Manitoba Hydro

Open Access Transmission Tariff Business Practices

Version 26

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Document Change History

Issue	Reason for Issue	Date
17	Included reference to MHEB TSR sold in EST. Ontario IMO-IESO name change, replaced IMO with IESO. Replaced the term Control Area with Balance Authority. Added detail to Separated load. Identified all TSRs in processing transmission service requests.	2006 05 17
18	Clarified TSR processing on MHEX_N interface procedure involving MHEX counter flow.	2006 11 09
19	Added clarification to the calculation of the MHEX_N interface. Clarified transmission rules for separated loads. Contingency reserves change to Midwest CRSG.	2007 01 30
20	Revised tagging example for Island Falls. Clarified scheduling validations for NEB permits.	2007 03 09
21	Added clarification to the transmission requirements for CRSG	2007 03 20
22	Revised the coordination of long term TSRs with MISO. Added Eligible Customer section. Added detail to TSR process. Added Fully Subscribed Interface section. Added clarification to transferred loads sections. Added Network Integrated Transmission Service section.	2007 10 19
23	Added Real Power Loss Factors section	2007 11 12
24	Revised short term transmission ATC calculation section Revised long term transmission ATC calculation section Revised CRSG section	2008 02 14
25	Added clarification to the ATC calculation section	2008 03 05
26	Added section for coordinated long term studies	2008 07 30

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1 Introduction

This document contains the business practices the Manitoba Hydro Open Access Transmission Tariff (OATT) and related activity applicable to the Manitoba Hydro interfaces. These practices are intended to supplement the Manitoba Hydro OATT and to the extent that there is a conflict between the Manitoba Hydro OATT and these practices, the OATT will apply.

2 General Inquiries

For General Inquiries regarding the OATT contact:

John Coates
Tariff Administration Officer
Transmission Services Department
Manitoba Hydro
Phone (204) 487-5486
Email: jjcoates@hydro.mb.ca

3 Coordination of the Manitoba Hydro OATT

Manitoba Hydro is a coordinating member of the Midwest Independent Transmission System Operator (MISO). The Manitoba Hydro OATT tariff is similar to module B of the MISO Open Access Transmission and Energy Markets Tariff (TEMT)

Transmission customers should be aware that Manitoba Hydro has not implemented an energy market within Manitoba and that MISO administers the Manitoba Hydro OATT for transmission service across Manitoba Hydro facilities. The Manitoba Hydro OATT applies to all transmission service in Manitoba, with the exception being that all transmission service charges shall use MISO rates.

The coordination agreement between Manitoba Hydro and MISO eliminates rate pan caking and coordinates transmission service rates between Manitoba Hydro and MISO. Transmission customers who are MISO members, taking service within the MISO footprint, obtain transmission service under MISO Schedules 7 and 8. Transmission customers that are not MISO members that are not serving load in a MISO rate zone, obtain transmission service under MISO Schedules 7, 8 and 14. Charges for Transmission Service under schedules 7, 8 and 14 for transmission customers who are MISO members taking service to serve load in the MISO Tariff Zone are waived.

4 Real Power Loss Factors

Manitoba Hydro calculates the transmission Real Power Loss Factor using the Average System Loss Factor (ASLF) calculation in accordance with the Midwest ISO Loss System User Manual. All point to point transaction and network transactions shall incur real power losses and are charged the same average loss rate in accordance with Schedule 9 of the Manitoba Hydro OATT. The Average System Loss rate is reviewed on June 1st each year and the resulting Average System Loss Factor Study is posted on OASIS.

5 Reserving Point to Point Transmission Service

Transmission Customers reserving transmission service across Manitoba Hydro transmission facilities shall make two separate transmission reservations:

a) One reservation under the Manitoba Hydro Tariff made on the Manitoba Hydro OASIS page. The MH OASIS number is used to calculate ATC on Manitoba Interfaces.
b) One reservation under the MISO Tariff made on the MISO OASIS page. The MISO OASIS reservation number is used for billing and settlement purposes.

If other transmission tariffs are being used, then the transmission customer will be required to make additional transmission service reservations under the appropriate tariff.

MHEB Transmission Service is sold in Eastern Standard Time (EST) year round to correspond with the matching MISO Transmission Service. The time specified on the MHEB Transmission Service Reservation must be the same time specified on the MISO Transmission Service Reservation.

5.1 Eligible Customer Status and Application

To become an eligible customer under the Manitoba Hydro Open Access Transmission Tariff the applicant shall complete Attachment L of the MHEB OATT. Eligible Customer status will be approved at the discretion of Manitoba Hydro. Once approved the MHEB eligible transmission customer will be given the ability to enter a Transmission Service Request on MHEB OASIS. To maintain approved MHEB eligible transmission customer status;

1. **New Customer**:
    - Customer submit completed "Application for Eligible Customer Status" "Attachment L" from the MHEB OATT as posted on OASIS along with all documents requested in Attachment L, to the contact listed in the application, and;
    - A completed "Attachment B" "Umbrella Agreement for Short Term or Point to Point Transmission Service" from the MHEB OATT, and;
    - Provide copies of the appropriate NEB export permit or license (see NEB section) for energy to leave Canada, and;

- Customer must be an eligible customer in good standing, of the Midwest ISO.
- Once the application has been submitted:
    i. Manitoba Hydro will review the submission and contact the customer if the documentation is deficient in any way.
    ii. When a valid application is submitted., Manitoba Hydro will contact the Midwest ISO to determine if the applicant is an eligible customer under the MISO TEMT ;
    iii. If the applicant has eligible customer status under the MISO TEMT, MHEB shall verify the applicants' particular's and contact the applicant to make the necessary arrangements to grant the applicant access to the Manitoba OASIS.
    iv. In the event the applicant does not have eligible customer status under the MISO TEMT, Manitoba Hydro will contact the applicant to advise that the applicant must become an eligible customer under the MISO TEMT since the customer must have an MISO Transmission Service Reservation and a Manitoba Transmission Service Reservation in order to reserve Transmission Service.

