune.pdf.

The recommendations presented in this paper also consider that the System Controller (SC) must always maintain the supply/demand balance to ensure that the Alberta Interconnected Electric System (AIES) is operating reliably.

The principles that the supply surplus rules must adhere to have been established in the discussion paper. All principles remain the same with the exception of principle b). Principle b) has been changed as follows based on stakeholder feedback.

From:

> Supply surplus rules should be drafted so that they encourage competition and reduce barriers to entry

To:

> Supply surplus rules should be drafted so that they facilitate competition and reduce barriers to entry.

Only stakeholder comments on the discussion paper that apply to the recommendations have been included within this recommendation paper. For all stakeholder comments on the discussion paper and associated AESO comment-responses, please refer to the AESO's website at www.aeso.ca, and follow the path Market > Market Policy Implementation > Supply Surplus.

4. Short-Term and Long-Term Solutions for Managing Supply Surplus Conditions

4.1 General

Within the discussion paper, the AESO proposed short term and long term options for consideration for managing supply surplus conditions.

The short term options for consideration included:

- removal of an exemption for wind generators and co-generators under OPP 103,
- the scheduling of exports within T-2 or within the delivery hour, and
- a voluntary generator curtailment request to the market.

The longer term options included:

- market rules for wind generation and
- a voluntary generator curtailment program

4.1.1 Short Term vs Long Term Solution

4.1.1.1 Stakeholder Feedback

There were three participants that questioned the need to implement a short term solution and commented that the AESO focus on a sustainable long term solution.

4.1.1.2 AESO Recommendation & Rationale

The AESO is working on the short term and long term solutions simultaneously. In the AESO's view the short term solutions proposed in the discussion paper are necessary for two reasons:

- to ensure that there is a level playing field for all competitors,
- to manage the increase in $0 energy that the system could see in the next year or two.

The long term solutions proposed in the discussion paper are more complex and require more coordination and consultation with stakeholders. The strategy is to create short term solutions that are compatible with the longer term solutions so that the final design is fair, efficient, and openly competitive.

A combination of these options is considered appropriate. Stakeholder comments and the AESO's recommendation and rationale on the proposed options will be discussed in this section.

4.2 Short-Term Options

4.2.1 No Exemption for Wind Generators

4.2.1.1 Description

At present, wind generators are exempt from dispatch down protocols within OPP 103. The pros and cons of removing the exemption from supply surplus procedures are outlined within the discussion paper, and also summarized below:

Pros:

- Fairness: all generators are subject to supply surplus protocols
- Fairness: all generators are subject to curtailment
- Wind generators are capable of being curtailed, like other generators

Cons:

- Curtailment of wind generators using supply surplus protocols may require the system controller to manually calculate pro rata curtailment and issue dispatches and directives by phone if wind generators are not subject to market rules because the SC will not have visibility of wind generation through the energy market merit order.

4.2.1.2 Stakeholder Feedback

The majority of participants that responded to the discussion paper supported the inclusion of wind generators in supply surplus procedures. The comments submitted by these participants are summarized below:

- Wind power facilities should not be exempt from the supply surplus management procedure.
- Update the rules to permit wind generation to must offer, must comply and be curtailed if necessary during a supply surplus event.
- Dispatchable generators should not have to pay to allow wind generation to remain on line.

The participants that supported wind generators remaining exempt from supply surplus procedures submitted the following comments, which are summarized below:

- More time is required to refine wind forecasts, refine wind technical standards and to make improvements to wind technologies before the exemption is removed.
- Removing the exemption for wind generation in OPP 103 or pursuing uniformity of market rules for all resources may not be prudent at this time. If the AESO still feels compelled to pursue the removal of the exemption or insist on wind generators on complying with all market rules, the AESO must grandfather all existing wind facilities and allow other market participants yet to construct such facilities a reasonable amount of time to react to this important policy change.

