Market Renewal Program Feedback Form

Market Renewal Implementation – IESO Charge Types and Equations – August 4, 2023

Feedback Provided by:

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Email: ███████████████

Date: Sept 29, 2023

> To promote transparency, feedback submitted will be posted on the Implementation Engagement webpage unless otherwise requested by the sender.

The Independent Electricity System Operator (IESO) is seeking feedback from stakeholders on the charge types and equations used in the IESO settlements process for IESO-administered markets. The documents can be accessed from the Implementation Phase documents webpage.

Please submit feedback to engagement@ieso.ca **by September 29, 2023**. If you wish to provide confidential feedback, please mark the document "Confidential". Otherwise, to promote transparency, feedback that is not marked "Confidential" will be posted on the engagement webpage.

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Charge types and equations

What feedback do you have on the charge types and equations used in the IESO settlements process?

Section / Topic	Feedback
Click or tap here to enter text.	Click or tap here to enter text.

General Comments/Feedback

Evolugen by Brookfield Renewable appreciates the opportunity to provide feedback. Due to the high volume of comments and questions, and the need for supporting documents to help clarify our comments, please refer to three documents included in our email for our feedback:

- Summary of Evolugen-Brookfield feedback.docx

- MRP_Ch 9 Settlement and Billing - Feedback to IESO.xlsx

- Charge Type and Equations vs Market Rule Ch 9 - Feedback to IESO.docx

MR SECTION	DESCRIPTION	SETTLEMENT AMOUNT	VARIABLES IN FORMULA	Constants Used	DEFINITION OF INPUTS	Comments/Questions
3.3.5	Day-ahead market balancing credit settlement amount_boundary entity resource (reviewed as of 21st september 2023)	DAM_BCi k,h	RT_LMP (BCOR)	h - each settlement hour in a trading day i - intertie metering points t - each metering interval in settlement hour 'h' r - class r reserve	DAM - BC - RT_LMPi,t r,h =	Please provide definition for RT_LMPi,t r,h
3.3.5	Day-ahead market balancing credit settlement amount_boundary entity resource (reviewed as of 21st september 2023)	DAM_BCi k,h	DAM_PROR (BCOR)	h - each settlement hour in a trading day i - intertie metering points t - each metering interval in settlement hour 'h'	DAM - BC - DAM_PRORi,t h =	Please provide definition for the component DAM_PRORi,t h
3.3.5	Day-ahead market balancing credit settlement amount_boundary entity resource	DAM_BCi k,h	DAM_PROR (BCOR)	h - each settlement hour in a trading day i - intertie metering points t - each metering interval in settlement hour 'h'	DAM - BC - DAM_PRORi,t h =	Please provide definition for the component DAM_PRORi,t h
3.4.10	Day-ahead market make-whole payment_dispatchable loads	DAM_MWPm k,h	DAM_COMP1	m - delivery points h - each settlement hour in a trading day k - market participant	DAM - MWP - COMP1 = OP=	Can you please provide an example with numbers for calculating Operating profit (OP)
3.4.10	Day-ahead market make-whole payment_dispatchable loads	DAM_MWPm k,h	DAM_HDR_BL (COMP1)	m - delivery points h - each settlement hour in a trading day k - market participant	DAM - MWP - DAM_HDR_BLm k,h =	Please provide definition fro the component DAM_HDR_BLm k,h
3.4.13.3	Day-ahead market make-whole payment_hydroelectric generation resources	DAM_MWPm k,h	FROPm k,h (COMP1)	m - delivery points h - each settlement hour in a trading day k - market participant	DAM - MWP - FROPm k,h = Formula provided in 3.4.13.2	Please provide definition and meaning of FROP
3.4.15	Day-ahead market make-whole payment_dispatchable generation resources_pseudo-unit	DAM_MWPs k,h	DAM_COMP1	s - steam turbine delivery point h - each settlement hour in a trading day k - market participant	DAM - MWP - DAM_COMP1 = Formula provided	Steam turbines uses "s" as an variable and also "s" is used as selling market participant, Example 3.1.2 and 3.4.15, Is it possible to change the acronym of one of them as it is confusing

3.5.6	Real time make-whole payment_dispatchable generation resources_not associated with pseudo-unit	**RT_MWPm k,h**	**RT_ELC**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - MWP - RT_ELCm,t k,h =	Please provide definition and meaning of RT_ELCm,t k,h
3.5.6	Real time make-whole payment_dispatchable generation resources_not associated with pseudo-unit	**RT_MWPm k,h**	**RT_OLC**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - MWP - RT_OLCm,t k,h =	Please provide definition and meaning of RT_OLCm,t k,
3.5.6	Real time make-whole payment_dispatchable generation resources_not associated with pseudo-unit	**RT_MWPm k,h**	**RT_ELOC**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - MWP - RT_ELOCm,t k,h =	Please provide definition and meaning of RT_ELOCm,t k,h
3.5.6	Real time make-whole payment_dispatchable generation resources_not associated with pseudo-unit	**RT_MWPm k,h**	**RT_OLOC**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - MWP - RT_OLOCm,t k,h =	Please provide definition and meaning of RT_OLOCm,t k,h
3.5.6	Real time make-whole payment_dispatchable generation resources_not associated with pseudo-unit	**RT_MWPm k,h**	**DAM_QSI (RT_ELC)**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - MWP - DAM_QSIm,t k,h =	Please provide definition and meaning of DAM_QSIm,t k,h
3.5.6	Real time make-whole payment_dispatchable generation resources_not associated with pseudo-unit	**RT_MWPm k,h**	**RT_FROP_LC (RT_ELC)**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - MWP - RT_FROP_LCm,t k,h =	Please provide definition and meaning of RT_FROP_LCm,t k,h
3.5.6	Real time make-whole payment_dispatchable generation resources_not associated with pseudo-unit	**RT_MWPm k,h**	**DAM_QSOR (RT_OLC)**	m - delivery points h - each settlement hour in a trading day k - market participant r - class r reserve	RT - MWP - DAM_QSORm,t r,k,h =	Please provide definition and meaning of DAM_QSORm,t r,k,h
3.5.6	Real time make-whole payment_dispatchable generation resources_not associated with pseudo-unit	**RT_MWPm k,h**	**RT_OR_EOP (RT_OLC)**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h' r - class r reserve	RT - MWP - RT_OR_EOPm,t r,k,h =	Please provide definition and meaning of RT_OR_EOPm,t r,k,h

3.5.6	Real time make-whole payment_dispatchable generation resources_not associated with pseudo-unit	**RT_MWPm k,h**	**RT_FROP_LOC (RT_ELOC)**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - MWP - RT_ELCm,t k,h =	Please provide definition and meaning of RT_ELCm,t k,h
3.5.6	Real time make-whole payment_dispatchable generation resources_not associated with pseudo-unit	**RT_MWPm k,h**	**FR_LL (RT_FROP_LC)**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h' f - forbidden region set 'f'	RT - MWP - FR_LLm,t,f k,h =	Please provide more explanation on FR_LLm,t,f k,h
3.5.6	Real time make-whole payment_dispatchable generation resources_not associated with pseudo-unit	**RT_MWPm k,h**	**FR_UL (RT_FROP_LOC)**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h' f - forbidden region set 'f'	RT - MWP - FR_ULm,t,f k,h =	Please provide more explanation on FR_ULm,t,f k,h
3.5.6	Real time make-whole payment_dispatchable generation resources_not associated with pseudo-unit	**RT_MWPm k,h**	**RT_QSI (RT_FROP_LOC)**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h' f - forbidden region set 'f'	RT - MWP - RT_QSIm,t,f k,h =	Please provide definition and meaning of RT_QSIm,t,f k,
3.5.7	Real time make-whole settlement amount_dispatchable load	**RT_MWPm k,h**	**RT_ELC**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - MWP - RT_ELCm,t k,h =	The formula for RT_ELCm,t k,h has been provided, however definition of this is missing. What is the definition of RT_ELCm,t k,h
3.5.7	Real time make-whole settlement amount_dispatchable load	**RT_MWPm k,h**	**RT_OLC**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - MWP - RT_OLCm,t k,h =	The formula for RT_OLCm,t k,h has been provided, however definition of this is missing. What is the definition of RT_OLCm,t k,h
3.5.7	Real time make-whole settlement amount_dispatchable load	**RT_MWPm k,h**	**RT_ELOC**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - MWP - RT_ELOCm,t k,h =	The formula for RT_ELOCm,t k,h has been provided, however definition of this is missing. What is the definition of RT_ELOCm,t k,h
3.5.7	Real time make-whole settlement amount_dispatchable load	**RT_MWPm k,h**	**RT_OLOC**	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - MWP - RT_OLOCm,t k,h =	The formula for RT_OLOCm,t k,h has been provided, however definition of this is missing. What is the definition of RT_OLOCm,t k,h

3.5.8.1	Real time make-whole settlement amount_boundary entity resource	**RT_MWPi k,h**	**RT_ELC**	i - intertie metering points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - MWP - RT_ELCi,t k,h =	The formula for RT_ELCi,t k,h has been provided, however definition of this is missing. What is the definition of RT_ELCi,t k,h
3.5.8.1	Real time make-whole settlement amount_boundary entity resource	**RT_MWPi k,h**	**RT_OLC**	i - intertie metering points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - MWP - RT_OLCi,t k,h =	The formula for RT_OLCi,t k,h has been provided, however definition of this is missing. What is the definition of RT_OLCi,t k,h
3.5.8.2	Real time make-whole settlement amount_boundary entity resource	**RT_MWPi k,h (export)**	**PD_LMP (RT_ELC)**	i - intertie metering points h - each settlement hour in a trading day	RT - MWP - PD_LMPi h =	Please provide more explanation on PD_LMPi h
3.5.9	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPc k,h**	**RT_ELC**	c - combustion turbine delivery point h - each settlement hour in a trading day t - each metering interval in settlement hour 'h' k - market participant	RT - MWP - RT_ELCc,t k,h =	The formula for RT_ELCc,t k,h has been provided, however definition of this is missing. What is the definition of RT_ELCc,t k,h
3.5.9	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPc k,h**	**RT_OLC**	c - combustion turbine delivery point h - each settlement hour in a trading day t - each metering interval in settlement hour 'h' k - market participant	RT - MWP - RT_OLCc,t k,h =	The formula for RT_OLCc,t k,h has been provided, however definition of this is missing. What is the definition of RT_OLCc,t k,h
3.5.9	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPc k,h**	**RT_ELOC**	c - combustion turbine delivery point h - each settlement hour in a trading day t - each metering interval in settlement hour 'h' k - market participant	RT - MWP - RT_ELOCc,t k,h =	The formula for RT_ELOCc,t k,h has been provided, however definition of this is missing. What is the definition of RT_ELOCc,t k,h
3.5.9	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPc k,h**	**RT_OLOC**	c - combustion turbine delivery point h - each settlement hour in a trading day t - each metering interval in settlement hour 'h' k - market participant	RT - MWP - RT_OLOCc,t k,h =	The formula for RT_OLOCc,t k,h has been provided, however definition of this is missing. What is the definition of RT_OLOCc,t k,h
3.5.10	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPs k,h**	**RT_ELC**	s - steam turbine delivery point h - each settlement hour in a trading day t - each metering interval in settlement hour 'h' k - market participant	RT - MWP - RT_ELCs,t k,h =	The formula for RT_ELCs,t k,h has been provided, however definition of this is missing. What is the definition of RT_ELCs,t k,h