2. **Existing Customers:** Under the MHEB OATT, the Attachment L "Umbrella Agreement for Short Term expires 3 years after the contract has been executed. It is the customers' responsibility to keep all documentation current including any documents or reports supplied that may affect the customers' credit rating. MHEB eligible customer status may be withdrawn at any time at the discretion of Manitoba Hydro.

5.2 Transmission Service Requests

The MH transmission tariff provides service to or from a border point at the Manitoba-Saskatchewan, Manitoba-Ontario, and/or Manitoba-USA border. Border point POR's and POD's are as follows:

USA: MHEX

Ontario: MH-ONT

Saskatchewan: SPC

The MISO transmission tariff reservation is used to describe the complete transmission service reservation path and is used for the AFC evaluation.

With the exception of the POR or POD, the MH and MISO transmission service requests must be made identically. That is: possess identical start/stop times, capacity profiles, and source/sink pairs.

To link the transmission service requests the transmission customer can either:

a) enter information in the "comments field" identifying which requests are linked,

b) Or enter in a common "Deal" reference on each request.

Transmission customers should submit their transmission service request first on the Manitoba Hydro OASIS and the second request on the MISO OASIS. The MISO request queue time will determine the queue time for processing of the transmission service.

5.3 Long Term Transmission Requests-Coordinated Studies

The primary purpose of Long Term Firm Transmission studies is for the coordinated planning and cooperation with the Neighboring Transmission Providers for the enhanced reliability, operation and coordination of transmission upgrades on the contract path. Such planning will result in Manitoba Hydro performing a transmission study that will cooperate with the affected Transmission Provider on the contract path to conform to reliability requirements of NERC, applicable regional reliability councils and all applicable requirements of Canadian, Provincial, State, Federal laws and regulatory authorities.

It is the responsibility of the **Transmission Customer** to arrange for the Transmission Service Requests with all Transmission Providers along the contract path. Manitoba Hydro will coordinate transmission system studies for long term firm Transmission Service Requests with the Transmission Customer and adjacent Transmission Providers including coordination of the design and construction of any required transmission upgrades and new transmission facilities.

In the case where there are time differences for the submission of Long Term Firm Transmission Service Request resulting in a different queue position under the different transmission providers transmission tariffs; the date and time that the last Transmission Service Request is submitted to achieve the full contract path for the long term firm service will determine the queue time for processing of the transmission service.

In the case where the Long Term Firm Transmission Service Request submitted to Manitoba Hydro does not have sufficient information to complete a transmission study by Manitoba Hydro with the cooperation of Transmission Providers on the contract path, the Transmission Service Request shall be denied by Manitoba Hydro Tariff Administrator,. The Manitoba Hydro Tariff Administrator will provide written notice of the denial of the request, and the reason for such denial, to the Transmission Customer and the Transmission Customer will lose its queue position.

5.4 Fully Subscribed Interface

At the discretion of Manitoba Hydro where an interface would be fully subscribed if all holders of rollover rights exercised such rights, a new request shall be denied unless:

1. The Customer agrees to a System Impact Study, and;

2. The term of service is of a reasonable duration, including the time it takes for the study to be performed and the construction of new transmission facilities. Currently a reasonable timeframe for new service would be a minimum of;
    - Three years for a minor transmission upgrade (i.e.: upgrade risers, bus or series capacitors), or
    - Five years for a new transmission line.

5.5 Processing Transmission Service Requests greater than One Year

Transmission Requests for a term of one year or greater will not be accepted on OASIS until an executed Long Term Service Agreement in the form of MHEB OATT Attachment A is returned to MHEB Tariff Administration

Transmission requests with a contract term of one year or greater will be processed as described below depending upon the contract path..

5.5.1 Source and Sink outside MISO region

For MHEB Transmission service requests, where Manitoba is on the contract path and the source/sink is outside the MISO zone – i.e. MHEB to ONT, SPC to MHEB, or SPC to ONT through MHEB):

1. MISO shall notify MHEB of the transmission service request within 7 days of submission by the Eligible Customer. Manitoba Hydro shall determine the ATC in accordance with MHEB OATT attachment J, and if the request should be accepted or if a system impact study needs to be performed.

2. If a system impact study is required Manitoba Hydro staff shall process/evaluate and administer the system impact & facilities studies as outlined in section 19 ("Additional Study Procedures for Firm Point-to-Point Transmission Service Requests") of the Manitoba Hydro OATT tariff. Manitoba Hydro shall promptly notify MISO of the following;
    - System Impact Study Process
        - Date the System Impact Study Agreement was tendered to the Eligible Customer
        - Date the Eligible Customer executed the System Impact Study Agreement or the date application deemed withdrawn
        - Date the System Impact Study was completed or the date Eligible customer was notified that Manitoba Hydro is unable to complete the System Impact Study within 60 days along with an explanation of the reasons why additional time is required and a new estimated completion date
        - Date the Eligible Customer executed a Service Agreement or Umbrella Agreement or the date application deemed withdrawn

- Facilities Study Process
  - Date the Facilities Study Agreement was tendered to the Eligible Customer
  - Date the Eligible Customer executed the Facilities Study Agreement or the date application deemed withdrawn
  - Date the Facilities Study was completed or the date Eligible customer was notified that Manitoba Hydro is unable to complete the Facilities Study within 60 days along with an explanation of the reasons why additional time is required and a new estimated completion date
  - Date the Eligible Customer executed a Service Agreement or Umbrella Agreement and provided the required letter of credit or other form of security or the date application deemed withdrawn

3. MISO staff shall make the necessary status updates on MISO/MHEB OASIS as required.

5.5.2 Source and/or Sink inside MISO region

For MHEB transmission service requests, where Manitoba is on the contract path and the source/sink is in the MISO Tariff zone or MISO is on the contract path – i.e. NSP to MHEB, NSP to ONT through MHEB, MHEB to NSP, or MEC to MHEB through MISO:

1. MISO will notify MHEB of the transmission service request within 7 days of submission by the Eligible Customer.
2. MHEB shall determine the ATC for its portion of the contract path in accordance with MHEB OATT attachment J, and if the request should be accepted or if a system impact study needs to be performed.
3. MISO shall determine the ATC for its portion of the contract path in accordance with the MISO tariff and if the request should be accepted or if a system impact study needs to be performed.
4. If a system impact study is required Manitoba Hydro staff shall process/evaluate and administer the system impact & facilities studies for its portion of the contract path in accordance with the Manitoba Hydro OATT tariff. Manitoba Hydro shall promptly notify MISO of the following;
   - System Impact Study Process
     - Date the System Impact Study Agreement was tendered to the Eligible Customer
     - Date the Eligible Customer executed the System Impact Study Agreement or the date application deemed withdrawn
     - Date the System Impact Study was completed or the date Eligible customer was notified that Manitoba Hydro is unable to complete the System Impact Study within 60 days along with an explanation of the reasons why additional time is required and a new estimated completion date
     - Date the Eligible Customer executed a Service Agreement or Umbrella Agreement or the date application deemed withdrawn

- Facilities Study Process
  - Date the Facilities Study Agreement was tendered to the Eligible Customer
  - Date the Eligible Customer executed the Facilities Study Agreement or the date application deemed withdrawn
  - Date the Facilities Study was completed or the date Eligible customer was notified that Manitoba Hydro is unable to complete the Facilities Study within 60 days along with an explanation of the reasons why additional time is required and a new estimated completion date
  - Date the Eligible Customer executed a Service Agreement or Umbrella Agreement and provided the required letter of credit or other form of security or the date application deemed withdrawn

5. MISO shall process/evaluate and administer the system impact & facilities study for its portion of the contract path in accordance with the MISO Tariff.
6. Prior to forwarding a service agreement to the Eligible Customer MHEB and MISO shall discuss the study results and decide if the requested service can be granted under both tariffs and identify any facilities required to be constructed associated conditions on the service (ie: re-dispatch).
7. MISO and MHEB shall coordinate the approval of the matching Transmission Service Requests.

5.6 Processing Transmission Service Renewal Requests

A Transmission Customer with a contract term of one year (or more) has the right to continue to take transmission service when the contract expires, rolls over or is renewed. Service across Manitoba Transmission facilities requires both renewal of the MHEB TSR and the MISO TSR under there respective tariffs. MHEB and MISO shall coordinate the processing of renewal requests as follows:

1. MISO shall notify MHEB of the transmission service renewal request within three (3) business days of submission by the Transmission Customer.

2. If there is a competition queue established for the contract path MISO shall notify MHEB on the same business day the competition queue is established. If a competition queue is established MISO shall administer the competition queue once the available ATC on MHEB facilities has been determined by MHEB. MHEB shall notify MISO of the available ATC in accordance with attachment J of the MHEB OATT (within 30 days) or provide an explanation of the reasons why additional time is required to calculate the ATC and a new estimated date.

3. MISO shall review the renewal request under the terms of the MISO tariff and conditionally approve the renewal request under the terms of the MISO tariff.

4. MHEB shall review the renewal request and process the renewal request in accordance with Attachment E and Section 2 of the MH OATT. MHEB shall notify MISO of the available ATC in accordance with attachment J of the MHEB OATT (within 30 days) or provide an explanation of the reasons why additional time is required to calculate the ATC and a new estimated date.

5. If there is sufficient ATC to approve the renewal request MHEB shall prepare a Long Term Service Agreement for the renewal service and forward to the Transmission Customer for execution. Once the Transmission Customer has executed the Long Term Service Agreement, MHEB shall notify MISO that the renewal request has been approved by MHEB.

6. If MHEB determines that a system impact study is required to determine the available ATC for the duration of the renewal request MHEB shall offer partial interim service to the Transmission Customer for the portion of the requested Firm Point-to-Point Transmission Service that can be accommodated without the addition of any facilities and through generation redispatch in response to the renewal request. Manitoba Hydro staff shall process/evaluate and administer the system impact & facilities studies as outlined in section 19 ("Additional Study Procedures for Firm Point-to-Point Transmission Service Requests") of the Manitoba Hydro OATT tariff.

7. If the Transmission Customer accepts the offer of partial interim service for the renewal request, MHEB shall prepare a Long Term Service Agreement for the renewal service and forward to the Transmission Customer for execution. Once the Transmission Customer has executed the Long Term Service Agreement, MHEB shall notify MISO that partial interim service for the renewal request has been approved by MHEB.

8. If a system impact study is required Manitoba Hydro shall promptly notify MISO of the following;
    - System Impact Study Process
        - Date the System Impact Study Agreement was tendered to the Eligible Customer
        - Date the Eligible Customer executed the System Impact Study Agreement or the date application deemed withdrawn
        - Date the System Impact Study was completed or the date Eligible customer was notified that Manitoba Hydro is unable to complete the System Impact Study within 60 days along with an explanation of the reasons why additional time is required and a new estimated completion date
        - Date the Eligible Customer executed a Service Agreement or Umbrella Agreement or the date application deemed withdrawn

    - Facilities Study Process
        - Date the Facilities Study Agreement was tendered to the Eligible Customer
        - Date the Eligible Customer executed the Facilities Study Agreement or the date application deemed withdrawn

- Date the Facilities Study was completed or the date Eligible customer was notified that Manitoba Hydro is unable to complete the Facilities Study within 60 days along with an explanation of the reasons why additional time is required and a new estimated completion date
- Date the Eligible Customer executed a Service Agreement or Umbrella Agreement and provided the required letter of credit or other form of security or the date application deemed withdrawn

9. Where the source/sink is in Manitoba or Manitoba is on the contract path to a source/sink outside the MISO zone (i.e. ONT or SPC) and the source/sink is in the MISO Tariff zone or MISO is on the contract path – i.e. NSP to MHEB, NSP to ONT through MHEB, MHEB to NSP, or MEC to MHEB through MISO the renewal request or partial interim service shall be granted only if both MISO and MHEB approve the renewal request or the partial interim service.

