

ISO Rules

Part 200 Markets

Division 207 Demand Curve Parameters

Section 207.1 Gross Minimum Procurement Volume



External Consultation Draft
~~August 31~~October 22, 2018

Applicability

- 1 Section 207.1 applies to:
 - (a) the **ISO**.

Requirements

Gross Minimum Procurement Volume

- 2 The **ISO** must, for each **base auction** and **rebalancing auction**, establish the gross minimum procurement volume that meets the **resource adequacy standard** in accordance with subsections 3 and 4 ~~below~~, as applicable.

Base Auction Gross Minimum Procurement Volumes for 2021/2022 and 2022/2023 Obligation Periods

- 3 The **ISO** must establish the gross minimum procurement volumes as follows:
 - (a) 18,516 MW of **maximum capability** for the **base auction** for the 2021/2022 **obligation period** based on the assets listed in Appendix A; and
 - (b) 18,597 MW of **maximum capability** for the **base auction** for the 2022/2023 **obligation period** based on the assets listed in Appendix B.

Probabilistic Model

4(1) The **ISO** must, for the purposes of establishing the gross minimum procurement volume referred to in subsection 2, perform a probabilistic model of resource adequacy that considers the following characteristics:

- (a) the load forecast referred to in subsection 5;
- (b) the **available capability** or available generation from all individual **generating units** and **aggregated generating facilities** in Alberta that the **ISO** anticipates will have, for the **obligation period**, a:
 - (i) **maximum capability** greater than or equal to 5 MW; or
 - (ii) **uniform capacity value** that is greater than or equal to 1 MW;
- (c) historical outages of thermal assets, including **automatic forced outages**, **delayed forced outages**, **planned outages** and ambient temperature derates, and any projected changes as applicable;
- (d) historical performance of existing intermittent resources, including wind and solar, and any projected changes;
- (e) anticipated performance of new intermittent resources, including wind and solar;
- (f) historical performance of hydroelectric generation and any projected changes;
- (g) historical performance of cogeneration sites in Alberta and any projected changes;
- ~~(h)~~ historical performance of a load asset supplying **capacity** in the capacity market and any projected changes;
- (i) the correlation of load and generation at cogeneration sites in Alberta, as applicable;

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- (ij) the **available transfer capability** and gross import **offers** on the **interties**; and
- (jk) **capacity** to maintain **regulating reserve**.

(2) The **ISO** must, as applicable, make assumptions about the model characteristics identified in subsection 4(1) in order to minimize model error and the risk of over procuring or under procuring **capacity** to the extent practicable.

(3) The **ISO** must add or subtract **volumes of installed capacity** from the probabilistic model referred to in subsection 4(1) to determine the gross minimum procurement volume that meets the **resource adequacy standard**.

Load Forecast

5 The **ISO** must, for the purpose of performing the probabilistic model in subsection 4, complete a forecast of Alberta gross load for a 5-year forward looking period, considering the following variables:

- (a) economic growth indicators in Alberta including real gross domestic product, population, employment, and natural resource production;
- (b) weather and temperature data selected from multiple locations across Alberta;
- (c) load variations in Alberta based on calendar variables, including month of the year, day of the week, hour of the day, daylight savings, and holidays;
- (d) historical load behaviour in Alberta and any projected changes;
- (e) performance data from load assets that are qualified to participate in the capacity market to ~~provide demand response;~~ **supply capacity**;
- (f) load forecast uncertainty reflecting variability in the load forecast due to weather and economic forecasts; and
- (g) any other variables that, in the **ISO's** determination, may maximize the performance of the load forecast model.

Filing of Base Auction Gross Minimum Procurement Volume

6 The **ISO** must, ~~no later than 6 months prior to the publication of the Capacity Market Auction Guidelines for a base auction,~~ file the gross minimum procurement volume for ~~asuch base auction that is~~ determined in accordance with this section 207.1 with the **Commission** for approval ~~a minimum of 6 months prior to the publication of the Capacity Market Auction Guidelines for the applicable base auction.~~

Applicable Auctions

7 This Section 207.21 is in effect 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**; and
- (d) the **base auction and rebalancing auctions** for the 2024/2025 **obligation period**.