3.5.10	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPs k,h**	**RT_ELOC**	s - steam turbine delivery point h - each settlement hour in a trading day t - each metering interval in settlement hour 'h' k - market participant	RT - MWP - $RT\_ELOCs,t \ k,h =$	The formula for RT_ELOCs,t k,h has been provided, however definition of this is missing. What is the definition of RT_ELOCs,t k,h
3.5.10	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPs k,h**	**RT_OLC**	s - steam turbine delivery point h - each settlement hour in a trading day t - each metering interval in settlement hour 'h' k - market participant	RT - MWP - $RT\_OLCs,t \ k,h =$	The formula for RT_OLCs,t k,h has been provided, however definition of this is missing. What is the definition of RT_OLCs,t k,h
3.5.10	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPs k,h**	**RT_OLOC**	s - steam turbine delivery point h - each settlement hour in a trading day t - each metering interval in settlement hour 'h' k - market participant	RT - MWP - $RT\_OLOCs,k,h =$	The formula for RT_OLOCs,k,h has been provided, however definition of this is missing. What is the definition of RT_OLOCs,k,h
3.5.10	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPs k,h**	**RT_LMP (RT_ELOC)**	s - steam turbine delivery point h - each settlement hour in a trading day t0 - each metering interval in settlement hour 'h' when none of the combustion turbines associated with steam turbine have a real-time schedule that is less than its	RT - MWP - $RT\_LMPs,t0 \ h =$	Please provide definition and formula for RT_LMPs,t0 h
3.5.10	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPs k,h**	**RT_LMP (RT_ELOC)**	s - steam turbine delivery point h - each settlement hour in a trading day t1 - each metering interval in settlement hour 'h' when at least one of the combustion turbines associated with steam turbine have a real-time schedule that is less	RT - MWP - $RT\_LMPs,t1 \ h =$	Please provide definition and formula for RT_LMPs,t0 h
3.5.10	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPs k,h**	**RT_LOC_EOP_DIGQ (RT_ELOC)**	s - steam turbine delivery point h - each settlement hour in a trading day t0 - each metering interval in settlement hour 'h' when none of the combustion turbines associated with steam turbine have a real-time schedule that is less than its	RT - MWP - $RT\_LOC\_EOP\_DIGQs,t0 \ k,h =$	Please provide definition and formula for RT_LOC_EOP_DIGQs,t0 k,h
3.5.10	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPs k,h**	**RT_LOC_EOP_DIGQ (RT_ELOC)**	s - steam turbine delivery point h - each settlement hour in a trading day t1 - each metering interval in settlement hour 'h' when at least one of the combustion turbines associated with steam turbine have a real-time schedule that is less	RT - MWP - $RT\_LOC\_EOP\_DIGQs,t1 \ k,h =$	Please provide definition and formula for RT_LOC_EOP_DIGQs,t1 k,h
3.5.10	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPs k,h**	**RT_DIPC (RT_ELOC)**	s - steam turbine delivery point h - each settlement hour in a trading day t0 - each metering interval in settlement hour 'h' when none of the combustion turbines associated with steam turbine have a real-time schedule that is less than its	RT - MWP - $RT\_DIPCs,t0 \ k,h =$	Please provide definition and formula for RT_LOC_EOP_DIGQs,t1 k,h

3.5.10	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPs k,h**	**RT_DIPC (RT_ELOC)**	s - steam turbine delivery point h - each settlement hour in a trading day t1 - each metering interval in settlement hour 'h' when at least one of the combustion turbines associated with steam turbine have a real-time schedule that is less	RT - MWP - RT_DIPCs,t1 k,h =	Please provide definition and formula for RT_DIPCs,t1 k,h
3.5.10	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPs k,h**	**RT_QSI_DIGQ (RT_ELOC)**	s - steam turbine delivery point h - each settlement hour in a trading day t0 - each metering interval in settlement hour 'h' when none of the combustion turbines associated with steam turbine have a real-time schedule that is less than its	RT - MWP - RT_QSI_DIGQs,t0 k,h =	Please provide definition and formula for RT_QSI_DIGQs,t0 k,h
3.5.10	Real time make-payment_dispatchable generation resource_pseudo-unit	**RT_MWPs k,h**	**AQEI (RT_ELOC)**	s - steam turbine delivery point h - each settlement hour in a trading day t0 - each metering interval in settlement hour 'h' when none of the combustion turbines associated with steam turbine have a real-time schedule that is less than its	RT - MWP - AQEIs,t0 k,h =	Please provide definition for AQEIs,t0 k,h
3.6.3	Real-Time Intertie Offer Guarantee	**RT_IOGi k,h**	**Potential_IOG**	h - each settlement hour in a trading day k - market participant i - intertie metering points	RT - MWP - Potential_IOGi k,h =	Please provide definition for Potential_IOGi k,h
3.6.4	Real-Time Intertie Offer Guarantee	**RT_IOGi k,h**	**IOG_RATE (IOG_Offset)**	h - each settlement hour in a trading day k - market participant i - intertie metering points	RT - IOG - IOG_RATEi k,h =	Please provide definition and formula to calculate IOG_RATEi k,h
3.7.4	Real-time import failure charge	**RT_IMFCi k,h**	**RT_IBP**	h - each settlement hour in a trading day i - intertie metering points t - each metering interval in settlement hour 'h'	RT - IMFC - RT_IBPi,t h =	Please provide definition for RT_IBPi,t h
3.7.4	Real-time import failure charge	**RT_IMFCi k,h**	**PB_IM**	h - each settlement hour in a trading day t - each metering interval in settlement hour 'h'	RT - IMFC - BP_IMt h =	Please provide definition for BP_IMt h
3.7.4	Real-time import failure charge	**RT_IMFCi k,h**	**RT_ISD**	h - each settlement hour in a trading day i - intertie metering points t - each metering interval in settlement hour 'h' k - market participant	RT - IMFC - RT_ISDi,t k,h =	Please provide definition for RT_ISDi,t k,h

3.7.6	Real-time export failure charge	**RT_EXFCi k,h**	**RT_IBP**	h - each settlement hour in a trading day i - intertie metering points t - each metering interval in settlement hour 'h'	RT - EXFC - RT_IBPi,t h =	Please provide definition for RT_IBPi,t h
3.7.6	Real-time export failure charge	**RT_EXFCi k,h**	**RT_ESD**	h - each settlement hour in a trading day k - market participant i - intertie metering points t - each metering interval in settlement hour 'h'	RT - EXFC - RT_ESDi,t k,h =	Please provide definition for RT_ESDi,t k,h
3.10.2	Hourly uplift settlement amount	**HUSAk,h (collected or disbursed)**	**DAM_BCQ (RQ)**	m - delivery points h - each settlement hour in a trading day k - market participant i - intertie metering points b - buying market participants	HUSA - DAM_BCQm,i k,b,h =	Please provide definition for DAM_BCQm,i k,b,h
3.10.2	Hourly uplift settlement amount	**HUSAk,h (collected or disbursed)**	**DAM_BCQ (RQ)**	m - delivery points h - each settlement hour in a trading day k - market participant i - intertie metering points s - selling market participants	HUSA - DAM_BCQm,i s,k,h =	Please provide definition for DAM_BCQm,i s,k,h
3.10.2	Hourly uplift settlement amount	**HUSAk,h (collected or disbursed)**	**BCQ (RQ)**	m - delivery points h - each settlement hour in a trading day k - market participant i - intertie metering points b - buying market participants t - each metering interval in settlement hour	HUSA - BCQm,i,t k,b,h =	Please provide definition for BCQm,i,t k,b,h
3.10.2	Hourly uplift settlement amount	**HUSAk,h (collected or disbursed)**	**BCQ (RQ)**	m - delivery points h - each settlement hour in a trading day k - market participant i - intertie metering points s - selling market participants t - each metering interval in settlement hour	HUSA - BCQm,i,t s,k,h =	Please provide definition for BCQm,i,t s,k,h
4.4.12	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k (Variant 1)**	**DAM_GOG_COMP1**	c - combustion turbine delivery point k - market participant	DAM - GOG - DAM_GOG_COMP1c k =	Please provide definition for DAM_GOG_COMP1c k
4.4.12	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k (Variant 1)**	**DAM_GOG_COMP2**	c - combustion turbine delivery point k - market participant	DAM - GOG - DAM_GOG_COMP2c k =	Please provide definition for DAM_GOG_COMP2c k

4.4.12	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k (Variant 1)**	**DAM_GOG_COMP4**	c - combustion turbine delivery point k - market participant	DAM - GOG - DAM_GOG_COMP4c k =	Please provide definition for DAM_GOG_COMP4c k
4.4.12	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k (Variant 1)**	**DAM_GOG_COMP5**	c - combustion turbine delivery point k - market participant	DAM - GOG - DAM_GOG_COMP5c k =	Please provide definition for DAM_GOG_COMP5c k
4.4.13	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k (Variant 2)**	**DAM_GOG_COMP1**	k - market participant c - combustion turbine delivery point	DAM - GOG - DAM_GOG_COMP1c k =	Please provide definition for DAM_GOG_COMP1c k
4.4.13	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k (Variant 2)**	**DAM_GOG_COMP2**	k - market participant c - combustion turbine delivery point	DAM - GOG - DAM_GOG_COMP2c k =	Please provide definition for DAM_GOG_COMP2c k
4.4.13	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k (Variant 2)**	**DAM_GOG_COMP3**	k - market participant c - combustion turbine delivery point	DAM - GOG - DAM_GOG_COMP3c k =	Please provide definition for DAM_GOG_COMP3c k
4.4.13	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k (Variant 2)**	**DAM_GOG_COMP5**	k - market participant c - combustion turbine delivery point	DAM - GOG - DAM_GOG_COMP5c k =	Please provide definition for DAM_GOG_COMP5c k
4.4.14	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k (Variant 3)**	**DAM_GOG_COMP1**	k - market participant c - combustion turbine delivery point	DAM - GOG - DAM_GOG_COMP1c k =	Please provide definition for DAM_GOG_COMP1c k
4.4.14	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k (Variant 3)**	**DAM_GOG_COMP2**	k - market participant c - combustion turbine delivery point	DAM - GOG - DAM_GOG_COMP2c k =	Please provide definition for DAM_GOG_COMP2c k

