

ISO Rules

Part 200 Markets

Division 207 Demand Curve Parameters

Section 207.3 Calculation of Net-CONE



Draft Version
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Applicability

- 1(1)** Section 207.3 applies to:
- (a) the **ISO**.
- (2)** This section 207.3 applies to the **ISO** for the following auctions:
- (a) the **base auction** and **rebalancing auction** for the 2021/2022 **obligation period**;
 - (b) the **base auction** and **rebalancing auction** for the 2022/2023 **obligation period**;
 - (c) the **base auction** and **rebalancing auction** for the 2023/2024 **obligation period**;
 - (d) the **base auction** and **rebalancing auctions** for the 2024/2025 **obligation period**;
 - (e) the **base auction** and **rebalancing auctions** for the 2025/2026 **obligation period**; and
 - (f) the **base auction** and **rebalancing auctions** for the 2026/2027 **obligation period**.

Requirements

Gross-CONE Value for 2021/2022 Obligation Period

2 The **ISO** must establish an initial gross-CONE value for the 2021/2022 **obligation period** of \$244.2/kW-year.

Calculation of Gross-CONE for Subsequent Obligation Periods

3(1) The **ISO** must calculate a gross-CONE value for each **obligation period** following the 2021/2022 **obligation period** in accordance with the following formula:

$$gross-CONE_t = gross-CONE_{t=2021/2022} \times escalation\ rate_t$$

where:

- (a) $gross-CONE_{t=2021/2022}$ is the initial gross-CONE value in subsection 2 above; and
 - (b) $escalation\ rate_t$ is the escalation rate for **obligation period** t calculated in accordance with subsection 3(2).
- (2)** The **ISO** must, in calculating the gross-CONE _{t} value under subsection (1), calculate the escalation rate for the **obligation period** in accordance with the following formula:

$$escalation\ rate_t = \frac{0.25 \times labour\ index_t}{60.7} + \frac{0.35 \times materials\ index_t}{108.8} + \frac{0.40 \times turbine\ index_t \times exchange\ rate_t}{268.7}$$

where:

- (a) $labour\ index_t$ is the average of the most recent 12 **months** of construction union wage rates, including selected pay supplements, for electricians in Edmonton, Alberta from Construction

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union wage rates, monthly, Table 18-10-0139-01 most recently published by Statistics Canada;

- (b) *materials index_t* is the average of the most recent 4 quarters of gross final domestic expenditure, implicit price index 2012=100 from Gross national income and gross domestic income, indexes and related statistics, quarterly, Table 36-10-0105-01 most recently published by Statistics Canada;
- (c) *turbine index_t* is the average of the most recent 12 **month** of the Producer Price Index by Industry: Turbine and Turbine Generator Set Units Manufacturing (PCU333611333611), Index June 1982=100 most recently published by Federal Reserve Bank of St. Louis; and
- (d) *exchange rate_t* is the average of the most recent 12 **month** of U.S. dollar, monthly average from Monthly average foreign exchange rates in Canadian dollars, Bank of Canada, Table 33-10-0163-01 most recently published by Statistics Canada.

Calculation of Energy Offset

4(1) The **ISO** must, for each **obligation period**, calculate an energy offset value for each **obligation period** in accordance with the following formula:

$$\text{energy offset}_t = \frac{(\text{forward power price}_t - \text{energy market expense}_t) \times \text{forward product energy}_t}{\text{maximum capability} \times 1000}$$

where:

- (a) *forward power price_t* 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**, for the published NGX forward power product in Appendix 1 that yields the highest energy offset_t for **obligation period t**;
- (b) *forward product energy_t* is the forward product energy value for **obligation period t** calculated in accordance with subsection 4(2);
- (c) *energy market expense_t* is the energy market expense value for **obligation period t** calculated in accordance with subsection 4(3); and
- (d) *maximum capability* is 93 MW.

(2) The **ISO** must, in calculating the energy offset_t under subsection 4(1), calculate the forward product energy in accordance with the following formula:

$$\text{forward product energy}_t = \text{average capacity} \times (1 - \text{forced outage rate}) \times \text{forward product hours}_t$$

where:

- (a) *average capacity* is 87 MW;
- (b) *forced outage rate* is 2.5%; and
- (c) *forward product hours_t* is the number of **hours** defined in the ICE NGX Contracting Party Agreement for the forward power product associated with the forward power price in subsection 4(1)(a), for **obligation period t**.