Appendices

[Appendix 1 – 2021-2022 Obligation Period Gross Minimum Procurement Volume Asset Breakout](#)

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Appendix 2 – 2022-2023 Obligation Period Gross Minimum Procurement Volume Asset Breakout

Revision History

Date	Description
yyyy-mm-dd	Initial release

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Appendix A1 – 2021-2022 Obligation Period Gross Minimum Procurement Volume Asset Breakout

Capacity Resource Asset	Technology Type	Maximum Capability (MW)
AFG1	Other	131
AKE1	Wind	73
ALP1	Simple Cycle	7
ALP2	Simple Cycle	10
ALS1	Cogen	96
ANC1	Simple Cycle	63
APS1	Cogen	195
ARD1	Wind	68
BCR2	Cogen	36
BCRK	Cogen	64
BIG	Hydro	120
BOW1	Hydro	320
BR3	Coal	0
BR4	Coal	155
BR5	Coal	385
BRA	Hydro	350
BSC1	Solar	15
BSR1	Wind	300
BTR1	Wind	66
BUL1	Wind	13
BUL2	Wind	16
CAL1	Combined Cycle	320
CCMH	Other	42
CHIN	Hydro	15
CL01	Cogen	100
CMH1	Combined Cycle	255
CNR5	Cogen	203
CR1	Wind	39
CRG1	Cogen	10
CRR1	Wind	77
CRS1	Simple Cycle	48
CRS2	Simple Cycle	48
CRS3	Simple Cycle	48
CRW1	Wind	20
DAI1	Other	52
DKSN	Hydro	15
DOWG	Cogen	326
DRW1	Simple Cycle	6
EAGL	Other	25
EC01	Combined Cycle	120
EC04	Cogen	98
EGC1	Combined Cycle	860
ENC1	Simple Cycle	48
ENC2	Simple Cycle	101
ENC3	Simple Cycle	101

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FH1	Cogen	199
FNG1	Combined Cycle	73
GEN5	Simple Cycle	15
GEN6	Simple Cycle	15
GN1	Coal	400
GN2	Coal	400
GN3	Coal	466
GPEC	Other	27
GW1	Wind	71
HAL1	Wind	150
HMT1	Cogen	45
HSM1	Simple Cycle	6
ICP1	Hydro	7
IEW1	Wind	66
IEW2	Wind	66
Intertie	Intertie	1,263
IOR1	Cogen	180
IOR2	Cogen	195
IOR3	Cogen	84
JOF1	Cogen	474
KH1	Coal	395
KH2	Coal	395
KH3	Coal	463
KHW1	Wind	63
ME02	Simple Cycle	8
ME03	Simple Cycle	7
ME04	Simple Cycle	6
MEG1	Cogen	202
MFG1	Simple Cycle	16
MKR1	Cogen	202
MKRC	Cogen	205
NAT1	Simple Cycle	20
NEP1	Wind	82
NPC1	Simple Cycle	11
NPC2	Simple Cycle	9
NPP1	Simple Cycle	105
NRG3	Other	16
NX01	Combined Cycle	120
NX02	Cogen	220
OMRH	Hydro	32
OWF1	Wind	46
PEC1	Cogen	16
PH1	Simple Cycle	48
PR1	Cogen	100
PW01	Cogen	5
RB5	Simple Cycle	50
REP Wind	REP Wind	1,296
RL1	Cogen	47
RYMD	Hydro	21

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SCL1	Cogen	510
SCR1	Cogen	899
SCR2	Wind	30
SCR3	Wind	30
SCR4	Wind	88
SD3	Coal	368
SD4	Coal	406
SD5	Coal	406
SD6	Coal	401
SH1	Coal	400
SH2	Coal	390
SHCG	Cogen	19
SLP1	Other	9
TAB1	Wind	81
TAY1	Hydro	14
TC01	Cogen	95
TC02	Cogen	46
TLM2	Cogen	13
UOA1	Cogen	39
UOC1	Cogen	12
VW1	Simple Cycle	50
VW2	Simple Cycle	50
WCD1	Simple Cycle	20
WEY1	Other	48
WST1	Other	18
WWD1	Other	50
Generic Build	Generic Build	156