4.4.14	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k (Variant 3)**	**DAM_GOG_COMP5**	k - market participant c - combustion turbine delivery point	DAM - GOG - DAM_GOG_COMP5c k =	Please provide definition for DAM_GOG_COMP5c k
4.4.15	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k**	**ST_Portion (DAM_GOG_COMP1)**	p - pseudo delivery point k - market participant d1 -	DAM - GOG - ST_Portionp k,d1=	Please provide definition for ST_Portionp k,d1
4.4.18.1	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k**	**ST_Portion (DAM_GOG_COMP4)**	p - pseudo delivery point d1 - k - market participant	DAM - GOG - ST_Portionp k,d1 = Repeated	Please provide definition for
4.4.20	Day ahead market generator offer guarantee_combustion turbine associated with pseudo-unit	**DAM_GOGc k**	**DAM_MWP (DAM_GOG_COMP5)**	h - each settlement hour in a trading day k - market participant c - combustion turbine delivery point	DAM - GOG - DAM_MWPc k,h =	Please provide definition for DAM_MWPc k,h
4.4.22	Day ahead market generator offer guarantee_steam turbine associated with pseudo-unit	**DAM_GOGs k**	**N (DAM_GOG_COMP1)**	h - each settlement hour in a trading day p - pseudo delivery point k - market participant	DAM - GOG - Np k,h =	Please provide definition for Np k,h
4.4.22	Day ahead market generator offer guarantee_steam turbine associated with pseudo-unit	**DAM_GOGs k**	**DAM_MWP (DAM_GOG_COMP5)**	h - each settlement hour in a trading day s - selling market participants k - market participant	DAM - GOG - DAM_MWPs k,h =	Please provide definition for DAM_MWPs k,h
4.5.12	Real time offer guarantee_combustion turbine associated with pseudo-unit	**RT_GOGc k (Variant 1)**	**RT_GOG_COMP1**	k - market participant c - combustion turbine delivery point	RT - GOG - RT_GOG_COMP1 =	Please provide definition for RT_GOG_COMP1
4.5.12	Real time offer guarantee_combustion turbine associated with pseudo-unit	**RT_GOGc k (Variant 1)**	**RT_GOG_COMP2**	k - market participant c - combustion turbine delivery point	RT - GOG - RT_GOG_COMP2 =	Please provide definition for RT_GOG_COMP2

4.5.12	Real time offer guarantee_combustion turbine associated with pseudo-unit	RT_GOGc k (Variant 1)	RT_GOG_COMP4	k - market participant c - combustion turbine delivery point	RT - GOG - RT_GOG_COMP4 =	Please provide definition for RT_GOG_COMP4
4.5.12	Real time offer guarantee_combustion turbine associated with pseudo-unit	RT_GOGc k (Variant 1)	RT_GOG_COMP5	k - market participant c - combustion turbine delivery point	RT - GOG - RT_GOG_COMP5 =	Please provide definition for RT_GOG_COMP5
4.5.16	Real time offer guarantee_combustion turbine associated with pseudo-unit	RT_GOGc k	RT_OR_CMT_DIPC (RT_GOG_COI	c - combustion turbine delivery point h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h' r - class r reserve	RT - GOG - RT_OR_CMT_DIPCc,t r,k,h =	Please provide definition for RT_OR_CMT_DIPCc,t r,k,h
4.5.17	Real time offer guarantee_combustion turbine associated with pseudo-unit	RT_GOGc k	RT_CM_DIPC (RT_GOG_COMP3)	c - combustion turbine delivery point h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	RT - GOG - RT_CM_DIPCc,t k,h =	Please provide definition for RT_CM_DIPCc,t k,h
4.5.20	Real time offer guarantee_combustion turbine associated with pseudo-unit	RT_GOGc k	RT_MWP (RT_GOG_COMP5)	c - combustion turbine delivery point h - each settlement hour in a trading day k - market participant	RT - GOG - RT_MWPc k,h =	Please provide definition for RT_MWPc k,h
4.7.2	Congestion rent and loss residual	CRLR	DAM_PNISL	h - each settlement hour in a trading day i - intertie metering points t - each metering interval in settlement hour 'h'	CRLR - DAM_PNISLi,t h =	Please provide definition for DAM_PNISLi,t h
4.8.3	Real-time external congestion residual settlement amount	RT_ECRUk	RT_ECRI		RT - ECRU -	Please provide definition for ECRU
4.8.3	Real-time external congestion residual settlement amount	RT_ECRUk	RT_ECR (RT_ECRI)		RT - ECRU - RT_ECR =	Please provide definition for RT_ECR

4.8.3	Real-time external congestion residual settlement amount	RT_ECRUk	TDc (RT_ECRI)		RT - ECRU - TDc =	Please provide definition for TDc
4.8.3	Real-time external congestion residual settlement amount	RT_ECRUk	TDc,c1 (RT_ECRI)		RT - ECRU - TDc,c1 =	Please provide definition for TDc,c1
4.8.4	Real-time external congestion residual settlement amount	RT_ECRUk	RT_ECRe		RT - ECRU - RT_ECRe =	Please provide definition for RT_ECRe
4.8.7	Day ahead market NISL residual	DAM_NISLUk	DAM_NISLR		DAM - NISLU -	Please provide definition for NISLU
4.9.2	Transmission rights clearing account	TRCACk	TRCAD		TRCACk - TRCAD =	Please provide definition for TRCAD
4.10.9	Pseudo unit market price component	GFC_MPCs k,h	GFC_MPC	s - steam turbine delivery point h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	GFC - MPC - GFC_MPCs,t k,h =	Please provide definition for GFC_MPCs,t k,h
4.10.9	Pseudo unit market price component	GFC_MPCs k,h	PD_LMP (GFC_MPCs,t k,h - less tl	s - steam turbine delivery point pdm - h - each settlement hour in a trading day	GFC - MPC - PD_LMPs,pdm h = pre-dispatch locational marginal price for energy (in $/MWh) at steam turbine delivery point 's' in settlement hour 'h' for pre-dispatch run 'pdm'.	Please provide formula to calculate PD_LMPs,pdm h
4.10.9	Pseudo unit market price component	GFC_MPCs k,h	PD_STP_QSI (GFC_MPCs,t k,h - le	p - pseudo delivery point h - each settlement hour in a trading day k - market participant pdm -	GFC - MPC - PD_STP_QSIp,pdm k,h = the steam turbine portion of the pre-dispatch schedule of energy for injection (in MWh) from pre-dispatch run 'pdm' for market participant 'k' at pseudo-unit delivery point 'p' in settlement hour 'h', and derived as the difference between PD_QSIk,h p,pdm and PD_QSIk,h c,pdm.	Please provide formula to calculate PD_STP_QSIp,pdm k,h

4.10.9	Pseudo unit market price component	**GFC_MPCs k,h**	**PD_LMP (GFC_MPCs,t k,h - more**	s - steam turbine delivery point h - each settlement hour in a trading day pd1 -	GFC - MPC - PD_LMPs,pd1 h = pre-dispatch locational marginal price for energy (in $/MWh) at delivery point 'm' in settlement hour 'h' for pre-dispatch run 'pd1'.	Please provide formula to calculate PD_LMPs,pd1 h
4.10.9	Pseudo unit market price component	**GFC_MPCs k,h**	**PD_STP_QSI (GFC_MPCs,t k,h - m**	p - pseudo delivery point k - market participant h - each settlement hour in a trading day pdm -	GFC - MPC - PD_STP_QSIp,pdm k,h = the steam turbine portion of the pre-dispatch schedule of energy for injection (in MWh) from pre-dispatch run 'pdm' for market participant 'k' at pseudo-unit delivery point 'p' in settlement hour 'h', and derived as the difference between PD_QSIk,h p,pdm and PD_QSIk,h c,pdm.	Please provide formula to calculate PD_STP_QSIp,pdm k,h
4.10.9	Pseudo unit market price component	**GFC_MPCs k,h**	**PD_LMP (GFC_MPCs,t k,h - more**	s - steam turbine delivery point h - each settlement hour in a trading day pdm -	GFC - MPC - PD_LMPs,pdm h = pre-dispatch locational marginal price for energy (in $/MWh) at steam turbine delivery point 's' in settlement hour 'h' for pre-dispatch run 'pdm'.	Please provide formula to calculate PD_LMPs,pdm h
4.10.10	Pseudo unit guarantee cost component	**GFC_GCCc k,f**	**PD_SU_Ratio**	c - combustion turbine delivery point k - market participant f - forbidden region set	GFC - MPC - PD_SU_Ratioc k,f =	Please provide definition for PD_SU_Ratioc k,f
4.10.10	Pseudo unit guarantee cost component	**GFC_GCCc k,f**	**SU_NICR**	p - pseudo delivery point pdm - k - market participant f - forbidden region set	GFC - MPC - SU_NICRp,pdm k,f =	Please provide definition for SU_NICRp,pdm k,f
4.10.10	Pseudo unit guarantee cost component	**GFC_GCCc k,f**	**PD_BE_SNL**	p - pseudo delivery point pdm - k - market participant h - each settlement hour in a trading day	GFC - MPC - PD_BE_SNLp,pdm k,h =	Please provide definition for PD_BE_SNLp,pdm k,h
4.10.10	Pseudo unit guarantee cost component	**GFC_GCCc k,f**	**PD_QSI (M1)**	c - combustion turine delivery point h - each settlement hour in a trading day k - market participant pdm -	GFC - MPC - PD_QSIc,pdm k,h = pre-dispatch schedule quantity of energy (in MWh) scheduled for injection by pre-dispatch run 'pdm' for market participant 'k' at combustion turbine delivery point 'p' in settlement hour 'h'.	Please provide formula to calculate PD_QSIc,pdm k,h
4.10.10	Pseudo unit guarantee cost component	**GFC_GCCc k,f**	**SU_INCR (M1)**	f - forbidden region set h - each settlement hour in a trading day k - market participant pdm -	GFC - MPC - SU_INCRp,pdm k,f =	Please provide definition for PD_QSIc,pdm k,h