10. Where the source/sink is in Manitoba or if service is through Manitoba/outside the MISO zone and the source/sink is outside the MISO zone – i.e. MHEB to ONT, SPC to MHEB, or SPC to ONT through MHEB On the MH_ONT_East, MH_ONT_West, MH_SPC_East, MH_SPC_West interfaces, the MISO transmission service reservation is utilized for billing and settlement purposes only. Renewal of Transmission Service or partial interim service only requires approval by MHEB, MISO shall approve transmission service at the direction of MHEB.

5.7 Processing Transmission Service Requests less than One Year

Manitoba Hydro has contracted out the administration of transmission reservations of less than one year to the Midwest ISO. Manitoba Hydro Transmission Service Requests for a term of less than one year will be processed by MISO for both sides of the contract path utilizing AFC values in the scheduling horizon. The Midwest ISO calculates the ATC on each for each of the Manitoba Hydro interfaces and posts the available short term ATC for the each of the Manitoba Hydro interfaces on the Manitoba Hydro OASIS site called the "Manitoba Hydro Interface ATC Tool".

5.8 Transmission Service Reservation ATC Evaluation

The Midwest ISO has developed an automated process to calculate the ATC on the Manitoba Hydro interfaces (MHEX, ONT, and SPC) called the "Manitoba Hydro Interface ATC Tool". The link to the Manitoba Hydro Interface ATC Tool is posted on MISO OASIS home page under System Information & Studies and is entitled **Manitoba Hydro Interface ATC Tool.**

The Queries begin at 15 minutes past the hour and are posted on OASIS at 23 minutes past the hour. It is the responsibility of the tariff administrator on shift to manually track the sale of

transmission service between hourly queries to ensure that transmission is not over sold. The tool is not a dynamic tool and the ATC posted on OASIS may contain information that is up to one hour old. MISO Tariff Administration staff use the ATCs calculated by most recent update to sell transmission service. Transmission Service sold during the interval between updates is not reflected on OASIS.

5.8.1 Firm ATC:

For all time points in MISO time horizon:
Firm ATC = TTC – Firm TRM – summation of firm reservation capacity

5.8.2 Non-Firm ATC in Operating Horizon:

The Operating Horizon is the remainder of the day (day 1). If the time of day is later than 15:00, the operating horizon is extended to include tomorrow (day 2). During the operating horizon, the ATC calculation will release capacity from transmission reservations where schedules do not exsist, as hourly non-firm ATC, with the exception being capacity from hourly non-firm reservations. Similar to the following formula;

Non Firm ATC = TTC – (Non Firm TRM * COEF) – sum of firm schedules - sum of monthly and daily non-firm schedules - sum of hourly non-firm scheduled MW if available (if not scheduled upon, non-firm reservation MW are used).

5.8.3 Non-Firm ATC in the Planning Horizon:

The planning horizon is the period after the operating horizon, being:

- If the hour of the day is before 15:00, the planning horizon is tomorrow and beyond.
- If the hour of the day is after 15:00, the planning horizon is day 3 and beyond.

During the planning horizon, the ATC calculation will only use transmission reservations MW values to calculate available non-firm ATC.

Non-Firm ATC = TTC – (TRM*COEF) – sum of firm reservations – sum of non-firm reservations

Example 1: Interface Firm/NonFirm Reservations and Schedules remain constant to illustrate available ATC with time.

TTC	Firm TRM	NF TRM	COEF
1000	100	50	0.7

							Time of day < 15:00		Time of day > 15:00	
Day	Time Point	Reservation	Schedule	Reservation	Schedule	Schedule	Firm ATC	Non-Firm ATC	Firm ATC	Non-Firm ATC
		Firm	Firm	dly non-firm	dly non-firm	hrly non-firm				
1	00:00-24:00	800	500	100	0	50	100	415		
1	15:00-24:00	800	500	100	0	50	100	415	100	415
2	00:00-24:00	800	500	100	0	50	100	315	100	415
3	00:00-24:00	800	500	100	0	50	100	65	100	65

Example 2: The same interface with variable Firm/Non-Firm Reservations and Schedules to illustrate available ATC with time.

							Time of day < 15:00		Time of day > 15:00	
Day	Time Point	Reservation	Schedule	Reservation	Schedule	Schedule	Firm ATC	Non-Firm ATC	Firm ATC	Non-Firm ATC
		Firm	Firm	dly non-firm	dly non-firm	hrly non-firm				
1	00:00-24:00	800	500	100	50	50	100	365		
1	15:00-24:00	800	0	100	0	50	100	915	100	915
2	00:00-24:00	800	500	100	50	0	100	415	100	415
3	00:00-24:00	800	0	100	0	0	100	65	100	65

5.8.4 MHEX North non-firm ATC

The MHEX North ATC calculation takes advantage of interface counter flow to increase the non-firm capability to match confirmed counter flow schedules up to a maximum of 200MW.

For all time points, if counter flow on north is less than 200MW;

MHEX_N Non-Firm ATC = Non-Firm ATC for time point on interface MHEX_ N + counter flow from south

Or;

MHEX_N Non-Firm ATC = Non-Firm ATC for time point on interface MHEX_N + 200

5.9 Partial Path Reservations

Transmission customers are permitted to reserve transmission service in "pieces", then use the separate pieces reserved at different times together at schedule time to transact across MHEB facilities. Since all paths must sink or source at MHEB, it is only necessary to reserve two pieces of transmission to transact across MHEB facilities. Scheduling priority will be the lowest of any of the reservations used to transact across MHEB facilities.

