

ISO Rules

Part 200 Markets

Division 206 Capacity Market

Section 206.11 Energy and Ancillary Services

Offset for Assets



External Consultation Draft
August 31, 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 and asset.

Requirements

Calculation of Energy and Ancillary Services Offset for Assets

2(1) The **ISO** must, when required under Section 201.15 of the **ISO rules**, *Delisting* and Section 206.8 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:

$$\text{EAS Offset}_t = \frac{(\text{Forward Power Price}_t - \text{Energy Market Expense}_t) \times \text{Forward Product Energy}_t + \text{Other non - electricity market revenues}}{\text{Nameplate Capacity} \times 1000}$$

where;

- (i) t equals the **obligation period** or portion of an **obligation period**, for which the energy and ancillary services offset is being determined;
 - (ii) EAS Offset_t in \$/kW, is the revenue less variable cost offset of the asset and includes energy and ancillary services revenues as well as all other non-electricity market revenues the asset may be expected to obtain such as revenues from the sale of renewable attributes an for **obligation period** t ;
 - (iii) $\text{Forward Power Price}_t$ is in \$/MWh and 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**, of the published NGX forward power product in Appendix 1 that yields the highest EAS Offset_t for **obligation period** t .
 - (iv) $\text{Energy Market Expense}_t$ is the energy market expenses for the asset in \$/MWh for **obligation period** t calculated in accordance with subsection 2(5) below;
 - (v) $\text{Forward Product Energy}_t$ is the forward product energy value in MWh for **obligation period** t calculated in accordance with subsection 2(4) below; and
 - (vi) $\text{Nameplate Capacity}$ is the **maximum capability** of the asset.
- (2)** The **ISO** must, when determining the $\text{Forward Power Price}_t$ for hydro assets, wind assets, storage assets, solar assets and thermal assets with an availability factor less than 50%, multiply the forward power price with a forward power price adjustment factor, as calculated in subsection 2(3).
- (3)** The **ISO** must calculate the forward power price adjustment factor as the realized energy revenues from the immediately preceding **obligation period** divided by the average **pool price** from the immediately preceding **obligation period** where the realized energy revenues equal hourly production

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of the asset in MWh multiplied by the **pool price** in each of those hours.

(4) The **capacity market participant** must provide the **ISO** with the expectation of forward product energy production in MWh for the asset during the **obligation period** t or a portion of an obligation period, for which the generation is being determined

(5) The **ISO** must, in calculating the EAS Offset t under subsection 2(1) above, calculate the Energy Market Expense t using the following formula:

$$\begin{aligned} \text{Energy Market Expense}_t &= [\text{Forward Fuel Price}_t + (1 + \text{Commodity Fuel Charge}_t)] \times \text{Heat Rate}_t \\ &+ \text{Variable Operations and Maintenance}_t \\ &+ (\text{Emission Intensity} - \text{Established Benchmark}_t) \times \text{Carbon Price}_t + \text{Transmission Losses}_t \\ &+ \text{Trading Charge}_t \end{aligned}$$

where;

- (i) t equals the **obligation period**, or the portion of an **obligation period**, for which the energy and ancillary services offset is being determined;
- (ii) Forward Fuel Price t is
 - (A) For natural gas fueled assets: the weighted average of the settlements matching **obligation period** t , where the settlements are the average over the period determined by the **ISO** in subsection 2(1)(i), of NGX Phys, FP (CA/GJ), AB-NIT;
 - (B) For thermal assets that are not fueled by natural gas: the **capacity market participant** must provide the **ISO** the expected variable cost of fuel in \$/GJ, including variable transportation charges, for the asset during the **obligation period** t .
 - (C) For non thermal assets: this variable does not apply
- (iii) Commodity Fuel Charge t relates to natural gas fueled assets only and is the most recent 12 **month** average of published NOVA Gas Transmission Ltd NGTL Fuel Usage and Measurement Variance;
- (iv) Heat Rate relates to thermal assets only; the **capacity market participant** must provide the **ISO** the fuel consumption efficiency of the asset in GJ/MWh for the **obligation period** t ;
- (v) Variable Operations and Maintenance t the **capacity market participant** must provide the **ISO** the variable operations and maintenance costs of the asset for **obligation period** t in \$/MWh, excluding any fuel related costs and any amortized or capitalized costs;
- (vi) Emission Intensity is the amount of CO₂ emitted by the asset when producing a MWh of electricity; the **capacity market participant** must provide the **ISO** the Emissions Intensity for the asset in tonnes of CO₂/MWh;
- (vii) Established Benchmark t is the weighted average of the calendar year values matching

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- obligation period** t for an established benchmark for electricity published by a public authority;
- (viii) 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;
 - (ix) Transmission Losses t is the transmission loss value for **obligation period** t in \$/MWh calculated as the loss factor of the asset multiplied 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 2(1)(a)(iii).
 - (x) Energy Market Trading Charge t is the most recent energy market trading charge in \$/MWh published on the AESO website.

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