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Appendix B2 – 2022-2023 Obligation Period Gross Minimum Procurement Volume Asset Breakout

Capacity Resource Asset	Technology Type	Maximum Capability (MW)
AFG1	Other	131
AKE1	Wind	73
ALP1	Simple Cycle	7
ALP2	Simple Cycle	10
ALS1	Cogen	96
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APS1	Cogen	195
ARD1	Wind	68
BCR2	Cogen	36
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CRS3	Simple Cycle	48
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NPC2	Simple Cycle	9
NPP1	Simple Cycle	105
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PH1	Simple Cycle	48
PR1	Cogen	100
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SH1	Coal	400
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SHCG	Cogen	19
SLP1	Other	9
TAB1	Wind	81
TAY1	Hydro	14
TC01	Cogen	95
TC02	Cogen	46
TLM2	Cogen	13
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UOC1	Cogen	12
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WST1	Other	18
WWD1	Other	50
Generic Build	Generic Build	237

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Section 207.2 Calculation of Net-CONE



External Consultation Draft
 August 31 ~~October 22~~, 2018

Applicability

- 1 Section 207.2 applies to:
 - (a) the ISO.

Requirements

Establish Gross-CONE, Energy ~~and Ancillary Services~~ Offset and Net-CONE

- 2 The ISO must establish for each **obligation period**:
 - (a) a gross-CONE value in \$/kW-year in accordance with subsections 3 and 4, as applicable;
 - (b) an energy ~~and ancillary services~~ offset value in \$/kW-year in accordance with subsection 5; and
 - (c) a net-CONE value in \$/kW-year in accordance with subsection 6.

Initial Gross-CONE Value for 2021/2022 Obligation Period

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

Calculation of Gross-CONE

- 4(1) The ISO must calculate the gross-CONE value for ~~every~~**each** **obligation period** following the 2021/2022 **obligation period** in accordance with the following formula:

$$\text{gross-CONE}_t \text{ gross-CONE}_t = \text{gross-CONE}_{t=2021/2022} \times \text{Composite Index}_t \text{ composite index}_t$$

where:

- (i) ~~a~~ **t** equals the **obligation period** for which the gross-CONE is being determined;
- (ii) ~~gross-CONE~~ ~~is the gross-CONE value for~~ **obligation period t**;
- (iii) ~~(b)~~ $\text{gross-CONE}_{t=2021/2022}$ is the initial gross-CONE value in subsection 3 above; and
- (iv) ~~Composite Index~~ ~~(c)~~ ~~composite index~~ Composite Index_t is the composite index value for **obligation period t** calculated in accordance with subsection 4(2) below.

- (2) The ISO must, in calculating the gross-CONE gross-CONE_t value under subsection 4(1) ~~above~~, calculate the ~~Composite Index~~ ~~composite index~~ Composite Index_t using the following formula:

$$\begin{aligned} \text{Composite Index}_t &= 0.25 \times \frac{\text{Labour Index}_t}{60.7} + 0.35 \times \frac{\text{Materials Index}_t}{118.5} + 0.40 \\ &\times \frac{\text{Turbine US Cost Index}_t \times \text{Foreign Exchange Rate}_t}{268.7} \end{aligned}$$

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$$\text{composite index}_t = \frac{0.25 \times \text{labour index}_t}{60.7} + \frac{0.35 \times \text{materials index}_t}{118.5} + \frac{0.40 \times \text{turbine index}_t \times \text{exchange rate}_t}{268.7}$$

where:

- (ia) t equals the **obligation period** for which the gross-CONE value is being determined;
- ~~(ii) Composite Index f~~ (b) composite index f is the composite index value for **obligation period t** ;
- ~~(iii) Labour Index f~~ (c) labour index f is the most recent 12 **month** average of published Statistics Canada Construction Union Wage Rates (Electrician), Monthly for Edmonton Alberta, Table 18-10-0046-01;
- ~~(iv) Materials Index d~~ (d) materials index f is the most ~~recently~~ recent 4 quarters average published Statistics Canada Gross National and Gross Domestic Income, Indexes and Related Statistics, Annual, Table 36-10-0105-01;
- ~~(v) Turbine US Cost Index f~~ (e) turbine index f is the most recent 12 **month** average of published Federal Reserve Economic Data (St. Louis) Producer Price Index by Industry: Turbine and Turbine Generator Set Units Manufacturing (PCU333611333611); and
- ~~(vi) USD/CAD Foreign Exchange Rate f~~ (f) exchange rate f is the most recent 12 **month** average of published Statistics Canada Monthly Average Exchange Rates in Canadian Dollars, U.S. Dollar monthly average, Table 33-10-0163-01.

Calculation of Energy ~~and Ancillary Services~~ Offset

5(1) The **ISO** must, for every **obligation period**, calculate the energy ~~and ancillary services~~ offset value in accordance with the following formula:

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

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

where:

- (ia) t equals the **obligation period** for which the energy ~~and ancillary services~~ offset is being determined;
- ~~(ii) EAS Offset f~~ (b) energy offset f is the energy and ancillary services offset for **obligation period t** ;
- ~~(iii) Forward Power Price f~~ (b) forward power price f 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 ~~EAS Offset~~ energy offset f for **obligation period t** ;
- ~~(iv) Energy Market Expense c~~ (c) energy market expense f is the energy market expense value for

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obligation period t calculated in accordance with subsection 5(3) ~~below~~;

~~(v) Forward Product Energy(d) forward product energy~~ t is the forward product energy value for **obligation period** t calculated in accordance with subsection 5(2) ~~below~~; and

~~(vi) Nameplate Capacity(e) maximum capability~~ is equal to 93 MW.

(2) The ISO must, in calculating the ~~EAS Offset energy offset~~ t under subsection 5(1) above, calculate the ~~Forward Product Energy forward product energy~~ t using in accordance with the following formula:

$$\begin{aligned} \text{Forward Product Energy}_t & \\ &= \text{Average Capacity} \times (1 - \text{Forced Outage Rate}) \times \text{Forward Product Hours}_t \end{aligned}$$

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

where:

~~(ia)~~ t equals the **obligation period** for which the generation is being determined;

~~(ii) Average Capacity(b) average capacity~~ is equal to 87 MW;

~~(iii) Forced Outage Rate(c) forced outage rate~~ is equal to ~~3.02.5~~%; and

~~(iv) Forward Product Hours(d) 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 forward power price~~ in subsection 5(1)(iii) ~~above~~, for **obligation period** t .

(3) The ISO must, in calculating the ~~EAS Offset energy offset~~ t under subsection 5(1) ~~above~~, calculate the ~~Energy Market Expense energy market expense~~ t using in accordance with the following formula:

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

$$\begin{aligned} \text{energy market expense}_t = \\ [\text{forward gas price}_t \times (1 + \text{commodity fuel charge}_t)] \times \text{heat rate}_t \\ + \text{variable operations and maintenance}_t \\ + (\text{emission intensity} - \text{established benchmark}_t) \times \text{carbon price}_t \\ + \text{transmission losses}_t + \text{trading charge}_t \end{aligned}$$

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where:

- (i) t equals the **obligation period** for which the energy ~~and ancillary services~~ offset is being determined;
- ~~(ii) Energy Market Expense~~
- ~~(b) forward gas price~~ t is the ~~energy market expense value for obligation period t~~ ;
- ~~(iii) Forward Gas Price 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 5(1)(~~iii~~**b**), of NGX Phys, FP (CA/GJ), AB-NIT;
- ~~(iv) Commodity Fuel Charge(c)~~ ~~commodity fuel charge~~ t is the most recent 12 **month** average of published NOVA Gas Transmission Ltd NGTL Fuel Usage and Measurement Variance;
- ~~(v) Heat Rated)heat rate~~ is equal to 9.677 GJ/MWh;
- ~~(vi) Variable Operationse)~~ ~~variable operations~~ and ~~Maintenance~~ ~~maintenance~~ t is the variable operations and maintenance value for **obligation period** t calculated in accordance with subsection 5(4) ~~below~~;
- ~~(vii) Emission Intensityf)~~ ~~emission intensity~~ is equal to 0.50 tonnes of CO₂/MWh;
- ~~(viii) Established Benchmark(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;
- ~~(ix) Carbon Price(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;
- ~~(x) Transmission Losses(i)~~ ~~transmission losses~~ t is the transmission loss value for **obligation period** t calculated in accordance with subsection 5(5) ~~below~~;
- ~~(xi) Energy Market Trading Charge (j)~~ ~~energy market trading charge~~ t is the most recent energy market trading charge published on the AESO website.