4.10.10	Pseudo unit guarantee cost component	**GFC_GCCc k,f**	**PD_SU_Ratio (M1)**	f - forbidden region set c - combustion turbine delivery point k - market participant	GFC - MPC - PD_SU_Ratioc k,f =	Please provide definition for PD_SU_Ratioc k,f
4.10.11	Pseudo unit guarantee cost component	**GFC_GCCs k**	**SU_INCR**	f - forbidden region set p - pseudo delivery point k - market participant pdm -	GFC - MPC - SU_INCRp,pdm k,f =	Please provide definition for SU_INCRp,pdm k,f
4.10.11	Pseudo unit guarantee cost component	**GFC_GCCs k**	**PD_BE_SNL**	h - each settlement hour in a trading day k - market participant p - pseudo delivery point pdm -	GFC - MPC - PD_BE_SNLp,pdm k,h =	Please provide definition for PD_BE_SNLp,pdm k,h
4.10.11	Pseudo unit guarantee cost component	**GFC_GCCs k**	**PD_LMP**	h - each settlement hour in a trading day s - steam turbine delivery point pdm -	GFC - MPC - PD_LMPs,pdm h = pre-dispatch locational marginal price for energy (in $/MWh) at steam turbine delivery point 's' in settlement hour 'h' for pre-dispatch run 'pdm'.	Please provide formula to calculate PD_LMPs,pdm h
4.10.11	Pseudo unit guarantee cost component	**GFC_GCCs k**	**PD_STP_QSI (M1)**	p - pseudo delivery point pdm - h - each settlement hour in a trading day k - market participant	GFC - MPC - PD_STP_QSIp,pdm k,h = the steam turbine portion of the pre-dispatch schedule of energy for injection (in MWh) from pre-dispatch run 'pdm' for market participant 'k' at pseudo-unit delivery point 'p' in settlement hour 'h', and derived as the difference between PD_QSIk,h p,pdm and PD_QSIk,h c,pdm.	Please provide formula to calculate PD_STP_QSIp,pdm k,h
4.10.11	Pseudo unit guarantee cost component	**GFC_GCCs k**	**SU_INCR (M1)**	p - pseudo delivery point pdm - k - market participant f - forbidden region set	GFC - MPC - SU_INCRp,pdm k,f =	Please provide definition for SU_INCRp,pdm k,f
4.10.11	Pseudo unit guarantee cost component	**GFC_GCCs k**	**PD_BE_SU (M1)**	p - pseudo delivery point pdm - k - market participant f - forbidden region set	GFC - MPC - PD_BE_SUp,pdm k,f = start-up offer submitted in the pre-dispatch process (in $/start) at pseudo-unit 'p' for market participant 'k' for the first settlement hour 'h' of the pre-dispatch operational commitment committed by the pre-dispatch calculation engine in pre-dispatch run 'pdm' that the	Please provide formula to calculate PD_BE_SUp,pdm k,f
4.14.4.1	Day ahead market reliability scheduling uplift settlement amount_virtual zonal resources	**V_DRSUk**	**DAM_NDL_OF**		V - DRSU - DAM_NDL_OF = total quantity of energy that was over-forecasted in the day-ahead market for non-dispatchable loads, as determined by the IESO as follows:	Please provide formula to calculate DAM_NDL_OF

4.14.4.1	Day ahead market reliability scheduling uplift settlement amount_virtual zonal resources	**V_DRSUk**	**DAM_HDR_QSW (DAM_NDL_OF**	m1 - set of all delivery points 'm' for physical hourly demand response resources h - each settlement hour in a trading day k - market participant	V - DRSU - DAM_HDR_QSWm1 k,h =	Please provide definition for DAM_HDR_QSWm1 k,h
4.14.5	Day ahead market make-whole payment disbursed_boundary entity resources_import transactions	**DAM_P2_PMT**	**Imp_DAM_MWP**	h - each settlement hour in a trading day k - market participant i - intertie metering points p1 -	DAM - P2 - PMT - Imp_DAM_MWPi,p1 k,h =	Please provide definition for Imp_DAM_MWPi,p1 k,h
4.14.5	Day ahead market make-whole payment disbursed_boundary entity resources_import transactions	**DAM_P2_PMT**	**Imp_DAM_MWP**	h - each settlement hour in a trading day k - market participant i - intertie metering points p2 -	DAM - P2 - PMT - Imp_DAM_MWPi,p2 k,h =	Please provide definition for Imp_DAM_MWPi,p2 k,h
4.14.5	Day ahead market make-whole payment disbursed_boundary entity resources_import transactions	**DAM_P2_PMT**	**DAM_GOG**	m - delivery points h - each settlement hour in a trading day k - market participant	DAM - P2 - PMT - DAM_GOGm k,h =	Please provide definition for DAM_GOGm k,h
4.14.6	Day ahead market make-whole payment disbursed_boundary entity resources_import transactions_Pass2	**Imp_DAM_MWPi,p2 k,h**	**DAM_QSI (DAM_COMP1)**	h - each settlement hour in a trading day k - market participant i - intertie metering points p2 -	Imp - DAM - MWP - DAM_QSIi,p2 k,h = quantity of energy (in MWh) scheduled for injection by market participant 'k' at intertie metering point 'i' in settlement hour 'h', as scheduled by Pass 2: Reliability Scheduling and Commitment.	Please provide formula to calculate DAM_QSIi,p2 k,h
4.14.6	Day ahead market make-whole payment disbursed_boundary entity resources_import transactions_Pass2	**Imp_DAM_MWPi,p2 k,h**	**DAM_QSOR (DAM_COMP2)**	h - each settlement hour in a trading day k - market participant i - intertie metering points r - class r reserve p2 -	Imp - DAM - MWP - DAM_QSORi,p2 r,k,h = scheduled quantity (in MWh) of class r reserve for market participant 'k' at intertie metering point 'i' in settlement hour 'h', as scheduled by Pass 2: Reliability Scheduling and Commitment, where r1, r2, and r3 are all	Please provide formula to calculate DAM_QSORi,p2 r,k,h
4.14.6	Day ahead market make-whole payment disbursed_boundary entity resources_import transactions_Pass2	**Imp_DAM_MWPi,p2 k,h**	**DAM_EOP (DAM_COMP2)**	h - each settlement hour in a trading day k - market participant i - intertie metering points r - class r reserve	Imp - DAM - MWP - DAM_EOPi r,k,h =	Please provide definition for DAM_EOPi r,k,h
4.14.7	Day ahead market make-whole payment disbursed_boundary entity resources_import transactions_Pass1	**Imp_DAM_MWPi,p1 k,h**	**DAM_QSI (DAM_COMP1)**	h - each settlement hour in a trading day k - market participant i - intertie metering points p1 -	Imp - DAM - MWP - DAM_QSIi,p1 k,h = quantity of energy (in MWh) scheduled for injection by market participant 'k' at intertie metering point 'i' in settlement hour 'h', as scheduled by Pass 1: Market Commitment and Market Power Mitigation.	Please provide formula to calculate DAM_QSIi,p1 k,h

4.14.7	Day ahead market make-whole payment disbursed_boundary entity resources_import transactions_Pass1 **Imp_DAM_MWPi,p1 k,h**	**DAM_QSOR (DAM_COMP2)**	h - each settlement hour in a trading day k - market participant i - intertie metering points r - class r reserve p1 -	Imp - DAM - MWP - DAM_QSORi,p2 r,k,h = scheduled quantity (in MWh) of class r reserve for market participant 'k' at intertie metering point 'i' in settlement hour 'h' described in the day-ahead schedule, where only r2 and r3 are applicable.	Please provide formula to calculate DAM_QSORi,p2 r,k,h
4.14.7	Day ahead market make-whole payment disbursed_boundary entity resources_import transactions_Pass1 **Imp_DAM_MWPi,p1 k,h**	**DAM_EOP (DAM_COMP2)**	h - each settlement hour in a trading day k - market participant i - intertie metering points r - class r reserve	Imp - DAM - MWP - DAM_EOPi r,k,h =	Please provide definition for DAM_EOPi r,k,h
4.14.8	Fuel Cost Compensation Uplift **FCCUk**	**FCC**	m - delivery points k - market participant	FCCU - FCCm k =	Please provide definition for FCCm k
5.3.1	Real time market reference level settlement charge **RT_RLSCm k,h**	**PM_RLSC**	m - delivery points c - combustion turbine delivery point p - pseudo delivery point e - w -	RT - RSLC - PM_RLSCmcepw = is the persistence multiplier for market control entity for physical withholding 'mcepw' of the relevant resource for the relevant settlement hour, determined as the number of trading days in which	Please provide formula to calculate PM_RLSCmcepw
5.4.1	Ex-post mitigation for physical withholding settlement charge **EXP_PWSCm k**	**PW_E**	m - delivery points k - market participant	EXP - PWSC - PW_Em k =	Please provide definition for PW_Em k
5.4.1	Ex-post mitigation for physical withholding settlement charge **EXP_PWSCm k**	**PW_OR**	m - delivery points k - market participant	EXP - PWSC - PW_ORm k =	Please provide definition for PW_ORm k
5.4.1.1	Ex-post mitigation for physical withholding settlement charge **EXP_PWSCm k**	**DAM_PW (PW_Em k)**	m - delivery points h - each settlement hour in a trading day k - market participant	EXP - PWSC - DAM_PWm k,h =	Please provide definition for DAM_PWm k,h
5.4.1.1	Ex-post mitigation for physical withholding settlement charge **EXP_PWSCm k**	**RT_PW (PW_Em k)**	m - delivery points h - each settlement hour in a trading day k - market participant	EXP - PWSC - RT_PWm k,h =	Please provide definition for RT_PWm k,h

5.4.1.1	Ex-post mitigation for physical withholding settlement charge EXP_PWSCm k	PM_PW (PW_Em k)	m - delivery points c - combustion turbine delivery point p - pseudo delivery point e - w -	EXP - PWSC - PW_PWmcepw = is the persistence multiplier applicable to the mcepw relevant trading day for the market control entity for physical withholding 'mcepw' that the registered market participant	Please provide formula to calculate PW_PWmcepw
5.4.1.1	Ex-post mitigation for physical withholding settlement charge EXP_PWSCm k	DAM_LMP (DAM_PWm k,h)	m - delivery points h - each settlement hour in a trading day k - market participant	EXP - PWSC - DAM_LMPm k,h =	Please provide definition for DAM_LMPm k,h
5.4.1.1	Ex-post mitigation for physical withholding settlement charge EXP_PWSCm k	RT_LMP (RT_PWm k,h)	m - delivery points h - each settlement hour in a trading day k - market participant t - each metering interval in settlement hour 'h'	EXP - PWSC - RT_LMPm,t k,h =	Please provide definition for RT_LMPm,t k,h
5.4.1.2	Ex-post mitigation for physical withholding settlement charge EXP_PWSCm k	DAM_PW (PW_ORm k)	m - delivery points h - each settlement hour in a trading day k - market participant	EXP - PWSC - DAM_PWm k,h =	Please provide definition for DAM_PWm k,h
5.4.1.2	Ex-post mitigation for physical withholding settlement charge EXP_PWSCm k	RT_PW (PW_ORm k)	m - delivery points h - each settlement hour in a trading day k - market participant	EXP - PWSC - RT_PWm k,h =	Please provide definition for RT_PWm k,h
5.5.1	Ex-post mitigation for economic withholding on uncompetitive interties EXP_EWSCi k	EW_E	k - market participant i - intertie metering points	EXP - PWSC - EW_Ei k =	Please provide definition for EW_Ei k
5.5.1	Ex-post mitigation for economic withholding on uncompetitive interties EXP_EWSCi k	EW_MWP	k - market participant i - intertie metering points	EXP - PWSC - EW_MWPi k =	Please provide definition for EW_MWPi k
5.5.1	Ex-post mitigation for economic withholding on uncompetitive interties EXP_EWSCi k	EW_OR	k - market participant i - intertie metering points	EXP - PWSC - EW_ORi k =	Please provide definition for EW_ORi k