4.2.1.3 AESO Recommendation & Rationale

The supply surplus consultation will not be considering offer rules for wind; these will be explored as part of the wind integration consultation, which is ongoing. The supply surplus consultation with respect to wind generation considers the visibility and inclusion of wind generation within the supply surplus procedures.

Supply surplus rules must be designed so that all generators including wind are treated fairly. The exemption for wind and other types of generation is not, in the AESO's view, fair. It is necessary to include all generation types in the supply surplus procedures so that all generation types are on a level playing field which means that rules should consider and, to the extent possible, accommodate the different characteristics of each generation type without unduly favoring one type of generation over another. Allowing a blanket exemption for one generation type will not accomplish this.

The AESO recommends that wind generators are not exempt from supply surplus procedures.

4.2.2 No Exemption for Co-generators

4.2.2.1 Description

Under the current rules co-generators are exempt from supply surplus procedures. The pros and cons of removing the exemption from supply surplus procedures are outlined within the discussion paper and also summarized below. Legislation requires that consideration must be given to electric energy produced and consumed solely on-site.

Pros:

- Fairness: all generators are subject to supply surplus protocols
- Fairness: all generators are subject to curtailment
- An exemption is not required for cogens as there is legislative direction regarding electric energy produced and consumed solely on site.

Cons:

- Cogens have indicated that sudden interruptions could have operational and economic impacts to the facility.

4.2.2.2 Stakeholder Feedback

Responses received by the AESO on the discussion paper included both support for the inclusion of co-generators in supply surplus procedures and support for the continued exemption of co-generators in supply surplus procedures. These comments are summarized below:

Support for co-generators to be included in supply surplus procedures:

- There is no principle to support treating any facility connected to the grid more favorably than others. If the site is a net consumer but has generation, the AESO has the right, responsibility and obligation to apply reliability rules to that facility in a manner that is comparable to other co-generation sites.
- Exceptions under the current OPP 103 should be re-examined to comply with FEOC. The thermal requirements for processes at cogen facilities should be considered in determining if the cogen electrical output can be curtailed during supply surplus events. However, some cogen facilities do have the ability to meet some of these thermal requirements via alternative methods that are typically less efficient and /or convenient. Although these alternative methods are not preferred for economic reasons, any such volumes should be considered in the supply surplus rule.
- Cogeneration facilities should be curtailed *after* wind power management has been implemented.
- There should not be a blanket exemption for co-generators.

Support for co-generators to remain exempt from supply surplus procedures:

- Given the complexities around cogeneration facilities a blanket exemption might be the best solution in this case.
- Do not agree with removing the current exemption for cogenerators in OPP 103. Within the ISD, power that is created is normally produced to meet steam requirements and oil production. This means that megawatts curtailed can directly impact the production of oil. This impacts rights assigned under the Industrial System Designation.
- It is unreasonable for a market participant such an ISD with such complex facilities, economics and extremely long lead times to respond to such important price signal change without incurring serious harm. If a market participant cannot respond in a timely manner or the costs are so prohibitive to respond and in turn is unduly harmed, the proposed change is neither fair nor efficient.
- Curtailment of an ISD's generation cannot be considered in isolation, as curtailment to an ISD is curtailment of an entire integrated operation which can have significant negative economic and operational impacts on the entire site.
- The technical variations between a traditional power generator and an ISD co-generator along with the disproportionate outcome as a result of a curtailment instruction from the AESO represents a fundamental distinction between the two entities and warrants the co-generation facility exemption in OPP 103.
- If the AESO feels compelled to pursue the removal of the exemption, the AESO must grandfather existing co-generation facilities and allow other market participants yet to construct such facilities a reasonable amount of time to react to this important policy change.