5.10 Redirection of Firm Service on a Non-Firm Basis

Firm point-to-point transmission service can be redirected (changing the source and / or sink) using the same reservation. However, the priority of this service when used on a redirected basis will be the lowest priority of service (i.e. non-firm secondary service) other than next hour service. The following business rules apply:

a) Transmission customer must initiate a non-firm redirect by utilizing the redirect functionality of OASIS. Transmission customers must obtain a redirected MHEB transmission number, and a redirected MISO transmission number.

b) The class and term of service is secondary hourly service. The timing requirements for submitting non–firm redirects on the OASIS is the hourly non-firm timing requirements in Attachment J

c) The secondary service MW amount can not exceed the amount of the original request less any other schedules utilizing this same reservation either on a firm or non-firm (i.e. secondary) basis.

d) Secondary service will be approved if sufficient ATC exists.

e) Curtailment of service will be conducted in accordance with NERC TLR procedures (non-firm secondary service will be deemed to have the lowest level of point-to-point service other than next-hour service).

f) The customer retains the right to schedule service on the original (firm) POR/POD source/sink basis with a firm priority subject to the same timing requirements that would apply to a new schedule on the original path.

5.11 Serving Separated Loads

Transmission service must be provided in the event where Manitoba Hydro load becomes separated from the Manitoba Hydro transmission system and the load is served by a neighboring utility or a neighboring utility load becomes separated from the their transmission system and the load is served by Manitoba resources.

Manitoba Hydro is a coordinating member of the Midwest Independent Transmission System Operator (MISO). Manitoba Hydro load separated onto a MISO will utilize existing transmission service. Manitoba Hydro will wheel energy through the MISO transmission to serve Manitoba Hydro load at no charge. The MHEB Network Reliability Officer will confirm with the neighboring Outage Coordinator that the neighboring Control Area is capable of supporting the load for the duration of the outage.

MISO load separated onto Manitoba Hydro will utilize existing transmission service. MISO will wheel energy through the Manitoba Hydro Transmission system to serve MISO load at no charge. The MHEB Network Reliability Officer will confirm with the neighboring Outage Coordinator that the MHEB Control Area is capable of supporting the load for the duration of the outage.

Transmission Service for separated load on the SPC interface falls under a grand fathered agreement; see the Saskatchewan Interface section of these Business Practices for Transmission Service Reservation numbers and details.

6 Network Integration Transmission Service

Manitoba Hydro provides Network Integration Transmission Service subject to the applicable terms and conditions contained in the MHEB Open Access Transmission Tariff and the Network Integration Transmission Service Agreement. Only a Network Customer with the confirmed network service for the load can designate a network resource for that load or request a new Network Resource. To request an increase or modification of service, the Network Customer shall submit an application to Manitoba Hydro, Network Resource applications are available under the "Application Forms" section or on the MHEB OASIS site, http://oasis.midwestiso.org/oasis/MHEB.

6.1 Designated new Network Resources internal to Manitoba

The designation of a new network resource must be made by a request for modification of service as specified under section 29 of the OATT.

Network Resource applications may be submitted via email or by fax to the Manitoba Hydro Transmission Tariff Department. A Network Customer requesting designation of a new Network Resource shall provide as much notice as practical.

Manitoba Hydro shall then determine available network capacity as per section 4.4, and offer a modified Network Integration Transmission Service Agreement contingent upon the information provided by the Network Customer and available ATC.

6.2 Designated new Network Resources external to Manitoba

To designate a new Network Resource external to Manitoba the Network Customer shall submit the following as far as possible in advance;

(i) Network Customer shall apply for NITS via MHEB OASIS.

(ii) An application form found under "Application Forms" on the MHEB OASIS site, http://oasis.midwestiso.org/oasis/MHEB, submitted via email or by fax to the Manitoba Hydro Transmission Tariff Department.

(iii) A $10,000.00 system study deposit (or approximate charge for one month of service).

(iv) The Customer must demonstrate that it owns or has committed to purchase generation pursuant to an executed contract in order to designate a generating resource as a Network Resource under the Manitoba Hydro OATT. Generation resources designated as Network Resources must be deliverable to load within the Province of Manitoba using firm transmission as defined in the MHEB OATT.

(v) The customer must certify to MHEB that the resource is not being counted as a designated resource for another load on or off the MHEB system.

Manitoba Hydro shall then determine available ATC as per section 4.4, and at the discretion of Manitoba Hydro, offer a modified Network Integration Transmission Service Agreement contingent upon the information provided by the Network Customer and available ATC.

6.3 Designating temporary Network Resources

Network Customers are permitted to convert a resource into a Network Resource for a period of no less than 30 days and no greater then 12 months of sequential service.

In the event a competing Point-to-Point Transmission Service request is received, the Point-to-Point Transmission request and the Temporary Network Resource request shall be ranked in accordance with first-come, first served principles based on the MHEB OASIS queue date and time. Providing a study is not required, MH Tariff Administration shall determine the available transmission capacity within 30 days of the conversion request, and provide the Network Customer with a revised service agreement for the amount of service which can be converted to a Network resource.

Steps to convert a Generation Resource to a Network Resource:

a) Network Customer shall submit the Temporary Network Resource Conversion Request form found under "Application Forms" on the MHEB OASIS site, http://oasis.midwestiso.org/oasis/MHEB. The request must be submitted via email or by fax to the Manitoba Hydro Transmission Tariff Department.
b) The conversion request shall be submitted no earlier then 12 months prior to the start of requested service and no later then 30 days prior to the start of requested service.
c) The Transmission Customer shall demonstrate that it owns or has committed to purchase generation pursuant to an executed contract.

6.4 Requesting to Terminate a Network Resource

A customer with a Designated Network Resource may terminate all or part of this designation of this resource by using the Request to Terminate a Network Resource Form found under "Application Forms" on the MHEB OASIS site, http://oasis.midwestiso.org/oasis/MHEB. The request must be submitted via email or by fax to the Manitoba Hydro Transmission Tariff Department.