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(3) The **ISO** must, in calculating the energy offset t under subsection 4(1), calculate the energy market expense $_t$ in accordance with the following formula:

$$\text{energy market expense}_t =$$

$$[\text{forward gas price}_t \times (1 + \text{commodity fuel charge}_t)] \times \text{heat rate}$$

$$+ \text{variable operations and maintenance}_t + \text{greenhouse gas exposure}_t$$

$$\times \text{carbon price}_t + \text{transmission losses}_t + \text{trading charge}_t$$

where:

- (a) *forward gas price $_t$* is the weighted average of the settlements matching the **obligation period t** , where the settlements are the average over the period determined by the **ISO** in subsection 4(1)(a), of NGX Phys, FP (CA/GJ), AB-NIT;
- (b) *commodity fuel charge $_t$* is the average of the most recent 12 **months** of total usage plus MVAR from the NGTL Fuel Usage and Measurement Variance table from NOVA Gas Transmission Ltd;
- (c) *heat rate* is 9.677 GJ/MWh;
- (d) *variable operations and maintenance $_t$* is the variable operations and maintenance value for **obligation period t** calculated in accordance with subsection 4(4);
- (e) *greenhouse gas exposure $_t$* is the greenhouse gas exposure to a carbon price levied by a public authority, based on 0.50 tonnes of CO₂ equivalent/MWh for **obligation period t** ;
- (f) *carbon price $_t$* is the weighted average of the calendar year values matching **obligation period t** for the carbon price relevant to Alberta published by a public authority;
- (g) *transmission losses $_t$* is the value calculated in accordance with subsection 4(5) for **obligation period t** ; and
- (h) *trading charge $_t$* is the energy market trading charge most recently published on the AESO website.

(4) The **ISO** must, in calculating the energy market expense $_t$ under subsection 4(3), calculate the variable operations and maintenance $_t$ value in accordance with the following formula:

$$\text{variable operations and maintenance}_t =$$

$$\text{variable operations and maintenance}_{t=2021/2022} \times \frac{\text{materials index}_t}{108.8}$$

where:

- (a) *variable operations and maintenance $_{t=2021/2022}$* is \$4.60/ MWh; and
- (b) *materials index $_t$* is the value in subsection 3(2)(b) for **obligation period t** .

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(5) The **ISO** must, in calculating the energy market expense under subsection 4(3), calculate the transmission losses_t value in accordance with the following formula:

$$\text{transmission losses}_t = \frac{\sum \text{loss factor}_i}{n} \times \text{forward power price}_t$$

where:

- (a) *loss factor*_i is the final **loss factor** for asset *i* that is located in the Fort Saskatchewan area most recently published on the AESO website;
- (b) *n* is the number of assets in the Fort Saskatchewan area identified in the most recent **loss factors** published on the AESO website; and
- (c) *forward power price*_t is the value in subsection 4(1)(a).

Calculation of Net-CONE

5(1) The **ISO** must, subject to subsection 5(2), calculate the net-CONE value for each **obligation period** in accordance with the following formula:

$$\text{net-CONE}_t = \text{gross-CONE}_t - \text{energy offset}_t$$

where:

- (a) *gross-CONE*_t is the gross-CONE value:
 - (a) in subsection 2 if **obligation period** *t* is the 2021/2022 **obligation period**; or
 - (ii) calculated in accordance with subsection 3 if **obligation period** *t* is an **obligation period** subsequent to the 2021/2022 **obligation period**;and
- (b) *energy offset*_t is energy offset calculated in accordance with subsection 4 for **obligation period** *t*.

(2) The **ISO** must, if the net-CONE value calculated in subsection 5(1) is:

- (a) below zero, set the net-CONE value at zero; or
- (b) above the gross-CONE value in subsection 2 or 3 for the **obligation period**, as applicable, set the net-CONE value at the gross-CONE value.

Publication of Net-CONE, Data and Indices

6 The **ISO** must publish the net-CONE value determined in accordance with this section 207.3 and the following data and indices in the *Capacity Market Auction Guidelines* for each **base auction** and **rebalancing auction**:

- (a) escalation rate_t;
- (b) labour index_t
- (c) material index_t;
- (d) turbine index_t;
- (e) exchange rate_t;

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- (f) gross-CONE_t;
- (g) energy market expense_t;
- (h) forward power price_t;
- (i) forward product hours_t;
- (j) forward product energy_t;
- (k) the period determined by the **ISO** referred to in subsections 4(1)(a)
- (l) forward gas price_t;
- (m) commodity fuel charge_t;
- (n) variable operations and maintenance_t;
- (o) *greenhouse gas exposure*_t;
- (p) carbon price_t;
- (q) transmission losses_t;
- (r) trading charge_t;
- (s) energy offset_t.

Substitute Index or Benchmark

- 8** The **ISO** must, notwithstanding this section 207.3:
- (a) use another comparable industry index or benchmark if any of the indices or benchmarks referred to in this section 207.3 are unavailable or not appropriate for the calculation of net-CONE; and
 - (b) publish the index or benchmark for each **base auction** and **rebalancing auction**.

Appendices

Appendix 1 – List of Forward Power Products

Revision History

Date	Description
xxxx-xx-xx	Initial release

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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