5.5.1.1	Ex-post mitigation for economic withholding on uncompetitive interties	**EXP_EWSCi k**	**DAM_EWUI (EW_Ei k)**	h - each settlement hour in a trading day k - market participant i - intertie metering points	EXP - PWSC - DAM_EWUIi k,h = Please provide definition for DAM_EWUIi k,h
5.5.1.1	Ex-post mitigation for economic withholding on uncompetitive interties	**EXP_EWSCi k**	**RT_EWUI (EW_Ei k)**	h - each settlement hour in a trading day k - market participant i - intertie metering points	EXP - PWSC - RT_EWUIi k,h = Please provide definition for RT_EWUIi k,h
5.5.1.1	Ex-post mitigation for economic withholding on uncompetitive interties	**EXP_EWSCi k**	**DAM_LMP (DAM_EWUIi k,h)**	h - each settlement hour in a trading day k - market participant i - intertie metering points	EXP - PWSC - DAM_LMPi k,h = Please provide definition for DAM_LMPi k,h
5.5.1.1	Ex-post mitigation for economic withholding on uncompetitive interties	**EXP_EWSCi k**	**RT_LMP (DAM_EWUIi k,h)**	h - each settlement hour in a trading day k - market participant i - intertie metering points t - each metering interval in settlement hour 'h'	EXP - PWSC - RT_LMPi,t k,h = Please provide definition for RT_LMPi,t k,h
5.5.1.2	Ex-post mitigation for economic withholding on uncompetitive interties	**EW_MWPi k**	**DAM_MWP**	h - each settlement hour in a trading day k - market participant i - intertie metering points	EXP - MWP - DAM_MWPi k,h = Please provide definition for DAM_MWPi k,h
5.5.1.2	Ex-post mitigation for economic withholding on uncompetitive interties	**EW_MWPi k**	**RT_MWP**	h - each settlement hour in a trading day k - market participant i - intertie metering points	EXP - MWP - RT_MWPi k,h = Please provide definition for RT_MWPi k,h
5.5.1.2	Ex-post mitigation for economic withholding on uncompetitive interties	**EW_MWPi k**	**RT_IOG**	h - each settlement hour in a trading day k - market participant i - intertie metering points	EXP - MWP - RT_IOGi k,h = Please provide definition for RT_IOGi k,h
5.5.1.3	Ex-post mitigation for economic withholding on uncompetitive interties	**EW_ORi k**	**DAM_EWUI**	h - each settlement hour in a trading day k - market participant i - intertie metering points	EXP - OR - DAM_EWUIi k,h = Please provide definition for DAM_EWUIi k,h

5.5.1.3	Ex-post mitigation for economic withholding on uncompetitive interties	EW_ORi k	RT_EWUI	h - each settlement hour in a trading day k - market participant i - intertie metering points	EXP - OR - RT_EWUIi k,h =	Please provide definition for RT_EWUIi k,h
6.16.6.3.1	Portion of short term funds borrowed by IESO to be recovered in current billing period	TRCACk	TRCAD	L -	EXP - OR - TRCADl = the portion of the total dollar value of all disbursements from the TR clearing account authorized by the IESO Board in the current energy market billing period allocated to market participants that have paid provincial transmission serviceservices charges "C" in the energy market	Please provide formula to calculate TRCADl
6.16.6.3.2	Portion of short term funds borrowed by IESO to be recovered in current billing period	TRCACk	TRCAD	e -	EXP - OR - TRCADe = the portion of the total dollar value of all disbursements from the TR clearing account authorized by the IESO Board in the current energy market billing period allocated to market participants that have paid export transmission serviceservices charges "C1" in the energy	Please provide formula to calculate TRCADe

Color scheme:

1. Header
2. Charge type and section
3. Document
4. Comments
5. Differences in equations highlighted

1. **Day - Ahead Market Energy Settlement Amount for Dispatchable Generators**

Charge type 1100; 3.1.2 and 3.1.3

   A. Document - Market Rules - Chapter 9 (Settlements and Billings)

$$HPTSA\{1\}_{k,h} = \sum^{M}\left[(DAM\_QSI_{k,h}^{m} - DAM\_QSW_{k,h}^{m}) \times DAM\_LMP_{h}^{m} \right.$$
$$\left. + (DAM\_QSI_{k,h}^{i} - DAM\_QSW_{k,h}^{i}) \times DAM\_LMP_{h}^{i}\right]$$

$HPTSA\_PBC\{1\}_{k,h}$
$$= \sum^{M}\left[DAM\_LMP_{h}^{m} \times \left(\sum_{S} DAM\_BCQ_{s,k,h}^{m} - \sum_{B} DAM\_BCQ_{k,b,h}^{m}\right) \right.$$
$$\left. + DAM\_LMP_{h}^{i} \times \left(\sum_{S} DAM\_BCQ_{s,k,h}^{i} - \sum_{B} DAM\_BCQ_{k,b,h}^{i}\right)\right]$$

   B. IESO Charge Types and Equations

| 1100 MRP new | Day-Ahead Market Energy Settlement Amount for Dispatchable Generators (HPTSA{1}) | MR Ch.9 ss.3.1.2 and 3.1.3 | $HPTSA\{1\}_{k,h} = \sum^{M}\left[(DAM\_QSI_{k,h}^{m} - DAM\_QSW_{k,h}^{m}) \times DAM\_LMP_{h}^{m}\right] + HPTSA\_PBC\{1\}_{k,h}$

Where:

a. $HPTSA\_PBC\{1\}_{k,h} = \sum^{M}\left[DAM\_LMP_{h}^{m} \times \left(\sum_{S} DAM\_BCQ_{s,k,h}^{m} - \sum_{B} DAM\_BCQ_{k,b,h}^{m}\right)\right]$ |

The equations for HPTSA do not match. The equation just includes delivery points and no intertie points. Is Physical Bilateral Contract added to the Day - Ahead Settlement Energy Calculation for each resource type? Please guide us on how to calculate the addition of physical bilateral contract to HPTSA according to the charge type document. We need clarification

because it was not included in the market rules document. The equation for calculation of physical bilateral contract is also different, please calrify.

2. Real - Time Energy Settlement Amount for Dispatchable Generators

Charge type 1101; 3.1.5 and 3.1.6

A. Document - Market Rules - Chapter 9 (Settlements and Billings)

$$
\begin{aligned}
HPTSA\{2\}\_PBC_{k,h} \\
= \sum^{M,T} RT\_LMP_h^{m,t} \times \left(\sum_S BCQ_{s,k,h}^{m,t} - \sum_B BCQ_{k,b,h}^{m,t} \right) \\
+ \sum^{M,T} RT\_LMP_h^{l,t} \times \left(\sum_S BCQ_{s,k,h}^{l,t} - \sum_B BCQ_{k,b,h}^{l,t} \right)
\end{aligned}
$$

$$
HPTSA\{2\}_{k,h} = \sum^{M,T} RT\_LMP_h^{m,t} \times \frac{\left((AQEI_{k,h}^{m,t} - DAM\_QSI_{k,h}^{m}) - (AQEW_{k,h}^{m,t} - DAM\_QSW_{k,h}^{m}) \right)}{12}
$$
$$
+ RT\_LMP_h^{i,t} \times \frac{\left((SQEI_{k,h}^{i,t} - DAM\_QSI_{k,h}^{i}) - (SQEW_{k,h}^{i,t} - DAM\_QSW_{k,h}^{i}) \right)}{12}
$$

B. IESO Charge Types and Equations

1101 MRP updated	Real-Time Energy Settlement Amount for Dispatchable Generators (HPTSA{2})	MR Ch.9 ss.3.1.5 and 3.1.6	$HPTSA\{2\}_{k,h} = \sum^{M,T} RT\_LMP_h^{m,t} \times \frac{\left((AQEI_{k,h}^{m,t} - DAM\_QSI_{k,h}^{m}) - (AQEW_{k,h}^{m,t} - DAM\_QSW_{k,h}^{m}) \right)}{12} + HPTSA\_PBC\{2\}_{k,h}$ **Where:** a. $HPTSA\{2\}\_PBC_{k,h} = \sum^{M,T} RT\_LMP_h^{m,t} \times \left(\sum_S BCQ_{s,k,h}^{m,t} - \sum_B BCQ_{k,b,h}^{m,t} \right)$

The equations for HPTSA do not match. The equation just includes delivery points and no intertie points. Is Physical Bilateral Contract added to the Real - Time Settlement Energy Calculation for each resource type? Please guide us on how to calculate the addition of physical bilateral contract to HPTSA according to the charge type document. We need clarification because it was not included in the market rules document. The equation for calculation of physical bilateral contract is also different, please clarify.

3. Day-Ahead Market Energy Settlement Amount for Dispatchable Loads

Charge type 1102; 3.1.2 and 3.1.3

A. Document - Market Rules - Chapter 9 (Settlements and Billings)

$$HPTSA\{1\}_{k,h} = \sum^{M}\left[\left(DAM\_QSI_{k,h}^{m} - DAM\_QSW_{k,h}^{m}\right) \times DAM\_LMP_{h}^{m}\right.$$
$$\left. + \left(DAM\_QSI_{k,h}^{i} - DAM\_QSW_{k,h}^{i}\right) \times DAM\_LMP_{h}^{i}\right]$$

$$HPTSA\_PBC\{1\}_{k,h}$$
$$= \sum^{M}\left[DAM\_LMP_{h}^{m} \times \left(\sum_{S} DAM\_BCQ_{s,k,h}^{m} - \sum_{B} DAM\_BCQ_{k,b,h}^{m}\right)\right.$$
$$\left. + DAM\_LMP_{h}^{i} \times \left(\sum_{S} DAM\_BCQ_{s,k,h}^{i} - \sum_{B} DAM\_BCQ_{k,b,h}^{i}\right)\right]$$

B. IESO Charge Types and Equations

1102 MRP new	Day-Ahead Market Energy Settlement Amount for Dispatchable Loads (HPTSA{1})	MR Ch.9 ss.3.1.2 and 3.1.3	$HPTSA\{1\}_{k,h} = \sum^{M}\left[\left(DAM\_QSI_{k,h}^{m} - DAM\_QSW_{k,h}^{m}\right) \times DAM\_LMP_{h}^{m}\right] + HPTSA\_PBC\{1\}_{k,h}$ **Where:** a. $HPTSA\_PBC\{1\}_{k,h} = \sum^{M}\left[DAM\_LMP_{h}^{m} \times \left(\sum_{S} DAM\_BCQ_{s,k,h}^{m} - \sum_{B} DAM\_BCQ_{k,b,h}^{m}\right)\right]$

The equations for HPTSA do not match. The equation just includes delivery points and no intertie points. Is Physical Bilateral Contract added to the Day - Ahead Settlement Energy Calculation for each resource type? Please guide us on how to calculate the addition of physical bilateral contract to HPTSA according to the charge type document. We need clarification because it was not added in the market rules document. The equation for calculation of physical bilateral contract is also different, please clarify.

Please clarify how this charge type is different from charge type 1100. Dispatchable loads and generators have same sections in market rules, so please elaborate on the reasoning for them to have different charge types.