Any subsequent request to designate this resource or any new resource must be made in writing and are subject to the requirements for new Network Resources of this Business Practice.

7 Manitoba – USA Interface

7.1 Canadian (NEB) Requirements for Exports to the United States

Effective November 01, 2002, Manitoba Hydro's transmission customers that use Manitoba Hydro's facilities to export electricity that sources in Canada to the United States are required to obtain an export permit/license from the Canadian National Energy Board (NEB).

All Manitoba Hydro eligible transmission customers shall provide Manitoba Hydro Transmission Services Department with a copy of their export permit or license. These copies are required to be submitted to Manitoba Hydro prior to scheduling the transmission service. No export permits or licenses are required to transmit electricity between Canadian provinces or for imports from the United States.

Transmission customers will be required to enter the export permit or license number on the transaction tag to verify possession of the required permit or license. The export license/permit number must be entered in the GCA "Contract "field" on the Physical path section of the tag. The export license/permit number must contain 6 digits and is part of the MISO tag validation process. Export license/permit numbers that do not have 6 digits should be prefaced by a 0 to make up the sixth digit. Example: license EPE-45 should be entered as EPE-045.

The Manitoba Hydro Balance Authority Operator or MISO Scheduler will deny a transaction tag that does not have the license or permit number entered if the energy source in Canada and the transaction is scheduled to flow into the United States.

Transmission customers may contact the National Energy Board for further information:

Dave Walker at telephone number 1-800-899-1265,

Or see Part VI – Exports and Imports, Division II Electricity at the National Energy Board website http://www.neb.gc.ca/clf-nsi/rpblctn/ctsndrgltn/ct/ntnlnrgybrdctprt6-eng.html

7.2 MHEX Counter flow

To make additional ATC available on MHEX_N interface, the Manitoba Hydro Interface ATC Tool will release a portion of the TRM when schedules are in effect on the MHEX_S interface. The amount of TRM that will be released is limited to the reliability margin component in TRM so that, in the event that all counter-flow schedules on MHEX_S are curtailed or lost, MHEX_N flows will not exceed the total transfer capability (TTC) on the interface. TRM will be released MW for MW on the MHEX_N interface up to a maximum of 200 MW.
Once schedules on MHEX_S have been made, the Manitoba Hydro Interface ATC Tool will automatically release TRM on the MHEX_N interface for the next hourly update.

7.3 Transmission Service for Contingency Reserves

Manitoba Hydro is a member of the Midwest "CRSG" Contingency Reserve Sharing Group (formerly the MAPP Generation Reserve Sharing Pool (GRSP)) (CRSG). Midwest CRSG members agree to share reserves for the loss of the largest contingency of each member. Manitoba Hydro's CRSG requirements are included in the TRM portion of the ATC values posted on OASIS.

7.4 Curtailment Criteria of the Manitoba – MISO Interface

On startup of MISO Day 2 operations April 1, 2005, both MISO and MHEB shall continue to follow NERC Transmission Loading Relief procedures on the MHEB/MISO interface. Curtailment on the MHEX_S and MHEX_N interfaces will be made based upon the priority of the MHEB transmission reservation.

7.5 MISO Spot Market Transmission Reservation

The Midwest ISO Scheduling Business Practices permit the offering of energy into the MISO Energy Market at the Manitoba Hydro - MISO Interface. Such offers, when consummated, go to satisfy the total energy requirement of the MISO market. To facilitate the scheduling and settlement of such offers into the market, a non-billable transmission service type is available to MISO Market Participants. MISO Market Participants desiring a Spot reservation must contact MISO Tariff Administration.

Transmission Customers offering energy into the MISO Energy market using MHEB transmission facilities which sources in Manitoba shall obtain two (2) transmission reservations:

a) One reservation under the Manitoba Hydro Tariff made on the Manitoba Hydro OASIS page.
b) One MISO Spot Market Reservation

Transmission Customers offering energy into the MISO Energy market via Manitoba Hydro transmission facilities which sources external to Manitoba shall obtain three (3) transmission reservations:

a) One reservation under the Manitoba Hydro Tariff made on the Manitoba Hydro OASIS page.
b) One reservation under the MISO Tariff, made on the MISO OASIS page
c) One MISO Spot Market Reservation

8 Manitoba – Saskatchewan Interface

8.1 Release of Unscheduled Transmission on the MHEB_SPC_E Interface

There is no automated process in place to release unscheduled transmission service on the MHEB_SPC_E Interface on an hourly basis. To facilitate additional transactions across this interface, hourly requests for transmission service up to three hours out will be examined and approved if unscheduled transmission capacity exists. For example if the current time is 1500 hours, hourly requests for the hour 1800 will be examined.

The Transmission customer applies for hourly transmission service for the hour three hours out. If there is Hourly Non Firm Transmission Service available the request will be processed automatically utilizing standard procedures. If there is no Hourly Non-Firm Transmission Service available, the amount of unscheduled transmission service for the requested hour will be manually calculated by Tariff Administration using the formula.

*Unscheduled Transmission Service = TTC - (TRM * COEF) - Sum of Monthly Non-Firm Schedules - Sum Daily Non-Firm Schedules - Sum Hourly Non-Firm Schedules*

Tariff Administration will then evaluate and determine if the hourly request will be denied, partially approved or approved in full.

8.2 Serving Separated Loads on the MHEB-SPC interface

Transmission service must be provided in the event where Manitoba Hydro load becomes separated from the Manitoba Hydro transmission system and the load is served by Saskatchewan resources or Saskatchewan load becomes separated from the Saskatchewan transmission system and the load is served by Manitoba resources.

Transferred loads may be served by;

a) Resources from the system the load is connected to;

b) Resources of the system responsible for the load by creating a separate schedule to the system supplying the load or;

c) A separate transaction from a third party.