There were also participants that did not directly comment for or against the inclusion of co-generators in supply surplus procedures, however, expressed the following regarding the management of supply surplus:

- Management of supply surplus, in real time, should not cause a participant to be in violation of its environmental permits (e.g. NOx permit) or health and safety guidelines, adversely impact equipment reliability or increase risk of damage to other operations and assets.
- Management of supply surplus, in real time, should not cause an adverse impact on the facility owner's processes (e.g. loss of bitumen production).

4.2.2.3 AESO Recommendation & Rationale

The AESO recognizes the complexity of co-generation processes, and that facility process requirements are most often the primary reason that these

facilities were built. In order to ensure a FEOC market the rules must consider and, to the extent possible, accommodate the different characteristics of each generation type without unduly favoring one type of generation over another. In the AESO's view, allowing a blanket exemption for one generation type will not accomplish this.

Legislation provides Industrial System Designation facilities (ISD's) certain exemptions. Legislation requires that consideration must be given to electric energy produced and consumed solely on-site[8]. However, electricity not produced and consumed solely on site must be subject to the appropriate rules and procedures, similar to other generators.

The discussion paper proposed updating the definition and application of minimum stable generation, which will allow participants to reflect more appropriate minimum operating levels. Section 6 of this paper provides further discussion on minimum stable generation.

Impact to co-generation facilities as a result of supply surplus curtailments must be kept to minimum. The minimizing the impact is addressed in the following manner:

- Electric energy produced and consumed on site is not subject to the ISO rules, meaning that net to grid generators will not be curtailed below 0MW net to grid,
- Generators will be curtailed to their minimum stable generation level,
- Revisions to rules regarding minimum stable generation will be explored to better accommodate current generator limitations.

The inclusion of co-generators in supply surplus procedures are necessary updates to the existing procedures to ensure that there is a level playing field for all competitors.

The AESO recommends no exemption for co-generators in supply surplus procedures.

4.2.3 Voluntary Generator Curtailment Request (VGCR)

4.2.3.1 Description

Under VGCR, in a supply surplus condition the system controller would send out a request to the market for generators to curtail supply if they have the ability. The pros and cons of the VGCR option are described in the discussion paper, and also outlined below:

[8] Electric Utilities Act, Chapter E-5.1, 2(1)(b)

Pros:

- request for voluntary curtailment may result in enough energy curtailment to avoid having to curtail generators more significantly impacted.
- Consistent with other successful practices in supply shortfall procedures (i.e. request to generators to provide more supply)
- Simple to implement

Cons:

- no obligation therefore there may be no MW curtailed.

4.2.3.2 Stakeholder Feedback

Out of the responses received by the AESO on the discussion paper, participants generally supported the VGCR option, but questioned how successful it would be.

These comments are summarized below:

- T-2 rules, implemented as part of Quick Hits, were intended to increase visibility of supply and the stability of the PP. However, market rules that potentially negatively impact the market's ability to respond competitively to changes in fundamentals should be carefully reviewed. Has the ISO continued to review the impacts of the Quick Hits merit order stabilizers, specifically T-2, to ensure that this change is not having unintended consequences and inadvertently contributing to supply surplus conditions as market participants are unable to immediately respond to $0 prices by reducing generation or by scheduling exports?
- Considering that generators are probably being paid $0 during supply surplus events, there is some possibility that one or more generators would curtail voluntarily. However, $0 offers are sometimes used to keep a unit "hot" in anticipation of system needs and higher prices in subsequent hours, and/or to avoid shut-down and start-up costs. It therefore seems unlikely that this option would succeed.
- This is a workable solution- any concerns for changes in offer behavior are simply adjustments that market participants would make in response to any rule change.
- A voluntary generator curtailment request that would permit suppliers to respond to $0 SMP within the T-2 time period would offer an additional market based tool for the system controller to manage supply surplus situations prior to resorting to administrative mechanisms.
- Need to further consider participation in this program for times when dispatching down will not result in steam impacts.

4.2.3.3 AESO Recommendation & Rationale

The VGCR allows generators to voluntarily curtail supply as a step within the supply surplus procedures. Including a VGCR is similar to comparable steps in supply shortfall procedures, in which the AESO requests generators to provide supply, if they have they ability.