(4) The **ISO** must, in calculating the ~~Energy Market Expense~~ ~~energy market expense~~ t under subsection 5(3) ~~above~~, calculate the ~~Variable Operations~~ ~~variable operations~~ and ~~Maintenance~~ ~~maintenance~~ t value ~~using in accordance with~~ the following formula:

$$\text{Variable Operations and Maintenance}_{t=2021/2022} \times \frac{\text{Materials Index}_{t=2021/2022}}{118.5}$$

$$\text{variable operations and maintenance}_{t=2021/2022} = \text{variable operations and maintenance}_{t=2021/2022} \times \frac{\text{materials index}_{t=2021/2022}}{118.5}$$

where:

- (i) t equals the **obligation period** for which the variable operations and maintenance is being determined;
- ~~(ii) Variable Operationsb)~~ ~~variable operations~~ and ~~Maintenance~~ ~~maintenance~~ $t=2021/2022$ ~~is~~ 2022

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is equal to \$4.60/ MWh; and

~~(iii) Materials Index for obligation period(c) materials index~~ $_{t}$ is the value in subsection 4(2)(a)(iv) ~~above-d).~~

(5) The ISO must, in calculating the ~~Energy Market Expense~~ energy market expense $_{t}$ under subsection 5(2) ~~above,~~, calculate the ~~Transmission Losses~~ transmission losses $_{t}$ value using in accordance with the following formula:

$$\text{Transmission Losses}_{t} = \frac{\sum_{i=1}^n \text{Loss Factor}_{i}}{n} \times \text{Forward Power Price}_{t}$$

$$\text{transmission losses}_{t} = \frac{\sum_{i=1}^n \text{loss factor}_{i}}{n} \times \text{forward power price}_{t}$$

where:

(ia) t equals the **obligation period** for which the transmission losses is being determined;

(iib) $i \dots n$ are facilities located in the Fort Saskatchewan area identified in the most recent ~~Loss Factors~~ loss factors published on the AESO website;

~~(iii) Loss Factor(c) loss factor~~ $_{i}$ is the most recent published loss factor values published on the AESO website; and

~~(iv) Forward Power Price(d) forward power price~~ $_{t}$ for **obligation period** t is the value in subsection 5(1)(a)(iii) ~~above-b).~~

Calculation of Net-CONE

6(1) The ISO must, subject to subsection 6(2), calculate the net-CONE value for every **obligation period** in accordance with the following formula:

$$\text{net-CONE}_{t} \text{net-CONE}_{t} = \text{gross-CONE}_{t} - \text{EAS Offset}_{t} \text{energy offset}_{t}$$

where:

(ia) t equals the **obligation period** for which the net-CONE value is being determined;

(iib) ~~gross-CONE~~ CONE $_{t}$ is the gross-CONE value in subsection 3 ~~above~~ or the gross-CONE value calculated in accordance with subsection 4 ~~above~~ for **the obligation period** t , as applicable; and

~~(iii) EAS Offset(c) energy offset~~ $_{t}$ is energy ~~and ancillary services~~ offset value calculated in accordance with subsection 5 ~~above~~ for **obligation period** t .

(2) The ISO must, if the net-CONE value calculated in subsection 6(1) is:

(a) below zero, set the net-CONE value at zero ~~;~~ or

(b) above the gross-CONE value in subsection 3 or 4, set the net-CONE value at the gross-CONE value.