Separation of load can occur under both system intact and planned outage conditions.

8.2.1 Transmission Service Requests for Transferred Loads

Manitoba Hydro and SaskPower have posted points of delivery on their respective OASIS pages for exclusive use to serve separated loads to accommodate transmission service requests and to distinguish these requests from normal transmission service.

a) For MHEB load served by SaskPower;

- SaskPower has created a transmission reservation and "set aside" this reservation for exclusive use to serve transferred MHEB load. The "set aside" reservation is xxMHSEPLD (xx is the calendar year eg. 2005 will be 05). The path for the set aside is QEPS_MH.LOAD and tags would have to match.
- The MHEB Network Reliability Officer will confirm with the SaskPower Outage Coordinator that the SPC Control Area is capable of supporting the load for the duration of the outage.
- Manitoba Hydro Energy Marketing is notified of the outage by the Temporary Operating Instruction as posted on the MHEB OASIS site.
- Manitoba Hydro Energy Marketing shall arrange for the energy to serve the load with the SaskPower Marketing authority. MHEB transmission shall be purchased for the duration of the outage and a dynamic tag is created.
- The MHEB electronic scheduler (see the Scheduling section) creates a matching dynamic schedule that will be trued up, after the fact, by loading the integrated hourly MW values used by the load into the schedule. The MHEB Schedule is updated by the MHEB System Operator after obtaining approval from the SPC Operator

b) For SPC load served by MHEB:

- Manitoba Hydro has created a transmission reservation on the MHEB OASIS page to be used exclusively for serving transferred SPC load. Transmission service request reservation to be used for serving SPC load that becomes separated on to the MHEB system is #76333322 (the matching MISO Transmission Service Request is # 76333336) and resides on the MHEB OASIS page on the MISO OASIS node.
- The MHEB Network Reliability Officer will confirm with the SaskPower Outage Coordinator that the MHEB Control Area is capable of supporting the load for the duration of the outage.
- Manitoba Hydro Energy Marketing is notified of the outage by the Temporary Operating Instruction as posted on the MHEB OASIS site.
- Manitoba Hydro Energy Marketing will arrange for the energy to serve the load with the SaskPower Marketing authority. A dynamic tag is created by Manitoba Hydro Energy Marketing using MHEB TSR 76333322.
- MHEB electronic scheduler (see the Scheduling section) creates a matching dynamic schedule that will be trued up, after the fact, by loading the integrated hourly MW values used by the load into the schedule. The MHEB Schedule is updated by the MHEB System Operator after obtaining approval from the SPC Operator

8.3 Curtailment Criteria of the Manitoba – Saskatchewan Interface

The purpose of this business practice is to establish the criteria for the coordination of curtailment orders on the SaskPower/Manitoba Hydro interface that would be applied for curtailments in the event of a contingency and for reallocation to allow higher priority transmission service to start.

This criterion reflects the position that the transfer capability into or through a Balance Authority is based on conditions internal to the associated Balance Authority. Conditions in Manitoba impact the ATC posting on the MISO OASIS site and conditions in Saskatchewan impact the ATC posting on the SaskPower OASIS site.

8.3.1 Curtailment Criteria:

8.3.1.1 Initialization of Curtailment

a. Contingencies that occur within Saskatchewan will cause the curtailment to be initiated by SaskPower.

b. Contingencies that occur within Manitoba will cause the curtailment to be initiated by Manitoba Hydro.

8.3.1.2 Reallocation

a) If a tag is received that exceeds the Manitoba Hydro posted ATC for the SP/MH interface, the Midwest ISO will issue the TLR to process the Reallocation.

b) If a tag is received that exceeds the SaskPower posted ATC for the SP/MH interface, the SaskPower Schedule Interruption Practices will be followed to process the Reallocation.

c) If a tag is received that exceeds the ATC posted by both SaskPower and Manitoba Hydro for the SP/MH interface and the lower of the posted ATC limits is in Manitoba, the Midwest ISO will issue the TLR to process the Reallocation.

d) If a tag is received that exceeds the ATC posted by both SaskPower and Manitoba Hydro for the SP/MH interface and the lower of the posted ATC limits is in Saskatchewan, the SaskPower Schedule Interruption Practices will be followed to process the Reallocation.

e) If a tag is received that exceeds the ATC posted by both SaskPower and Manitoba Hydro for the SP/MH interface, and the postings are equal, the Midwest ISO will determine the order and initiate the TLR process if the SINK is East of the SP/MH interface.

f) If a tag is received that exceeds the ATC posted by both SaskPower and Manitoba Hydro for the SP/MH interface, and the postings are equal, the SaskPower Schedule Interruption Practices will determine the curtailment order if the SINK is West of the SP/MH interface

8.4 Firm Transmission Capacity on the Manitoba Saskatchewan Interface

Manitoba Hydro firm transmission capacity that is posted for the Manitoba – SPC interface reflects the transfer capability attainable without requiring generation re-dispatch within the Manitoba Hydro system. Additional firm transfer capability may be possible by re-dispatching generation at Grand Rapids generating station either higher or lower generation depending on the direction of power transfers. This procedure allows a transmission customer to apply for additional firm transmission capacity resulting from generation re-dispatch.

8.4.1 Procedure to Increase Transfer Capability:

a) A transmission customer applying for firm transmission service on the MH-SPC interface and is refused service because the request failed due to inadequate transfer capability, may request MHEB Tariff Administration staff to amend the posted transfer capability after obtaining a generation re-dispatch agreement from Manitoba Hydro Transmission Services Department.

b) Grand Rapids generation must be "constrained on" to increase the firm transfer capability for transfers from MHEB to SPC.

c) Grand Rapids generation must be "constrained off" to increase the firm transfer capability for transfers from SPC to MHEB.