Generators that have processes or minimum stable generation requirements can assess their situation and decide on whether they are able to participate to help achieve supply-demand balance on the AIES. Essentially, during supply surplus conditions, when the SMP is $0, generators that have the ability to curtail would dispatch down their flexible MW at this step in the procedure.

In their comments on the discussion paper, stakeholders questioned the appropriateness of the T-2 rules. The T-2 rules were implemented as part of Quick Hits. The AESO has completed a review of the Quick Hits implementation, and continues to monitor these rules as the market evolves. Details of the review are on the AESO's website[9]. The rules would be revised to allow this behavior within T-2 under supply surplus conditions, and therefore will not be a barrier for implementation of VGCR.

The AESO recommends the implementation of VGCR. Section 5 shows the recommended procedure, including VGCR.

4.2.4 Exports Within T-2

4.2.4.1 Description

The procedure would be revised to allow maximizing the export ATC within the current hour to allow for exports during supply surplus conditions. Similar to supply shortfall procedures, the intent is not to affect price.

The pros and cons of this option are described in the discussion paper, and also outlined below:

Pros:

- A comparable step has been used successfully in supply shortfall procedures
- including this step early in the procedure may help reduce the impact or avoid curtailment of generators under supply surplus procedures

Cons:

- may have only a minimal impact in the current hour

[9] Information related to the Market Policy Implementation, commonly referred to as Quick Hits, including the Quick Hits 6 month review may be found on the AESO's website by following the path: www.aeso.ca > Market > Market Policy Implementation > Quick Hits

4.2.4.2 Stakeholder Feedback

Stakeholder comments on the discussion paper for exports within T-2 are summarized below. There was support and opposition for allowing exports within T-2 as part of supply surplus procedures. There was also comment about the validity of other rules and related consultation on interties.

Comments that supported allowing exports to schedule within T-2:

- Conceptually this option is a good one. Practically, however, it could be difficult for exporters to find counterparties, arrange transmission in adjacent jurisdictions, and confirm export transactions in sufficient time to avoid curtailment.

Comments that oppose allowing exports to schedule within T-2:

- Do not believe that creating selective exemptions to T-2 is a desired solution to address supply surplus and consider it to be contrary to FEOC.

4.2.4.3 AESO Recommendation & Rationale

Maximizing export ATC within T-2 is similar to comparable procedures during supply shortfall where import ATC is maximized and all viable options are considered before load curtailment. Similarly, all practical steps should be considered before generator curtailment in supply surplus procedures. Export and Import are opportunity service, and may help in alleviating the problem in order to achieve supply-demand balance.

Increasing export ATC in supply surplus conditions is comparable to increasing import ATC in supply shortfall conditions which may be an effective and simple step in managing supply surplus and should be discussed in this context.

The AESO recommends the inclusion of allowing exports within T-2 as part of supply surplus procedures. It is a low cost solution that is easy to implement. It is consistent with successful practices in supply shortfall procedures.

4.3 Long-Term Options

4.3.1 Voluntary Generator Curtailment Program (VGCP)

4.3.1.1 Description

A Voluntary Generator Curtailment (VGC) may be a viable option for generators that have the ability to curtail supply.

Under the VGCP option, the generator would be compensated to curtail generation through a market based solution where generators could submit an offer to curtail for a price when the SMP is zero.

All generators that remain on line during a supply surplus condition would compensate one or more generators who would curtail on their behalf.

The pros and cons of this option are outlined in the discussion paper, and summarized below:

Pros:

- decreased risk of curtailment for generators that would like to continue normal operation of their facility due to operational or economic reasons
- it may provide incentive for generators to move out of the $0 block
- market solution, with minimal intervention from the AESO

Cons:

- may provide a perverse incentive for generators to wait until this step in the procedure to voluntarily curtail generation.
- it may not make sense to pay a generator to curtail when the market price is $0
- the VGCP market may require significant resources to create and maintain
- a VGCP may not even be required; we may not ever reach this step in the procedure.