4. **Real-Time Energy Settlement Amount for Dispatchable Loads**

Charge type 1103; 3.1.5 and 3.1.6

A. Document - Market Rules - Chapter 9 (Settlements and Billings)

$$HPTSA\{2\}_{k,h} = \sum^{M,T} RT\_LMP_h^{m,t} \; x \; \frac{\left(\left(AQEI_{k,h}^{m,t} - DAM\_QSI_{k,h}^m\right) - \left(AQEW_{k,h}^{m,t} - DAM\_QSW_{k,h}^m\right)\right)}{12}$$

$$+ \; RT\_LMP_h^{i,t} \; x \; \frac{\left(\left(SQEI_{k,h}^{i,t} - DAM\_QSI_{k,h}^i\right) - \left(SQEW_{k,h}^{i,t} - DAM\_QSW_{k,h}^i\right)\right)}{12}$$

$$HPTSA\{2\}\_PBC_{k,h}$$
$$= \sum^{M,T} RT\_LMP_h^{m,t} \; x \; \left(\sum_S BCQ_{s,k,h}^{m,t} - \sum_B BCQ_{k,b,h}^{m,t}\right)$$
$$+ \sum^{M,T} RT\_LMP_h^{i,t} \; x \; \left(\sum_S BCQ_{s,k,h}^{i,t} - \sum_B BCQ_{k,b,h}^{i,t}\right)$$

B. IESO Charge Types and Equations

1103 MRP updated	Real-Time Energy Settlement Amount for Dispatchable Loads (HPTSA{2})	MR Ch.9 ss.3.1.5 and 3.1.6	$HPTSA\{2\}_{k,h} = \sum^{M,T} RT\_LMP_h^{m,t} \; x \; \frac{\left(\left(AQEI_{k,h}^{m,t} - DAM\_QSI_{k,h}^m\right) - \left(AQEW_{k,h}^{m,t} - DAM\_QSW_{k,h}^m\right)\right)}{12}$ $+ \; HPTSA\_PBC\{2\}_{k,h}$ **Where:** a. $HPTSA\{2\}\_PBC_{k,h} = \sum^{M,T} RT\_LMP_h^{m,t} \; x \; \left(\sum_S BCQ_{s,k,h}^{m,t} - \sum_B BCQ_{k,b,h}^{m,t}\right)$

The equations for HPTSA do not match. The equation just includes delivery points and no intertie points. Is Physical Bilateral Contract added to the Real - Time Settlement Energy Calculation for each resource type? Please guide us on how to calculate the addition of physical bilateral contract to HPTSA according to the charge type document. We need clarification because it was not added in the market rules document. The equation for calculation of physical bilateral contract is also different, please clarify.

Please clarify how this charge type is different from charge type 1101. Dispatchable loads and generators have same sections in market rules, so please elaborate on the reasoning for them to have different charge types.

5. **Day-Ahead Market Energy Settlement Amount for Price Responsive Loads**

Charge type 1104; 3.1.2 and 3.1.4

A. Document - Market Rules - Chapter 9 (Settlements and Billings)

$HPTSA\_PBC\{1\}_{k,h}$

$$= \sum^{M} \left[DAM\_LMP_h^m \times \left(\sum_S DAM\_BCQ_{s,k,h}^m - \sum_B DAM\_BCQ_{k,b,h}^m \right) \right.$$
$$\left. + DAM\_LMP_h^i \times \left(\sum_S DAM\_BCQ_{s,k,h}^i - \sum_B DAM\_BCQ_{k,b,h}^i \right) \right]$$

$HPTSA\{1\}\_PRL\_SSW_{k,h}$

$$= -1 \times \left[\sum^{M1} \left(DAM\_QSW_{k,h}^m \times DAM\_LMP_h^m \right) \right.$$
$$\left. + \sum^{M2} \left(DAM\_QSW_{k,h}^m \times DAM\_LMP_h^m \right) \right]$$

B. IESO Charge Types and Equations

1104 MRP new	Day-Ahead Market Energy Settlement Amount for Price Responsive Loads (HPTSA{1})	MR Ch.9 ss.3.1.2 and 3.1.4	$HPTSA\{1\}\_PRL\_SSW_{k,h}$ $$= -1 \times \left[\sum^{M1} \left(DAM\_QSW_{k,h}^m \times DAM\_LMP_h^m \right) + \sum^{M2} \left(DAM\_QWS_{k,h}^m \times DAM\_LMP_h^m \right) \right]$$ $+ HPTSA\_PBC\{1\}_{k,h}$ **Where:** a. $HPTSA\_PBC\{1\}_{k,h} = \sum^{M1} \left[DAM\_LMP_h^m \times \left(\sum_S DAM\_BCQ_{s,k,h}^m - \sum_B DAM\_BCQ_{k,b,h}^m \right) \right]$ b. M1 = the set of all *delivery points* 'm' for *price responsive loads* and *self-scheduling electricity storage resources* that are withdrawing; and c. M2 = the set of all *delivery points* 'm' for *price responsive loads* used as physical *hourly demand response resources* to fulfill *capacity obligations*.

The equations for HPTSA do not match. The equation just includes delivery points and no intertie points. Is Physical Bilateral Contract added to the Day - Ahead Settlement Energy Calculation for each resource type? Please guide us on how to calculate the addition of physical bilateral contract to HPTSA according to the charge type document. We need clarification because it was not added in the market rules document. The equation for calculation of physical bilateral contract is also different, please clarify.

6. **Real-Time Energy Settlement Amount for Price Responsive Loads**

Charge type 1105; 3.1.5 and 3.1.7

A. Document - Market Rules - Chapter 9 (Settlements and Billings)

$$HPTSA\{2\}\_PBC_{k,h}$$

$$= \sum^{M,T} RT\_LMP_h^{m,t} \times \left(\sum_S BCQ_{s,k,h}^{m,t} - \sum_B BCQ_{k,b,h}^{m,t} \right)$$

$$+ \sum^{M,T} RT\_LMP_h^{l,t} \times \left(\sum_S BCQ_{s,k,h}^{l,t} - \sum_B BCQ_{k,b,h}^{l,t} \right)$$

$$HPTSA\{2\}\_PRL\_SSW_{k,h}$$

$$= -1 \times \left[\sum^{M1,T} RT\_LMP_h^{m,t} \times \frac{\left(AQEW_{k,h}^{m,t} - DAM\_QSW_{k,h}^m\right)}{12} \right.$$

$$\left. - \sum^{M2,T} RT\_LMP_h^{m,t} \times \frac{DAM\_QSW_{k,h}^m}{12} \right]$$

1105 MRP new	Real-Time Energy Settlement Amount for Price Responsive Loads (HPTSA{2})	MR Ch.9 ss.3.1.5 and 3.1.7	$HPTSA\{2\}\_PRL\_SSW_{k,h}$ $= -1 \times \left[\sum^{M1,T} RT\_LMP_h^{m,t} \times \frac{\left(AQEW_{k,h}^{m,t} - DAM\_QSW_{k,h}^m\right)}{12} - \sum^{M2,T} RT\_LMP_h^{m,t} \times \frac{DAM\_QSW_{k,h}^m}{12} \right] + HPTSA\_PBC\{2\}_{k,h}$ **Where:** a. $HPTSA\{2\}\_PBC_{k,h} = \sum^{M,T} RT\_LMP_h^{m,t} \times \left(\sum_S BCQ_{s,k,h}^{m,t} - \sum_B BCQ_{k,b,h}^{m,t} \right)$ b. M1 = the set of all *delivery points* 'm' for *price responsive loads* and *self-scheduling electricity storage resources* that are withdrawing; and c. M2 = the set of all *delivery points* 'm' for *price responsive loads* used as physical *hourly demand response resources* to fulfill *capacity obligations*.

The equations for HPTSA don't match. The equation just includes delivery points and no intertie points. Is Physical Bilateral Contract added to the Real - Time Settlement Energy Calculation for each resource type? Please guide us on how to calculate the addition of physical bilateral contract to HPTSA according to the charge type document, need clarification because it wasn't added in the market rules document. The equation for calculation of physical bilateral contract is also different, please guide on that.

7. **Day - Ahead Market Energy Settlement Amount for Virtual Transactions to Sell**

Charge type 1106; 3.1.8

A. Document - Market Rules - Chapter 9 (Settlements and Billings)

$$HVTSA\{1\}_{k,h} = \sum^{V}(DAM\_QVSI^v_{k,h} - \boxed{DAM\_QVSW^v_{k,h})} \times DAM\_LMP^{vz}_h$$

1106 MRP new	Day-Ahead Market Energy Settlement Amount for Virtual Transactions to Sell (HVTSA{1})	MR Ch.9 s.3.1.8	$HVTSA\{1\}_{k,h} = \sum^{V} DAM\_QVSI^v_{k,h} \times DAM\_LMP^{vz}_h$

The equations do not match. It looks like injections and withdrawals are calculated separately but in the market rules it seems to be netting injections and withdrawals, please clarify and provide guidance on that.

8. Real-Time Energy Settlement Amount for Virtual Transactions to Sell

Charge type 1107; 3.1.9

A. Document - Market Rules - Chapter 9 (Settlements and Billings)

$$HVTSA\{2\}_{k,h} = -1 \times \sum^{V,T}(DAM\_QVSI^v_{k,h} - \boxed{DAM\_QVSW^v_{k,h})}/12 \times RT\_LMP^{vz,t}_h$$

B. IESO Charge Types and Equations

1107 MRP new	Real-Time Energy Settlement Amount for Virtual Transactions to Sell (HVTSA{2})	MR Ch.9 s.3.1.9	$HVTSA\{2\}_{k,h} = -1 \times \sum^{V,T} DAM\_QVSI^v_{k,h}/12 \times RT\_LMP^{vz,t}_h$

The equations do not match. It looks like injections and withdrawals are calculated separately but in the market rules it seems to be netting injections and withdrawals, please clarify and provide guidance on that.

9. Day - Ahead Market Energy Settlement Amount for Virtual Transactions to Buy

Charge type 1108; 3.1.8

$$HVTSA\{1\}_{k,h} = \sum^{V} \left(DAM\_QVSI^{v}_{k,h} - DAM\_QVSW^{v}_{k,h}\right) \times DAM\_LMP^{vz}_{h}$$

B. IESO Charge Types and Equations

1108 MRP new	Day-Ahead Market Energy Settlement for Virtual Transactions to Buy (HVTSA{1})	MR Ch.9 s.3.1.8	$HVTSA\{1\}_{k,h} = -1 \times \sum^{v} DAM\_QVSW^{v}_{k,h} \times DAM\_LMP^{vz}_{h}$

The equations do not match. It looks like injections and withdrawals are calculated separately but in the market rules it seems to be netting injections and withdrawals, please clarify and provide guidance on that.

10. Real-Time Energy Settlement Amount for Virtual Transactions to Buy

Charge type 1109; 3.1.9

A. Document - Market Rules - Chapter 9 (Settlements and Billings)

$$HVTSA\{2\}_{k,h} = -1 \times \sum^{V,T} \left(DAM\_QVSI^{v}_{k,h} - DAM\_QVSW^{v}_{k,h}\right)/12 \times RT\_LMP^{vz,t}_{h}$$

B. IESO Charge Types and Equations

1109 MRP new	Real-Time Energy Settlement Amount for Virtual Transactions to Buy (HVTSA{2})	MR Ch.9 s.3.1.9	$HVTSA\{2\}_{k,h} = \sum^{V,T} DAM\_QVSW^{v}_{k,h}/12 \times RT\_LMP^{vz,t}_{h}$

The equations do not match. It looks like injections and withdrawals are calculated separately but in the market rules it seems to be netting injections and withdrawals, please clarify and provide guidance on that.

