

ISO Rules

Part 200 Markets

Division 206 Capacity Market

Section 206.11 Energy and Ancillary Services

Offset for Assets



External Consultation Draft
October 22, 2018

Applicability

- 1 Section 206.11 applies to:
- (a) the **ISO**; and
 - (b) a **capacity market participant** requiring an energy and ancillary services offset for an asset.

Requirements

Information for Energy and Ancillary Services Offset Calculation

2 The **capacity market participant** must, in accordance with the timelines prescribed in the *Capacity Market Auction Guidelines*, provide the following information to the **ISO** for the **obligation period** or a portion of the **obligation period**, as applicable:

- (a) the fuel consumption efficiency of an asset in GJ/MWh for the **obligation period** *t*;
- (b) for a thermal **generating unit's** or thermal **aggregated generating facility's** that is not fueled by natural gas, the expected variable cost of fuel for the asset in \$/GJ, including variable transportation charges for the **obligation period** *t*;
- (c) the variable operations and maintenance costs of an asset in \$/MWh for **obligation period** *t*, excluding fuel related costs and amortized or capitalized costs;
- (d) the tonnes of CO₂/MWh emitted by the asset when producing electricity;
- (e) for a wind or solar **aggregated generating facility**, hydro **generating unit**, **energy storage facility**, or a thermal **generating unit** or an **aggregated generating facility**:
 - (i) anticipated **forced outages** and derating values in percentages; and
 - (ii) expected forward product energy production in MWh and substantiating evidence;
- (f) for all other assets not specified in subsection 3(e):
 - (i) seasonal ambient derates; and
 - (ii) anticipated **planned outages** and **forced outages**;
- (g) the revenues in dollars received from other sources outside of the electricity market that are directly related to production in the **obligation period**; and
- (h) expected **ancillary services** revenues in dollars for products other than **spinning reserve**, **supplemental reserve** and **regulating reserve**.

Calculation of Energy and Ancillary Services Offset for Assets

3(1) The **ISO** must, when required under Section 201.15 of the **ISO rules**, *Delisting* and Section 206.7 of the **ISO rules**, *Capacity Market Mitigation*, for every **obligation period** or portion of an **obligation period**, calculate the energy and ancillary services offset value in accordance with the following formula:

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$$\text{Energy and ancillary services offset}_t = \frac{(\text{forward power price}_t - \text{energy market expense}_t) \times \text{forward product energy}_t + \text{other revenues}}{\text{maximum capability} \times 1000}$$

where:

- (a) t equals the **obligation period** or portion of an **obligation period**, for which the energy and ancillary services offset is being determined;
- (c) $\text{forward power price}_t$ is the forward power price for an asset for **obligation period** t calculated in accordance with subsection 3(4);
- (d) $\text{energy market expense}_t$ is the energy market expense for the asset for **obligation period** t calculated in accordance with subsection 3(3);
- (e) $\text{forward product energy}_t$ is the forward product energy value in MWh for **obligation period** t as follows:
 - (i) for a wind or solar **aggregated generating facility**, hydro **generating unit**, **energy storage facility**, or a thermal **generating unit** or an **aggregated generating facility** with expected production hours less than 50% of the hours in **obligation period** t , the expected forward product energy production provided in accordance with 2(e); or
 - (ii) for all other assets, calculated in accordance with subsection 3(2);
- (f) other revenues is the revenues received from other sources outside of the electricity market and expected **ancillary services** revenues, provided in accordance with subsections 2(g) and 2(h); and
- (g) $\text{maximum capability}$ is the **maximum capability** of the asset.

(2) The **ISO** must, in calculating the energy and ancillary services offset t under subsection 3(1), calculate the $\text{forward product energy}_t$ in subsection 3(1)(e)(ii) in accordance with the following formula:

$$\text{forward product energy}_t = \text{maximum capability} \times (1 - \text{forced outage and derating values}) \times \text{forward power product hours}$$

where:

- (a) $\text{maximum capability}$ is the **maximum capability** of the asset;
- (b) $\text{forced outage and derating values}$ are the percentages provided in subsection 2(e)(i); and
- (c) $\text{forward power product hours}$ are the number of hours in the forward power product determined in subsection 3(4)(b)(i).

(3) The **ISO** must, in calculating the energy and ancillary services offset t under subsection 3(1) above, calculate the energy market expense t in accordance with the following formula:

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energy market expense_t =

$$\begin{aligned}
 & [forward\ fuel\ price_t \times (1 + commodity\ fuel\ charge_t)] \times heat\ rate_t \\
 & + variable\ operations\ and\ maintenance_t \\
 & + (emission\ intensity - established\ benchmark_t) \times carbon\ price_t \\
 & + transmission\ losses_t + trading\ charge_t
 \end{aligned}$$

where:

- (a) *t* equals the **obligation period**, or the portion of an **obligation period**, for which the energy and ancillary services offset is being determined;
- (b) *forward fuel price_t* in \$/GJ is:
 - (i) if the thermal **generating unit's** or **aggregated generating facility's** fuel is natural gas, the weighted average of the settlement corresponding to **obligation period t**, where such settlement are selected by the **ISO** from either:
 - (A) the published NGX Phys, FP (CA/GJ), AB-NIT; or
 - (B) if the NGX forward Phys, FP is unavailable or not applicable for use in the calculation of the forward fuel price, another comparable industry standard natural gas benchmark for **obligation period t**;
 - (ii) if the thermal **generating unit's** or thermal **aggregated generating facility's** fuel is not natural gas, the expected variable cost of fuel during the **obligation period t** provided in subsection 2(b); and
 - (iii) for non-thermal **generating unit** or **aggregated generating facilities**, is 0.
- (c) *commodity fuel charge_t* is:
 - (i) if thermal **generating unit's** or **aggregated generating facility's** fuel is natural gas, the most recent 12 **month** average of published NOVA Gas Transmission Ltd NGTL Fuel Usage and Measurement Variance expressed as a percentage; and
 - (ii) for all other assets, 0;
- (d) *heat rate* is the heat rate provided in subsection 2(a);
- (e) *variable operations and maintenance_t* are the costs provided in subsection 2(c);
- (f) *emission intensity* is the tonnes of CO₂/MWh provided in subsection 2(d);
- (g) *established benchmark_t* is the weighted average of the calendar year values matching **obligation period t** for an established benchmark for electricity published by a public authority;
- (h) *carbon price_t* is the weighted average of the calendar year values matching **obligation period t** for the carbon price published by a public authority for carbon emissions in Alberta;

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- (i) *transmission losses* $_t$ is the transmission loss value for **obligation period** t in \$/MWh calculated as the loss factor of the asset multiplied by the forward power price $_t$ where:
 - (i) the loss factor is the most recent published loss factor for the asset published on the AESO website; and
 - (ii) forward power price $_t$ for **obligation period** t is the value in subsection 3(4), as applicable;
- and
- (j) *energy market trading charge* $_t$ is the most recent energy market trading charge in \$/MWh published on the AESO website.

(4) The **ISO** must in calculating the energy and ancillary services offset in subsection 3(1), calculate the forward power price $_t$ in \$/MWh as follows:

- (a) for a wind or solar **aggregated generating facility**, hydro **generating unit**, **energy storage facility**, or a thermal **generating unit** or an **aggregated generating facility** with expected production hours less than 50% of the hours in **obligation period** t , the NGX FP Flat forward power price multiplied by a forward power price adjustment factor calculated in subsection 3(5); or
- (b) for all other assets, is the weighted average of the settlements matching the **obligation period** t , where the settlements are the average over a period determined by the **ISO** from either:
 - (i) the published NGX forward power products in Appendix 1 that yields the highest energy and ancillary services offset $_t$ for **obligation period** t ; or
 - (ii) if the NGX forward power product is unavailable or not applicable for use in the calculation of the energy and ancillary services offset, another comparable industry standard that yields the highest energy and ancillary services offset $_t$ for **obligation period** t ;

(5) The **ISO** must, in calculating the forward power price $_t$ in subsection 3(4)(a), calculate the forward power price adjustment factor in accordance with the following formula:

$$\text{forward power price adjustment factor} = \left(\frac{\sum (\text{hourly production} \times \text{pool price})}{\sum \text{hourly production}} \right) \div \text{annual average pool price}$$

where:

- (a) *hourly production* is the production of the asset in MWh in each hour from the **obligation period** or equivalent November 1 through October 31 period should an **obligation period** not yet have occurred, occurring most recently to the point in time at which the energy and ancillary services offset is calculated;

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- (b) *pool price* is the pool price for each hour for which production data is provided for in 3(5)(a) from the **obligation period** or equivalent November 1 through October 31 period should an **obligation period** not yet have occurred, occurring most recently to the point in time at which the energy and ancillary services offset is calculated; and
- (c) *annual average pool price* is the average of all pool prices during the **obligation period** or equivalent November 1 through October 31 period should an **obligation period** not yet have occurred, occurring most recently to the point in time at which the energy and ancillary services offset is calculated.

Attestation and Assessment of Information

4(1) The **capacity market participant** must submit an attestation from a corporate officer of the **legal owner** that the information provided pursuant to subsection 2 is accurate.

(2) The **ISO** must request additional information from the **capacity market participant** concerning the information submitted in subsection 2 where the **ISO** determines such information appears unreasonable.

(3) The **ISO** must after requesting additional information pursuant to subsection 2:

- (a) exclude costs provided in accordance with subsection 2 if the **ISO** determines that such costs are unreasonable; and
- (b) adjust forward product energy production provided in accordance with subsection 2 if the **ISO** determines that such expected energy production is unreasonable.

Appendices

Appendix 1 – *List of Forward Power Products*

Revision History

Date	Description
yyyy-mm-dd	

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Appendix 1 – List of Forward Power Products

Forward Power Product Names on NGX:

- NGX Fin FUT FF, FP for AESO Flat
- NGX Fin FUT FF, FP for AESO Ext Off Peak
- NGX Fin FUT FF, FP for AESO Ext Peak
- NGX Fin FUT FF, FP for AESO Off Peak
- NGX Fin FUT FF, FP for AESO On Peak
- NGX Fin FUT FF, FP for AESO Super Peak
- NGX Fin FUT FF, FP for AESO Hourly