4.3.1.2 Stakeholder Feedback

Stakeholder comments received on the discussion paper showed support and opposition on the implementation of a VGCP. These comments are summarized below:

Comments that support implementation of a VGCP:

- support the implementation of a VGC Program
- Voluntary Generator Curtailment is a viable option but would like to further explore this option.
- This is an acceptable solution, with the exception that imports should not be forced to be curtailed first. Importers should be allowed to offer to not be curtailed, the same as other generation. This situation will be an issue if importers are paying for firm transmission from another jurisdiction.

Oppose the implementation of a VGCP:

- a VGCP program would create perverse incentives that would aggravate the original problem. Low priced generation would see an incremental revenue opportunity by offering additional generation at $0 to then become eligible for an out of market payment. In addition, just like any administrative solution, a VGCP would result in inefficient outcomes, a transfer of wealth, and disturb the investment signal.

- It is not clear how the Voluntary Generator Curtailment Program (VGCP); a solution where generators submit offers to curtail for a price is different from the Dispatch Down Service (DDS) product that was designed to offset the impacts of Transmission Must Run (TMR). By taking DDS offers from the lowest priced offer block ($0) the ISO creates an incentive for potential DDS providers, units with the highest marginal costs, to price their entire DDS offer volume (in addition to their MSG volumes) at $0, thus exacerbating conditions that contribute to supply surplus events. Given that DDS is a contributing factor to supply surplus it does not seem practical that a Voluntary Generator Curtailment Program (DDS) be recommended as a solution.
- Dispatchable generators should not have to pay to allow wind generation to remain on line.
- Support the principle that loads should not be compensated for not consuming during periods of supply shortfall nor should supply be compensated for not supplying during periods of supply surplus.
- despite a general preference for market based solutions, we do not support this proposal on a principled basis. The forecast of supply surplus situations becoming more frequent is primarily the result of subsidized supply (imports, wind, Medicine Hat, government impacted) that are not subjected to the same AESO rules as other generators. For a generator to further compensate its competitors to accommodate public policy objectives that are counter to its interests would not be fair. This would not be an issue if this compensation was a system cost.
- this approach could cause reliability concerns and create vastly different market outcomes. It is currently relatively common for generators to be operated at a loss for short periods on the basis that the losses are small and opportunities for profits will be missed if a unit is off-line. If supply surplus situations cause new costs for generators, these decisions would be affected and long lead time units may be off-line when needed by the system.

4.3.1.3 AESO Recommendation & Rationale

The VGCP is a market based solution for managing supply surplus conditions, in which participants voluntarily enter an offer to curtail. The incentives to participate in a VGCP market should not outweigh the benefits of participating in the energy market. Stakeholders indicated that the implementation of a VGCP will provide perverse incentives. The VGCP should provide the right incentives to encourage the correct behavior.

If implemented, the provision of a VGCP could include the following:

- The VGCP would be activated when the SMP is $0, as a step in the supply surplus procedure after imports are curtailed, intra-hour exports are allowed, the voluntary generator request is sent out, and before flexible blocks are dispatched down and wind generators are curtailed.
- Offers for participating in the VGCP would be accepted day-ahead, by noon.

Requiring participants to enter day-ahead offers would prevent any perverse incentives in real-time as supply surplus is a real-time condition. An acceptable operational reason would be required for any changes to the day-ahead offer.

All generators that remain on line during a supply surplus condition would compensate one or more generators who would curtail on their behalf. Requiring generators to pay for the VGCP is aligned with the current requirement of loads paying for curtailment services in supply shortfall procedures. In the AESO's view, this requirement could also:

- incent generators to offer at a value other than $0 in the energy market, and may prevent supply surplus conditions
- incent generators that have the ability to curtail to not be on-line during a supply surplus condition, in order to avoid payment to other generators that curtail under the VGCP, which will also help alleviate the supply surplus condition.