11. Day-Ahead Market Energy Settlement for Imports

Charge type 1110; 3.1.2 and 3.1.3

A. Document - Market Rules - Chapter 9 (Settlements and Billings)

$$HPTSA\_PBC\{1\}_{k,h}$$

$$= \sum^{M} \left[DAM\_LMP_h^m \times \left(\sum_S DAM\_BCQ_{s,k,h}^m - \sum_B DAM\_BCQ_{k,b,h}^m \right) \right.$$
$$\left. + DAM\_LMP_h^i \times \left(\sum_S DAM\_BCQ_{s,k,h}^i - \sum_B DAM\_BCQ_{k,b,h}^i \right) \right]$$

$$HPTSA\{1\}_{k,h} = \sum^{M} \left[\left(DAM\_QSI_{k,h}^m - DAM\_QSW_{k,h}^m \right) \times DAM\_LMP_h^m \right.$$
$$\left. + \left(DAM\_QSI_{k,h}^i - DAM\_QSW_{k,h}^i \right) \times DAM\_LMP_h^i \right]$$

B. IESO Charge Types and Equations

1110 MRP new	Day-Ahead Market Energy Settlement for Imports (HPTSA{1})	MR Ch.9 ss.3.1.2 and 3.1.3	$HPTSA\{1\}_{k,h} = \sum^{M} \left[\left(DAM\_QSI_{k,h}^i - DAM\_QSW_{k,h}^i \right) \times DAM\_LMP_h^i \right] + HPTSA\_PBC\{1\}_{k,h}$ **Where:** a. $HPTSA\_PBC\{1\}_{k,h} = \sum^{M} \left[DAM\_LMP_h^i \times \left(\sum_S DAM\_BCQ_{s,k,h}^i - \sum_B DAM\_BCQ_{k,b,h}^i \right) \right]$

The equations for HPTSA do not match. The equation just includes delivery points and no intertie points. Is Physical Bilateral Contract added to the Day - Ahead Settlement Energy Calculation for each resource type? Please guide us on how to calculate the addition of physical bilateral contract to HPTSA according to the charge type document. We need clarification because it was not added in the market rules document. The equation for calculation of physical bilateral contract is also different, please clarify.

12. Real Time Energy Settlement Amount for Imports

A. Document - Market Rules - Chapter 9 (Settlements and Billings)

$$HPTSA\{2\}_{k,h} = \sum^{M,T} RT\_LMP_h^{m,t} \times \frac{\left(\left(AQEI_{k,h}^{m,t} - DAM\_QSI_{k,h}^{m}\right) - \left(AQEW_{k,h}^{m,t} - DAM\_QSW_{k,h}^{m}\right)\right)}{12}$$
$$+ RT\_LMP_h^{i,t} \times \frac{\left(\left(SQEI_{k,h}^{i,t} - DAM\_QSI_{k,h}^{i}\right) - \left(SQEW_{k,h}^{i,t} - DAM\_QSW_{k,h}^{i}\right)\right)}{12}$$

$$HPTSA\{2\}\_PBC_{k,h}$$
$$= \sum^{M,T} RT\_LMP_h^{m,t} \times \left(\sum_S BCQ_{s,k,h}^{m,t} - \sum_B BCQ_{k,b,h}^{m,t}\right)$$
$$+ \sum^{M,T} RT\_LMP_h^{i,t} \times \left(\sum_S BCQ_{s,k,h}^{i,t} - \sum_B BCQ_{k,b,h}^{i,t}\right)$$

B. IESO Charge Types and Equations

| 1111
MRP
updated | Real-Time
Energy
Settlement
Amount for
Imports

(HPTSA{2}) | MR Ch.9
ss.3.1.5 and
3.1.6 | $HPTSA\{2\}_{k,h} = \sum^{M,T} RT\_LMP_h^{i,t} \times \frac{\left(\left(SQEI_{k,h}^{i,t} - DAM\_QSI_{k,h}^{i}\right) - \left(SQEW_{k,h}^{i,t} - DAM\_QSW_{k,h}^{i}\right)\right)}{12}$
$+ HPTSA\_PBC\{2\}_{k,h}$

Where:
a. $HPTSA\{2\}\_PBC_{k,h} = \sum^{M,T} RT\_LMP_h^{i,t} \times \left(\sum_S BCQ_{s,k,h}^{i,t} - \sum_B BCQ_{k,b,h}^{i,t}\right)$ |

The equations for HPTSA do not match. The equation just includes delivery points and no intertie points. Is Physical Bilateral Contract added to the Real - Time Settlement Energy Calculation for each resource type? Please guide us on how to calculate the addition of physical bilateral contract to HPTSA according to the charge type document. We need clarification because it was not added in the market rules document. The equation for calculation of physical bilateral contract is also different, please clarify.

13. **Day Ahead Market Energy Settlement Amount for Exports**

A. Document - Market Rules - Chapter 9 (Settlements and Billings)

$$HPTSA\_PBC\{1\}_{k,h}$$
$$= \sum^{M} \left[DAM\_LMP_h^m \times \left(\sum_S DAM\_BCQ_{s,k,h}^m - \sum_B DAM\_BCQ_{k,b,h}^m\right) \right.$$
$$\left. + DAM\_LMP_h^i \times \left(\sum_S DAM\_BCQ_{s,k,h}^i - \sum_B DAM\_BCQ_{k,b,h}^i\right) \right]$$

$$HPTSA\{1\}_{k,h} = \sum^{M}\left[\left(DAM\_QSI^m_{k,h} - DAM\_QSW^m_{k,h}\right) \times DAM\_LMP^m_h \right.$$
$$\left. + \left(DAM\_QSI^i_{k,h} - DAM\_QSW^i_{k,h}\right) \times DAM\_LMP^i_h\right]$$

B. IESO Charge Types and Equations

| 1112 MRP new | Day-Ahead Market Energy Settlement for Exports (HPTSA{1}) | MR Ch.9 ss.3.1.2 and 3.1.3 | $HPTSA(1)_{k,h} = \sum^{M}\left[\left(DAM\_QSI^i_{k,h} - DAM\_QSW^i_{k,h}\right) \times DAM\_LMP^i_h\right] + HPTSA\_PBC\{1\}_{k,h}$

Where:
a. $HPTSA\_PBC\{1\}_{k,h} = \sum^{M}\left[DAM\_LMP^i_h \times \left(\sum_S DAM\_BCQ^i_{s,k,h} - \sum_B DAM\_BCQ^i_{k,b,h}\right)\right]$ |

The equations for HPTSA do not match. The equation just includes delivery points and no intertie points. Is Physical Bilateral Contract added to the Real - Time Settlement Energy Calculation for each resource type? Please guide us on how to calculate the addition of physical bilateral contract to HPTSA according to the charge type document. We need clarification because it was not added in the market rules document. The equation for calculation of physical bilateral contract is also different, please clarify.

By comparing charge type 1110 and 1112, imports and exports are settled separately but in the market rules document they are not categorised, please clarify on the preferred method out of the two.

14. Real Time Energy Settlement Amount for Exports

Charge type 1113; 3.1.5 and 3.1.6

A. Document - Market Rules - Chapter 9 (Settlements and Billings)

$$HPTSA\{2\}_{k,h} = \sum^{M,T} RT\_LMP^{m,t}_h \times \frac{\left(\left(AQEI^{m,t}_{k,h} - DAM\_QSI^m_{k,h}\right) - \left(AQEW^{m,t}_{k,h} - DAM\_QSW^m_{k,h}\right)\right)}{12}$$
$$+ RT\_LMP^{i,t}_h \times \frac{\left(\left(SQEI^{i,t}_{k,h} - DAM\_QSI^i_{k,h}\right) - \left(SQEW^{i,t}_{k,h} - DAM\_QSW^i_{k,h}\right)\right)}{12}$$

$$HPTSA\{2\}\_PBC_{k,h}$$

$$= \sum^{M,T} RT\_LMP_h^{m,t} \times \left(\sum_S BCQ_{s,k,h}^{m,t} - \sum_B BCQ_{k,b,h}^{m,t} \right)$$
$$+ \sum^{M,T} RT\_LMP_h^{i,t} \times \left(\sum_S BCQ_{s,k,h}^{i,t} - \sum_B BCQ_{k,b,h}^{i,t} \right)$$

B. IESO Charge Types and Equations

1113 MRP updated	Real-Time Energy Settlement Amount for Exports (HPTSA{2})	MR Ch.9 ss.3.1.5 and 3.1.6	$HPTSA\{2\}_{k,h} = \sum^{M,T} RT\_LMP_h^{i,t} \times \dfrac{\left((SQEI_{k,h}^{i,t} - DAM\_QSI_{k,h}^{i,t}) - (SQEW_{k,h}^{i,t} - DAM\_QSW_{k,h}^{i,t}) \right)}{12}$ + $HPTSA\_PBC\{2\}_{k,h}$ Where: a. $HPTSA\{2\}\_PBC_{k,h} = \sum^{M,T} RT\_LMP_h^{i,t} \times \left(\sum_S BCQ_{s,k,h}^{i,t} - \sum_B BCQ_{k,b,h}^{i,t} \right)$

The equations for HPTSA do not match. The equation just includes delivery points and no intertie points. Is Physical Bilateral Contract added to the Real - Time Settlement Energy Calculation for each resource type? Please guide us on how to calculate the addition of physical bilateral contract to HPTSA according to the charge type document. We need clarification because it was not added in the market rules document. The equation for calculation of physical bilateral contract is also different, please guide on that. It is observed by comparing charge type 1111 and 1113 that the imports and exports are settled separately but in the market rules document they are not categorised, please clarify on the preferred method out of the two.

15. Day Ahead Market Whole Payment

Charge type 1801,1802 and 1803; 3.4.13.3, 3.4.13.4 and 3.4.13.5

A. Document - Market Rules - Chapter 9 (Settlements and Billings)

iii. $DAM\_COMP2_{k,h}^m = -1 \times$
$\sum_R \left[OP\left(DAM\_PROR_{r,h}^m, DAM\_QSOR_{r,k,h}^m, DAM\_BOR_{r,k,h}^m\right) - OP\left(DAM\_PROR_{r,h}^m, DAM\_OR\_EOP_{r,k,h}^m, DAM\_BOR_{r,k,h}^m\right) \right]$

c. $DAM\_COMP2_{k,s}^m = (-1) \times$
$\sum_H \sum_R \left[OP\left(DAM\_PROR_{r,h}^m, DAM\_QSOR_{r,k,h}^m, DAM\_BOR_{r,k,h}^m\right) - OP\left(DAM\_PROR_{r,h}^m, DAM\_OR\_EOP_{r,k,h}^m, DAM\_BOR_{r,k,h}^m\right) \right]$

$$DAM\_COMP2^m_{k,h+TL_m} = -1 \times$$
$$\sum_R \left[OP\left(DAM\_PROR^m_{r,h+TL_m}, DAM\_QSOR^m_{r,k,h+TL_m}, DAM\_BOR^m_{r,k,h+TL_m}\right) - \right.$$
$$\left. OP\left(DAM\_PROR^m_{r,h+TL_m}, DAM\_OR\_EOP^m_{r,k,h+TL_m}, DAM\_BOR^m_{r,k,h+TL_m}\right) \right]$$

'TL_m' is the *time-lag*, for each *delivery point* 'm', equal to the number of hours downstream that the *delivery point* is from the furthest upstream *delivery point* determined by the *time-lag*, submitted by the *market participant* in the daily *dispatch data* for the *linked forebay*.

