

- 3.16.1.1 the number of *transmission rights* awarded to the *TR bidder* during that round;
 - 3.16.1.2 the *TR market clearing price* of each *transmission right* awarded to the *TR bidder* during that round;
 - 3.16.1.3 the injection *TR zone* and the withdrawal *TR zone* in respect of each *transmission right* awarded to the *TR bidder* during that round; and
 - 3.16.1.4 the period for which each *transmission right* awarded to the *TR bidder* during that round is valid.
- 3.16.2 [Intentionally left blank – section deleted]
- 3.16.3 The *IESO* shall, as soon as practicable and no later than the end of the next *business day* following the conclusion of a round of a *TR auction*, and in any event prior to the time at which *TR bids* may be submitted in respect of the next round of the *TR auction*, *publish* the following:
- 3.16.3.1 the *TR market clearing price* for each *transmission right* sold during that round;
 - 3.16.3.2 the number of *transmission rights* sold during that round;
 - 3.16.3.3 the injection *TR zone* and withdrawal *TR zone* for each *transmission right* sold during that round; and
 - 3.16.3.4 the period of validity of each *transmission right* sold during that round.

3.17 Payment for Purchase of Transmission Rights

- 3.17.1 The amount payable to the *IESO* by a successful *TR bidder* in respect of *transmission rights* awarded to that successful *TR bidder* in a given round of a *TR auction* shall be the aggregate of the *TR market clearing price* of each *transmission right* awarded to that successful *TR bidder* in that round.

3.18 TR Clearing Account

- 3.18.1 The *IESO* shall establish and maintain a *TR clearing account* and shall:
 - 3.18.1.1 credit to the *TR clearing account*, in respect of each *settlement hour*, the amount calculated in accordance with MR Ch.9 s.3.8.2;
 - 3.18.1.2 credit to the *TR clearing account* the amounts referred to in sections 3.20.2 and 3.20.3;
 - 3.18.1.3 subject to section 3.19.5, credit to the *TR clearing account* the net revenues received from the sale of *transmission rights* in a *TR auction* in accordance with section 3.19.4;

- 3.18.1.4 debit from the *TR clearing account* any amounts required to be paid to *TR holders* pursuant to section 3.19.2;
- 3.18.1.5 debit from the *TR clearing account* any amounts authorized to be debited and used to offset *transmission services charges* in accordance with section 3.18.2;
- 3.18.2 Subject to section 3.18.3, the *IESO Board* may, at such times as it determines appropriate, authorize the debit of funds from the *TR clearing account* in accordance with MR Ch.9 s.3.8.3 for the purpose of using those funds to offset *transmission services charges*.
- 3.18.3 The *IESO Board* shall establish a reserve threshold for the *TR clearing account*.

3.19 Settlement

- 3.19.1 All amounts payable to *TR holders* under *transmission rights* in accordance with section 3.4.1 shall be *settled* by the *IESO* in accordance with MR Ch.9 s.6.
- 3.19.2 Payments required to be made by the *IESO* to *TR holders* in accordance with section 4.4.1 shall be funded by means of the disbursement of the *day-ahead market external congestion rent* and where the *day-ahead market external congestion rent* for a given *billing period* is insufficient to cover such payments to *TR holders*, by debits from the *TR clearing account*. Where the aggregate amount payable to *TR holders* in a given *billing period* under section 3.4.1 exceeds all funds available in the *TR clearing account*, the shortfall shall be funded by the borrowing of short-term funds in accordance with MR Ch.9 s.6.16.5.
- 3.19.3 Where the aggregate amount payable to *TR holders* in a given *billing period* under section 3.4.1 is less than the *day-ahead market external congestion rent* collected during that *billing period*, the excess shall be used first, to repay any short-term funds borrowed by the *IESO* on account of a shortfall referred to in sections 3.19.2 and 3.19.7, second, subject to section 3.19.6, to reimburse *market participants* for funds recovered by the *IESO* under MR Ch.9 s.6.16.6.2, on a prorated basis according to, and in an amount that does not exceed, the amount so recovered, third, to replenish the reserve threshold specified in section 3.18.3, and the balance shall remain in the *TR clearing account*.
- 3.19.4 All amounts payable to the *IESO* on account of the purchase of *transmission rights* in accordance with section 3.17.1 in respect of all rounds of a given *TR auction* shall be settled by the *IESO* in accordance with MR Ch.9 s.6.
- 3.19.5 In respect of a given *TR auction*, the aggregate amount received by the *IESO* in respect of the purchase of *transmission rights* shall be used first to repay any short-term funds borrowed by the *IESO* on account of a shortfall referred to in sections 3.19.2, second, subject to section 3.19.6, to reimburse *market participants* for funds recovered by the *IESO* under MR Ch.9 s.6.16.6.2, on a prorated basis according to, and in an amount that does not exceed, the amount so recovered, third, to replenish

the reserve threshold specified in section 3.18.3, and the balance shall remain in the *TR clearing account*.