While this incentive may be beneficial for managing supply surplus conditions, there has been concern that it may cause supply shortfall issues if long lead time units are off-line when required by the system. Ultimately, the AESO recognizes that an important enabler for allowing the market to respond to supply surplus conditions on its own without AESO intervention is information. The AESO intends to provide the market with an indication of supply surplus events prior to real time so that participants can respond to market signals and adjust accordingly. Section 7 further details the supply surplus report provisions.

Stakeholders have also compared the VGCP to the Dispatch Down Service (DDS) market. There are distinct differences between the DDS and VGCP. DDS is dispatched below the reference price when there is a Transmission Must Run (TMR) dispatch (also taking into consideration constraints) and its purpose is to offset the impacts of the TMR dispatch on SMP. VGCP does not consider TMR or a reference price, and would be dispatched when the SMP is at $0, under a supply surplus condition.

It is noted that for both DDS and the proposed VGCP markets, participants would voluntarily enter an offer to curtail.

Stakeholder comments within this section with respect to the order of curtailment will be further discussed in section 5 of this paper.

As noted above, the provision of a VGCP may help in alleviating supply surplus conditions as it provides a market based solution for generators to voluntarily curtail. It may also help in preventing supply surplus conditions by: incenting generators not to be on-line in order to avoid payment to other generators that participate in the program or preventing supply surplus conditions by incenting generators to offer at a value other than $0.

Although the AESO has noted various benefits for the implementation of the VGCP, the AESO does not recommend the implementation of the VGCP at this time. The AESO has received mixed participant support for the implementation of the VGCP and most participants were not in favor. Additionally, the VGCP solution may be a more complex solution than is required. The AESO believes that the other recommendations noted in this paper will be sufficient in managing supply surplus conditions. Once implemented, the AESO will monitor the recommended solutions and will re-visit the VGCP if necessary (the normal stakeholder consultation process will be followed if the option is re-visited).

4.4 Other Considerations

Market rules for wind and negative pricing were also considered in the Supply Surplus Discussion paper. The AESO will not pursue these options further in this forum because:

- Market rules for wind participation in the energy market will be explored within the wind integration consultation that is ongoing.
- The supply surplus discussion paper provided the AESO's position on negative pricing. Negative pricing also seems to have limited support from stakeholders.

Please refer to the discussion paper for further detail on the option assessment, and the supply surplus comment-response matrix for the stakeholder comments and associated AESO responses (which also provide the AESO's position and rationale).

5. Rules and Procedures

5.1 General

This section will outline the recommended procedure to be followed during supply surplus conditions.

Specific stakeholder comments on the recommended order is available on the AESO's website,[10] but are not summarized within this section.

[10] Stakeholder comments and AESO's comment-responses on the supply surplus discussion paper are available on the AESO's website by following the path: www.aeso.ca > Market > Market Policy Implementation > Supply Surplus.

The updated rules and procedures will be drafted according to the rule format under the Transition of Authoritative documents initiative[11].

5.2 AESO Recommendation & Rationale

The AESO recommends the following procedure during supply surplus conditions when there are multiple $0 offers in the energy market merit order. It assumes that wind generators and co-generators are subject to supply surplus procedures, as per the recommendations outlined under sections 4.2.1 and 4.2.2 of this paper.

It should be noted that all relevant communication to market participants during supply surplus procedures will be posted to the AIES event log.