B. IESO Charge Types and Equations

Component 2	
	$$DAM\_COMP2^m_{k,s} = (-1)$$ $$\times \sum_H \left[OP\left(DAM\_PROR^m_{r1,h}, DAM\_QSOR^m_{r1,k,h}, DAM\_BOR^m_{r1,k,h}\right) \right.$$ $$\left. - OP\left(DAM\_PROR^m_{r1,h}, DAM\_OR\_EOP^m_{r1,k,h}, DAM\_BOR^m_{r1,k,h}\right) \right]$$ **Where:** a. s = a start event consisting of a set of *settlement hours* for *market participant* 'k' at *delivery point* 'm', as determined in accordance with the applicable *market manual*; and b. H = the set of all *settlement hours* within start 's'. 2. The *resource* has: a. Not Attained Max Starts; or b. Attained Max Starts but has a *day-ahead schedule* with *settlement hours* with a binding *reliability* constraint; or c. Attained Max Starts but has a *day-ahead schedule* with *settlement hours* that are not within a start event, as determined in accordance with the applicable *market manual*, then: $$DAM\_COMP2^m_{k,h+TL_m} = -1$$ $$\times \left[OP\left(DAM\_PROR^m_{r1,h+TL_m}, DAM\_QSOR^m_{r1,k,h+TL_m}, DAM\_BOR^m_{r1,k,h+TL_m}\right) \right.$$ $$\left. - OP\left(DAM\_PROR^m_{r1,h+TL_m}, DAM\_OR\_EOP^m_{r1,k,h+TL_m}, DAM\_BOR^m_{r1,k,h+TL_m}\right) \right]$$ **NOTE:** hydroelectric *generation resources* associated with *linked forebays*, which are subject to this calculation of the DAM_MWP, shall only receive a DAM_MWP *settlement amount* for a *settlement hour* when the condition as set out in MR Ch.9 s.3.4.13.5.3 is true for such *settlement hour*. **Where:** a. TL_m = the *time-lag*, for each *delivery point* 'm', equal to the number of hours downstream that the *delivery point* is from the furthest upstream *delivery point* determined by the *time-lag*, submitted by the *market participant* in the daily *dispatch data* for the *linked forebay*.

| 1801 MRP new | Day-Ahead Market Make-Whole Payment – 10-Minute Spinning Reserve (DAM_MWP) | MR Ch.9 s.3.4.13.5 | **Dispatchable Generation Resources – Hydroelectric Generation Resources Associated with Linked Forebays** 1. The *resource* has a. Attained Max Starts, then: |

1801 MRP new	Day-Ahead Market Make-Whole Payment – 10-Minute Spinning Reserve (DAM_MWP) Component 2	MR Ch.9 ss.3.4.13.3 and 3.4.13.4	**Dispatchable Generation Resources – Hydroelectric Generation Resources Not Associated with Linked Forebays** 1. **Hourly Basis Equation:** $$DAM\_COMP2^m_{k,h} = -1$$ $$\times \left[OP\left(DAM\_PROR^m_{r1,h}, DAM\_QSOR^m_{r1,k,h}, DAM\_BOR^m_{r1,k,h}\right)\right.$$ $$\left. - OP\left(DAM\_PROR^m_{r1,h}, DAM\_OR\_EOP^m_{r1,k,h}, DAM\_BOR^m_{r1,k,h}\right)\right]$$ 2. **Per-Start Equation:** $$DAM\_COMP2^m_{k,s} = (-1)$$ $$\times \sum_{H} \left[OP\left(DAM\_PROR^m_{r1,h}, DAM\_QSOR^m_{r1,k,h}, DAM\_BOR^m_{r1,k,h}\right)\right.$$ $$\left. - OP\left(DAM\_PROR^m_{r1,h}, DAM\_OR\_EOP^m_{r1,k,h}, DAM\_BOR^m_{r1,k,h}\right)\right]$$ **Where:** a. s = a start event consisting of a set of *settlement hours* for *market participant* 'k' at *delivery point* 'm', as determined in accordance with the applicable *market manual*; and b. H = the set of all *settlement hours* within start 's'.
1802 MRP new	Day-Ahead Market Make-Whole Payment – 10-Minute Non-Spinning Reserve (DAM_MWP) Component 2	MR Ch.9 ss.3.4.13.3 and 3.4.13.4	**Dispatchable Generation Resources – Hydroelectric Generation Resources Not Associated with Linked Forebays** 1. **Hourly Basis Equation:** $$DAM\_COMP2^m_{k,h} = -1$$ $$\times \left[OP\left(DAM\_PROR^m_{r2,h}, DAM\_QSOR^m_{r2,k,h}, DAM\_BOR^m_{r2,k,h}\right)\right.$$ $$\left. - OP\left(DAM\_PROR^m_{r2,h}, DAM\_OR\_EOP^m_{r2,k,h}, DAM\_BOR^m_{r2,k,h}\right)\right]$$ 2. **Per-Start Equation:** $$DAM\_COMP2^m_{k,s} = (-1)$$ $$\times \sum_{H} \left[OP\left(DAM\_PROR^m_{r2,h}, DAM\_QSOR^m_{r2,k,h}, DAM\_BOR^m_{r2,k,h}\right)\right.$$ $$\left. - OP\left(DAM\_PROR^m_{r2,h}, DAM\_OR\_EOP^m_{r2,k,h}, DAM\_BOR^m_{r2,k,h}\right)\right]$$ **Where:** a. s = a start event consisting of a set of *settlement hours* for *market participant* 'k' at *delivery point* 'm', as determined in accordance with the applicable *market manual*; and

1802
MRP new
	Day-Ahead Market Make-Whole Payment – 10-Minute Non-Spinning Reserve
	
	(DAM_MWP)
	
	Component 2
		MR Ch.9 s.3.4.13.5	**Dispatchable Generation Resources – Hydroelectric Generation Resources Associated with Linked Forebays**
			
			1. The *resource* has
			   a. Attained Max Starts, then:
			
			$$DAM\_COMP2^m_{k,s} = (-1)$$
			$$\times \sum_{H} \left[OP\left(DAM\_PROR^m_{r2,h}, DAM\_QSOR^m_{r2,k,h}, DAM\_BOR^m_{r2,k,h}\right)\right.$$
			$$\left. - OP\left(DAM\_PROR^m_{r2,h}, DAM\_OR\_EOP^m_{r2,k,h}, DAM\_BOR^m_{r2,k,h}\right)\right]$$
			
			Where:
			a. s = a start event consisting of a set of *settlement hours* for *market participant* 'k' at *delivery point* 'm', as determined in accordance with the applicable *market manual*; and
			b. H = the set of all *settlement hours* within start 's'.
			
			2. The *resource* has:
			   a. Not Attained Max Starts; or
			   b. Attained Max Starts but has a *day-ahead schedule* with *settlement hours* with a binding *reliability* constraint; or
			   c. Attained Max Starts but has a *day-ahead schedule* with *settlement hours* that are not within a start event, as determined in accordance with the applicable *market manual*, then:
			
			$$DAM\_COMP2^m_{k,h+TL_m} = -1$$
			$$\times \left[OP\left(DAM\_PROR^m_{r2,h+TL_m}, DAM\_QSOR^m_{r2,k,h+TL_m}, DAM\_BOR^m_{r2,k,h+TL_m}\right)\right.$$
			$$\left. - OP\left(DAM\_PROR^m_{r2,h+TL_m}, DAM\_OR\_EOP^m_{r2,k,h+TL_m}, DAM\_BOR^m_{r2,k,h+TL_m}\right)\right]$$

1803 MRP new	Day-Ahead Market Make-Whole Payment – 30-Minute Operating Reserve (DAM_MWP) Component 2	MR Ch.9 ss.3.4.13.3 and 3.4.13.4	**Dispatchable Generation Resources – Hydroelectric Generation Resources Not Associated with Linked Forebays** 1. **Hourly Basis Equation:** $DAM\_COMP2^m_{k,h} = -1$ $\times \left[OP(DAM\_PROR^m_{r3,h}, DAM\_QSOR^m_{r3,k,h}, DAM\_BOR^m_{r3,k,h}) \right.$ $\left. - OP(DAM\_PROR^m_{r3,h}, DAM\_OR\_EOP^m_{r3,k,h}, DAM\_BOR^m_{r3,k,h}) \right]$ 2. **Per-Start Equation:**
			$DAM\_COMP2^m_{k,s} = (-1)$ $\times \sum_H \left[OP(DAM\_PROR^m_{r3,h}, DAM\_QSOR^m_{r3,k,h}, DAM\_BOR^m_{r3,k,h}) \right.$ $\left. - OP(DAM\_PROR^m_{r3,h}, DAM\_OR\_EOP^m_{r3,k,h}, DAM\_BOR^m_{r3,k,h}) \right]$ **Where:** a. s = a start event consisting of a set of *settlement hours* for *market participant* 'k' at *delivery point* 'm', as determined in accordance with the applicable *market manual*; and b. H = the set of all *settlement hours* within start 's'.

1803
MRP new
	Day-Ahead Market Make-Whole Payment – 30-Minute Operating Reserve
	
	(DAM_MWP)
	
	Component 2
		MR Ch.9 s.3.4.13.5	**Dispatchable Generation Resources – Hydroelectric Generation Resources Associated with Linked Forebays**
			
			1. The *resource* has
			   a. Attained Max Starts, then:
			
			$DAM\_COMP2^m_{k,s} = (-1)$
			$\times \sum_H \left[OP(DAM\_PROR^m_{r3,h}, DAM\_QSOR^m_{r3,k,h}, DAM\_BOR^m_{r3,k,h}) \right.$
			$\left. - OP(DAM\_PROR^m_{r3,h}, DAM\_OR\_EOP^m_{r3,k,h}, DAM\_BOR^m_{r3,k,h}) \right]$
			
			Where:
			a. s = a start event consisting of a set of *settlement hours* for *market participant* 'k' at *delivery point* 'm', as determined in accordance with the applicable *market manual*; and
			b. H = the set of all *settlement hours* within start 's'.
			
			2. The *resource* has:
			   a. Not Attained Max Starts; or
			   b. Attained Max Starts but has a *day-ahead schedule* with *settlement hours* with a binding *reliability* constraint; or
			   c. Attained Max Starts but has a *day-ahead schedule* with *settlement hours* that are not within a start event, as determined in accordance with the applicable *market manual*, then:

The charge type document splits the equations in section 3.4.13.3, 3.4.13.4 and 3.4.13.5 of market rules into three categories: 10 minute spinning reserve, 10 minute non-spinning reserve and 30 minute operating reserve. This is not done in the market rules document. Is this the reason the equations have r1,r2 an r3 in them in the charge type document? Please clarify and help us understand?