Publication of Net-CONE, Data and Indices

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Section 207.2 Calculation of Net-CONE



7 The **ISO** must, publish the net-CONE value determined in accordance with this section 207.2 and the following data and indices in the *Capacity Market Auction Guidelines* for each **base auction** and **rebalancing auction**:

- (a) ~~Composite Index~~ composite index_{t=2021/2022} ;
- (b) ~~Composite Index~~ composite index_t ;
- (c) ~~Labour Index~~ labour index_t ;
- (d) ~~Material Index~~ material index_t ;
- (e) ~~Turbine US Cost Index~~ turbine index_t ;
- (f) USD/CAD Foreign Exchange Rate_t ;
- (g) ~~Energy Market Expense~~ energy market expense_t ;
- (h) ~~Forward Power Price~~ forward power price_t ;
- (i) ~~Forward Product Hours~~ forward product hours_t ;
- (j) ~~Forward Product Energy~~ forward product energy_t ;
- (k) ~~The~~ the period determined by **ISO** refer to in subsections 5(1)(~~iii~~), 5(2)(~~iv~~) and 5(3)(~~iii~~) ;
- (l) ~~Forward Gas Price~~ forward gas price_t ;
- (m) ~~Commodity Fuel Charge~~ commodity fuel charge_t ;
- (n) ~~(e) Variable Operations~~ variable operations and ~~Maintenance~~ maintenance_t ;
- (o) emission intensity;
- (p) ~~Emission Intensity~~;
- (p) ~~Established Benchmark~~ established benchmark_t ;
- (q) ~~Carbon Price~~ carbon price_t ;
- (r) ~~Transmission Losses~~ transmission losses_t ;
- (s) ~~Loss Factor~~ loss factor_t ; and
- (t) ~~Trading Charge~~ trading charge_t .

Substitute Index or Benchmark

9 The **ISO** must, if any of the indices or benchmarks referred to in this section 207.2 are unavailable or not applicable for use in the calculation of the net-CONE value, use another comparable industry index or benchmark and publish the index or benchmark in the *Capacity Market Auction Guidelines* for each **base auction** and **rebalancing auction**.

Applicable Auctions

10 This ~~Section~~ section 207.2 is in effect for the following auctions:

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Section 207.2 Calculation of Net-CONE



- (a) the **base auction** and **rebalancing auction** for the 2021/2022 **obligation period**;
- (a) the **base auction** and **rebalancing auction** for the 2022/2023 **obligation period**;
- (a) the **base auction** and **rebalancing auction** for the 2023/2024 **obligation period**; and
- (a) the **base auction** and **rebalancing auctions** for the 2024/2025 **obligation period**.

Appendices

Appendix 1 – List of Forward Power Products

Revision History

Date	Description
xxxx-xx-xx	Initial release

ISO Rules

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Section 207.2 Calculation of Net-CONE



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

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Division 207 Demand Curve Parameters

Section 207.3 Shape of Demand Curve



External Consultation Draft
~~August 31~~ October 22, 2018

Applicability

- 1 Section 207.3 applies to:
 - (a) the ISO.

Requirements

Establish Preliminary Demand Curve

~~2(1) The ISO must, for the purpose of establishing a preliminary demand curve in accordance with subsection 2(2), estimate the net minimum procurement volume in subsection 3 below based on the most recent uniform capacity values calculated by the ISO in accordance with Section 206.3 of the ISO rules, Uniform Capacity Value Determination.~~

~~(2) 2(1)~~ The ISO must, for each **base auction** and **rebalancing auction**, establish a preliminary downward-sloping convex demand curve with the following:

- (a) a horizontal section from 0 MW to the estimate of the net minimum procurement volume in subsection ~~23~~(1), at a price cap that is the greater of:
 - (i) 1.75 times the adjusted net-CONE in subsection 4; or
 - (ii) 0.5 times gross-CONE established in accordance with Section 207.2 of the ISO rules, *Calculation of Net-CONE* divided by ~~0.8; the performance factor in subsection 4(iii);~~
- (b) a downward-sloping section from the estimate of the net minimum procurement volume in subsection ~~23~~(1) at the price cap in subsection 2(~~21~~)~~(a)~~ to an inflection point set at a ~~multiplermultiple~~ of 0.875 times the adjusted net-CONE in subsection 4 below at a quantity 7% above the estimate of the net minimum procurement volume; and
- (c) a downward sloping section from the inflection point in ~~subection~~ 2(1)(b) to a price floor of zero dollars at a quantity 18% above the estimate of the net minimum procurement volume.