1) Curtail current hour import transactions as required.
2) Maximize the posted export ATC limit to allow for exports within the hour.
3) Send out a request to market participants to voluntarily reduce generator output (VGCR).
4) Dispatch flexible blocks of the $0 offers for partial volumes on a pro-rata basis and direct[12] wind generation on a pro-rata basis.
5) Direct assets with inflexible $0 offers greater than their declared minimum stable generation levels to their declared minimum stable generation levels (MSG). Assets with the greatest difference will be directed first (please see section 6 of this paper for recommendations on MSG).
6) Assess if an asset, due to its operating characteristics, is running at a higher generation level than its minimum stable level because it is providing regulating reserve (RR), then determine if it should be dispatched off for RR. Consider whether another asset has offered and has not been dispatched for RR and will not require running at a generation level higher than its minimum stable level (this step is carried over from the existing procedure).

6. Minimum Stable Generation (MSG) and Minimum Operating Level (MOL)

6.1 Description

The ISO rules currently define MSG as: the minimum generation level that an asset can be continuously operated at without becoming unstable.

The MOF recommendation paper for wind recommended the addition of MOL which is defined as: “a physical operating limit (not an economic limit) for an asset constrained by legal/regulatory, environmental, health and safety,

[11] Information on the Transition of Authoritative documents initiative (TOAD) is available on the AESO’s website by following the path: www.aeso.ca > Rules and Standards > TOAD Project.

[12] Wind generation is directed because wind generators currently do not submit offers. Automated dispatches can only be sent to generators that have submitted an offer.

equipment reliability, operating level required to serve dispatched ancillary services, or operating level required to prevent damages to third party equipment".

The AESO questions the need for both a MOL and MSG.

6.2 Stakeholder Feedback

Generally, stakeholders indicated that both a MOL and MSG are not required. Stakeholder comments with respect to MSG and MOL are summarized below:

- the Supply Surplus Protocol Work Group Recommendation Paper identified a number of examples that were in fact economic limits. The examples provided included hydro facilities that must either pass water through the generators or waste it and contractual provisions that specify a particular level of output. In either case there is no physical risk to the facility for reducing output; rather there is a financial incentive to produce at a higher level. Economic incentives should not preclude units from being curtailed to MSG in a supply surplus event. Therefore, it is appears unnecessary to create a MOL. If however, these economic MOLs are currently being characterized as MSG, it may be necessary to create a separate category to differentiate economic limits from physical limits.
- A single minimum operating level ("MOL"), which reflects the physical capability of a unit and which may therefore vary over time, should be used.
- suggest the following definition be used: The Minimum Operating Level is a physical operating limit (not an economic limit) for an asset constrained by legal/regulatory, environmental, health and safety, equipment reliability, operating level required to dispatch ancillary services or operating level required to prevent adverse impacts on other operations and assets.
- the MOL should be used instead of the MSG. The only place the AESO currently uses MSG is for DDS. The MSG is static and does not reflect the real time constraints that units operate under- would prefer only MOL to be used since it better reflects facilities real time operations.

6.3 AESO Recommendation & Rationale

Stakeholder feedback on the discussion paper indicates, and the AESO agrees, that MOL and MSG are not both required as both are intended to be physical operating limits submitted by the participant. In the AESO's view, the current definition and application of MSG should be updated to better suit the needs of market participants and the AESO. Additionally, the MSG is also used as part of the DDS market and for constraints management therefore any updates will also need to be considered in this context. With respect to supply surplus conditions

the MSG needs to be accurate so that the SC has accurate and appropriate information when curtailments are necessary.

The definition of MSG should be updated to include operational limitations for generating units and not economic limits (economic limits should be reflected within the asset offer submission). The current definition of acceptable operational reason may be used as a guideline in determining these operational limits.

The supply surplus workgroup recommended the addition of a MOL (as described in section 6.1 of this paper and section 7 of the supply surplus discussion paper[13]). The definition of MOL specifically referenced "environmental, health and safety, equipment reliability". The AESO notes that the direction and directive[14] definitions accept that the facility owner retains the right and duty to take any action it deems prudent to protect the facility, its personnel, the public or the environment. Therefore, in the AESO's view, it may be redundant to include this content in the revised definition of MSG.