- 3.19.6 In the event that the *IESO* cannot, after taking all reasonable steps to do so, locate *market participants* from which funds were recovered by the *IESO* under MR Ch.9 s.6.16.6.2, any amount that would otherwise be distributed to such *market participants* under sections 3.19.3 and 3.19.5 shall remain in the *TR clearing account*.

3.20 Default in Payment

- 3.20.1 Where a successful *TR bidder* fails to remit to the *IESO* any payment due on account of a *transmission right* awarded to that *TR bidder* during a *TR auction* on the applicable *market participant payment date*:

3.20.1.1 the *transmission right* shall not be issued to the *TR bidder*; and

3.20.1.2 the *TR bidder* shall forfeit:

- a. its *TR market deposit*; or
- b. that portion of its *TR market deposit* that is equal to 10% of the value of all *transmission rights* awarded to the *TR bidder* during the applicable *TR auction*,

whichever is the lesser.

- 3.20.2 Where section 3.20.1.2 applies and the *TR market deposit* is in the form of a cash deposit, the *IESO* may draw upon the cash deposit and credit the *TR clearing account* with the amount of the penalty or may invoice the *market participant* for the amount of the penalty, as the case may be, and may remit to the *TR bidder* the difference, if any, between such amount and the amount of the *TR market deposit*.

- 3.20.3 Where section 3.20.1.2 applies and the *TR market deposit* is in the form of an irrevocable letter of credit, the *IESO* may claim and realize upon the letter of credit in respect of the amount referred to in section 3.20.1.2(a) or 3.20.1.2(b), as the case may be, and shall credit to the *TR clearing account* the proceeds of such realization.

- 3.20.4 Where a successful *TR bidder* has defaulted in payment of any amount due on account of a *transmission right* awarded to that *TR bidder* during a given *TR auction*, the *IESO* may impose one or both of the following conditions on the participation by that *TR bidder* in a subsequent *TR auction*:

3.20.4.1 require the *TR bidder* to provide a *TR market deposit* in the form of a cash deposit only; or

3.20.4.2 establish the *TR bidder's bidding limit* for that *TR auction* as an amount that is less than ten times the amount or value of the *TR market deposit* provided by that *TR bidder* in respect of that *TR auction*.

Chapter 8

Physical Bilateral Contracts and Financial Markets - Appendices

Appendix 8.1 – Mathematical Formulation of the TR Objective Function

- 1.1 This Appendix describes the objective function and additional processes used to determine the number of *transmission rights* to be awarded to each *TR bidder*, as described in MR Ch.8 s.3.5.1, and the *TR market clearing price* in a given round of a *TR auction*.
- 1.2 The objective function, outlined in section 1.3, describes the maximization of the benefit of awarded *TR laminations* net of any unawarded *transmission rights* as determined in accordance with section 1.4(e), if applicable. *Transmission rights* are awarded in quantities to *TR bidders* ranging from zero up to the maximum quantity of their *TR lamination*. The total amount of *transmission rights* awarded to all *TR bidders* in a round of a *TR auction* will not exceed the total number of *transmission rights* available in such round of the *TR auction*. *Transmission rights* will be awarded optimally from highest price to lowest price of the *TR laminations* received for the relevant round of the *TR auction* unless and until such time as there are multiple *TR laminations* that share the same price and cannot all be fully awarded based on the available *transmission rights*, which shall be resolved in accordance with section 1.4. If there are insufficient *transmission rights* available to award the entire quantity of a *TR lamination* and section 1.4 does not apply, such *TR bidder* shall be awarded the remainder of the *transmission rights* available.
- 1.3 The objective for each injection *TR zone* and withdrawal *TR zone* for each round of a given *TR auction* is to maximize the following function:

$$Z = \sum_i p_i * q_i$$

where:

- (a) 'Z' is the benefit as described in MR Ch.8 s.3.5.2 for the relevant round of the *TR auction*;
- (b) 'i' is an index into the set of all *TR laminations* received for the relevant round of the *TR auction*;
- (c) 'p_i' is the price of *TR lamination* 'i', submitted in accordance with MR Ch.8 s. 3.13.1.3;
- (d) 'q_i' is the quantity of awarded *transmission rights* associated with *TR lamination* 'i', submitted in accordance with MR Ch.8 s.3.13.1.4, where the

quantity of awarded *transmission rights* is determined as follows, as applicable:

- (i) the sum of all q_i is less than or equal to the fixed amount of *transmission rights* available for such round of a *TR auction* that is determined in accordance with MR Ch.8 ss.3.6, 3.7, and 3.11.10, if applicable;
- (ii) where *TR lamination 'i'* is the highest price *TR lamination* for such *TR bidder* and has an associated price is equal to or greater than the *TR market clearing price* for such round of the *TR auction*, the entire quantity of the *TR lamination* or a portion thereof as determined in accordance with section 1.4, or, where section 1.4 does not apply, the portion that will result in all available *transmission rights* being awarded;
- (iii) for *TR laminations 'i'* with a price that is equal to or greater than the *TR market clearing price* for such round of the *TR auction*, other than the one referred to in (ii) for the same *TR bidder*, the quantity that is incremental to the *TR bidder's* previous *TR lamination*, as ranked from highest to lowest price, or a portion thereof as determined in accordance with section 1.4, or, where section 1.4 does not apply, the portion that will result in all available *transmission rights* being awarded; and
- (iv) for *TR laminations 'i'* with a price that is less than the *TR market clearing price* for such round of the *TR auction*, such quantity shall be zero.

1.4 Where multiple *TR laminations* share the same price and cannot all be fully awarded based on the available *transmission rights*, the awarding of remaining available *transmission rights* will be determined in accordance with the following:

- (a) First, the *IESO* will award to each tied *TR bidder* their proportional share of the remaining *transmission rights* available, rounded down to nearest whole number. Each *TR bidders* proportional share will be determined based on the quantity of their tied *TR lamination* relative to the amount of all tied *TR laminations*, where the quantity of a tied *TR lamination* that is not the *TR bidders* highest priced *TR lamination* will be the quantity that is incremental to the *TR bidder's* previous *TR lamination*, as ranked from highest to lowest price;
- (b) second, if there continues to be a remainder of *transmission rights* within the relevant round of the *TR auction*, such remainder shall be awarded in accordance with the following:
 - (i) The *IESO* will rank all such *TR bidders* from the highest to lowest based on the difference between the proportional quantity

determined in section 1.4(a) prior to being rounded down and the proportional quantity determined in section 1.4(a) that was awarded to such *TR bidder*, and

- (ii) The *IESO* will award one *transmission right* to each such *TR bidder* in sequence from highest to lowest ranking until either there are no more remaining *transmission rights* to be awarded or one or more such *TR bidders* is tied in their ranking and there are insufficient remaining *transmission rights* to award to them all;
- (c) third, where there are still remaining *transmission rights* following the completion of section 1.4(b), such remainder shall be awarded in accordance with the following:
- (i) The *IESO* will rank the *TR bidders* whom tied, as contemplated under section 1.4(b)(ii), from highest to lowest based on the quantity of *transmission rights* in their *TR lamination* that is incremental to the *TR bidder's* previous *TR lamination*, as ranked from highest to lowest price, if applicable; and
 - (ii) The *IESO* will award one *transmission right* to each such *TR bidder* in sequence from highest to lowest ranking until either there are no more remaining *transmission rights* to be awarded or one or more such *TR bidders* is tied in their ranking and there are insufficient remaining *transmission rights* to award to them all;
- (d) fourth, where there are still remaining *transmission rights* following the completion of section 1.4(c), such remainder shall be awarded in accordance with the following:
- (i) The *IESO* will rank the *TR bidders* whom tied, as contemplated under section 1.4(c)(ii), from earliest to latest based on the timestamps of the date and time, to the second, reflecting the time when the *TR bidder* submits the relevant *TR laminations*; and
 - (ii) The *IESO* will award one *transmission right* to each such *TR bidder* in sequence from earliest to latest ranking until either there are no more remaining *transmission rights* to be awarded or one or more such *TR bidders* is tied in their ranking and there are insufficient remaining *transmission rights* to award to them all;

- (e) finally, where the remainder of *transmission rights* within the relevant round of the *TR auction* are unable to be awarded in accordance with section 1.4(d), such remainder shall not be awarded to any *TR bidder*.