(3) The ISO must publish the preliminary demand curve in the *Capacity Market Auction Guidelines* for the relevant **base auction** or **rebalancing auction**.

Net Minimum Procurement Volume

~~33(1) The ISO must, in establishing the preliminary demand curve under subsection 2(1), calculate an estimate of the net minimum procurement volume in accordance with the formula in subsection 3 using the most recent uniform capacity values calculated by the ISO.~~

(2) The ISO must, after **uniform capacity values** are assigned in accordance with Section 206.3 of the ISO rules, *Uniform Capacity Value Determination*, adjust the gross minimum procurement volume established for each **base auction** or **rebalancing auction** in accordance with Section 207.1 of the ISO rules, *Gross Minimum Procurement Volume* to a net minimum procurement volume ~~using in~~ accordance with the following formula:

$$Net\ minimum\ procurement\ volume_t = \sum_i^n UCAP_{Actual(t)} \sum_i^n uniform\ capacity\ value_{Actual(i)}$$

where:

- (ia) *t* is the obligation period for the **base auction** or **rebalancing auction** that the gross minimum procurement volume was established for;

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- (ii) $i \dots n$ are all the assets modelled in the probabilistic model that established the gross minimum procurement volume for the **obligation period**; and
- (iii) ~~UCAP_{Actual(t)}~~ uniform capacity value ~~Actual(i)~~ is the final **uniform capacity value** determined in accordance with Section 206.3 of the **ISO rules**, Uniform Capacity Value Determination for such asset or the most recent estimate of the **uniform capacity value** for such asset; .

Adjusted Net-CONE

4 The **ISO** must, using the following formula, adjust the net-CONE established for each **obligation period** in accordance with Section 207.2 of the **ISO rules**, *Calculation of Net-CONE*:

$$\text{Adjusted net-CONE}_t = \frac{\text{net-CONE}_t}{\text{performance factor}}$$

-where;:

- (ia) t equals the **obligation period** for which the adjusted net-CONE value is being determined; and
- (ib) net-CONE_t is net-CONE value established in accordance with Section 207.2 of the **ISO rules**, *Calculation of Net-CONE* in \$/kW-year; and
- (c) performance factor is equal to 0.8.

Establish Final Demand Curve for Base Auction and Rebalancing Auction

5(1) The **ISO** must, for each **base auction** and **rebalancing auction**, establish a final downward-sloping convex demand curve with the following:

- (a) a horizontal section from 0 MW to the net minimum procurement volume in subsection 3-(2), at a price cap that is the greater of:
 - (i) 1.75 times the adjusted net-CONE in subsection 4; or
 - (ii) 0.5 times gross-CONE established in accordance with Section 207.2 of the ISO rules, Calculation of Net-CONE divided by 0.8; the performance factor in subsection 4(iii);
- (b) a downward-sloping section from the net minimum procurement volume in subsection 3(2) at the price cap in subsection 5(1)(a) to an inflection point set at a ~~multiple~~ multiple of 0.875 times the adjusted net-CONE in subsection 4 below at a quantity 7% above the net minimum procurement volume; and
- (c) a downward sloping section from the inflection point in subsection 5(1)(b) to a price floor of zero dollars at a quantity 18% above the net minimum procurement volume in subsection ~~3~~ below ~~(2)~~.

(2) The **ISO** must publish the final demand curve prior to the opening of the offering window for each **base auction** or **rebalancing auction**.

Applicable Auctions

6 This Section 207.23 is in effect 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**;

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- (c) the **base auction** and **rebalancing auction** for the 2023/2024 **obligation period**; and
- (d) the **base auction** and **rebalancing auctions** for the 2024/2025 **obligation period**.

Revision History

Date	Description
yyyy-mm-dd	Initial release