The AESO requires further detail on the operational limitations of generators before a recommendation on the revised MSG definition is provided. The AESO recommends that a workgroup be established to outline requirements for the revised definition.

Currently, the MSG is a static value that is submitted to the AESO by the participant[15], and does not change unless there is a physical change to the asset.

The AESO recognizes that there are assets that have a dynamic MSG, namely co-generators that have multiple units or processes that affect their output at any given time and allowing participants to submit MSG changes to the AESO on a time-ahead basis may be appropriate.

Additionally, the supply surplus workgroup recommended that a mechanism be developed for participants to declare and submit a minimum operating level for their asset(s), although specific details were not defined.

[13] Supply Surplus discussion paper can be found on the AESO's website at: www.aeso.ca and by following the path Market > Market Policy Implementation > Supply Surplus

[14] Directive is defined as the following within the ISO Rules: means a direction given to a **market participant** by the **system controller** with the understanding that the **market participant** must comply, accepting that the facility owner retains the right and duty to take any action it deems prudent to protect the facility, its personnel, the public or the environment. A directive may instruct a **market participant** to curtail or restore **load**, or to stop planned work on a transmission or generation element and restore the element to service as quickly as possible.

[15] Market Participants do not have the ability to change their MSG through the Energy Trading System at this time. The value is submitted to a member of the AESO Energy Market Participant Support team, who enters the value on behalf of the participant.

Options for updating the application of MSG that would allow the participant to enter changes through the energy trading system (ETS) on a time-ahead basis, where time-ahead could be one of the following:

- day-ahead
- prior to T-2
- prior to T-2, and any changes within T-2 would require an acceptable operational reason (AOR)[16]

It should be noted that allowing this ability for participants to change the MSG requires a change to the ETS and to the dispatch tool so that the system controller will have visibility of the value that the participant enters in ETS.

The options listed above, and any additional options presented through stakeholder consultation relevant to updating the application of MSG will be further explored through the MSG workgroup.

7. Reporting

7.1 Description

An important enabler for allowing the market to respond to supply surplus conditions on its own without AESO intervention is information. Similar to the approach taken with the supply adequacy report the AESO intends to provide the market with an indication of supply surplus events prior to real time so that participants can respond to market signals and adjust accordingly.

7.2 Stakeholder Feedback

Stakeholders supported the provision of a report that would provide the market with an indication of supply surplus events prior to real time. Specific comments in support of the report are listed below:

- support the AESO efforts in reporting information regarding supply surplus to the market.
- agree with the AESO that better information will enable suppliers to better respond to supply surplus situations. We have not deliberated the specifics of such a report but would like to point out that unless reasonable accurate information is available at least 3 hours before the delivery hour, the reports will be of limited value.

7.3 AESO Recommendation & Rationale

The AESO currently forecasts the pool price after T-2. This pool price forecast is based on the offers for the settlement interval and looks at the incremental 10

[16] Acceptable Operational Reason is defined in the ISO Rules under Definitions: www.aeso.ca > Rules and Standards > ISO Rules > Current ISO Rules > Definitions

minute load changes from the current level to determine 6 forecast marginal prices for each hour. These are averaged to create the pool price forecast. Extending this methodology to 6 hours ahead and using an indicator of if the forecast marginal price is $0 can provide a signal to the market in advance of T-2 allowing participants to react and manage the potential of supply surplus conditions without AESO intervention.

The AESO recommends implementation of the option described above for forecasting a supply surplus event since it will be effective and useful to the AESO and to market participants.

8. Next Steps

The AESO seeks feedback on this recommendation paper. Please provide comments to Ruppa Minhas, ruppa.minhas@aeso.ca by January 14, 2011. Should you have any questions on this paper in the interim, please contact Ruppa Minhas at 403.539.2589.

The supply surplus initiative will continue to follow the normal stakeholder consultation process. An overview of the process is provided in the diagram below.