8.4.2 Procedure To Negotiate And Administer A Re-dispatch Agreement:

a) A Transmission Customer requesting MHEB Tariff Administration staff to release additional firm transfer capability must contact MHEB Tariff Administration staff in writing identifying the amount of additional transfer capability required, the duration of the increased transfer capability, start date, and end date.

b) MHEB Tariff Administration in conjunction with Power Sales and Operations Division Operations and Planning Section staff will determine if adequate hydraulic resources are available to meet the re-dispatch obligations and the associated energy costs and notify the transmission customer.

c) The transmission customer must complete the re-dispatch agreement form and provide MHEB Tariff Administration with a signed copy of the agreement.

d) MHEB Tariff Administration will submit a copy of the signed agreement to MISO tariff administration staff and identify to MISO the additional transfer capability as a result of the re-dispatch agreement.

e) The transmission customer must submit a new transmission service request and identify in the "Comments Section" of the transmission service request template that the reservation is subject to re-dispatch agreement.

f) MISO tariff administration will evaluate the new request including the impact of the re-dispatch agreement. MISO will notify the transmission customer and MHEB tariff administration staff of the evaluation results.

g) Once a transmission customer "Confirms" the approved transmission service request the request and the signed re-dispatch agreement become effective the start date of the transmission service request and remain in effect until the end date of the transmission service request.

h) MHEB tariff administration staff will revise the posting components to reflect the additional transfer capability and forward to MISO for posting.

i) The Manitoba Hydro Balance Authority Operator (BAO) will dispatch the designated generation as required to prevent an overload security violation.

8.4.3 Limitations:

a) Transmission service approved contingent on a re-dispatch agreement is available for monthly firm service only and limited to consecutive 6 months duration.
b) Re-dispatch agreements will be considered only when adequate hydraulic resources on the Manitoba Hydro system are available.
c) Re-dispatch agreements are only available for the Manitoba – SPC interface.
d) Only re-dispatch agreements in the same power transfer direction can be in effect simultaneously

8.4.4 Re-dispatch Agreement Form:

MHEB – SPC INTERFACE GENERATION RE-DISPATCH REQUEST FOR INCREASING FIRM TRANSFER CAPABILITY	
TO: **Manitoba Hydro** **Transmission Services Department** **Attention: John Coates** Phone: (204) 487-5486 Fax: (204) 487-5368	Alternate Manitoba Hydro Contact: Transmission Service Department Attention: Allan Silk Phone: (204) 487-5470 Fax: (204) 487-5368
FROM: (Transmission Customer) Contact: Address: Phone: Fax:	Alternate Transmission Customer Contact: Contact: Phone: Fax:
Section 1: Increased Transfer Capability Requested in MW.	
Section 2: Power transfer direction MHEB to SPC ڤ SPC to MHEB ڤ	
Section 3: Start Date	
Section 4: Stop Date	

9 Manitoba - Ontario Interface

9.1 General - MH_ONT_E Interface (formerly MH_IMO E)

The IESO (formerly IMO) has an hourly based market which does not require transmission service to schedule energy. The Manitoba Hydro OATT requires a transmission reservation in order to schedule energy.

Transmission customers who have firm Manitoba Transmission service are permitted to redirect transmission service (changing the source / sink) using the same reservation. Transmission customers must apply via OASIS for redirected Transmission Service, requests will be approved subject to available ATC.

IESO Accepts Schedules Greater Then Interface Capacity
Manitoba Hydro does not coordinate transfer capability limits with the IESO market limits. The IESO may accept offers of energy greater then the interface capacity. If the resulting schedules exceed the capacity of the MH_ONT_E interface, curtailment of schedules may be required. Curtailment of schedules will be made based on the criteria in the corresponding sink Balance Authority. The sink Balance Authority will be responsible for adjusting the appropriate tag(s) to adjust the Schedule. When Manitoba Hydro is the sink, curtailment of schedules will be made based upon transmission reservation priority. If ONT is the sink, IESO will decide which schedules to curtail.

Off-Load Phase Shifter
The MH_ONT interface includes two phase-shifting transformers, the transformers have both on-load and off-load tap changers. The on-load phase-shifter has a limited range, when the on-load phase-shifter runs near the end of its window of operation to maintain the existing schedules, it may necessary to perform an off-load phase shift. If an off-load tap change is required, transfers need to be reduced to 150 MW. Once agreement has been reached to proceed with an off-load tap change, curtailment of schedules will be made based on the criteria in the corresponding sink Balance Authority. The sink Balance Authority will adjust the tags as required to reduce the schedule to 150 MW. If ONT is the sink, IESO will determine which schedules (tags) are to be reduced. If MH is the sink, MH will determine which schedules (tags) are to be reduced based on MH Transmission priority. Once the off-load process is complete, the Sink Balance Authority will adjust the tags accordingly.

9.2 MH_ONT_SK1 – 115 kV Radial Line

Line SK1 is a non-synchronous tie line capable of delivering energy to Ontario (the IESO) from generation isolated from Manitoba Hydro's Seven Sisters Generating Station. The existing market rules in the IESO make it impracticable to operate the line as an interconnection facility.

The circuit is normally operated open at the MH-Ontario provincial border and the 115 kV circuit SK1 is limited for use as **backup** for load serving. Manitoba Hydro has customer load at Star lake and Brereton Lake stations and the Ontario IESO has load at Clearwater Bay station.

To transfer the loads to the backup source on line SK1 and return the load to its normal supply requires a customer outage to Manitoba Hydro's Star Lake and Brereton Lake stations or to IESO's Clearwater Bay station.

1. Manitoba Hydro requires a minimum of 24 hours notice to transfer load supply for a planned transfer in order to provide the required notice for the service interruption required at Star Lake and Brereton Lake stations.

2. A transmission service request is not required to transfer either Manitoba Hydro load to the ONT system, or to transfer the ONT load to the Manitoba Hydro system. The energy consumed by the load will be treated as inadvertent energy and settlement will be through the normal inadvertent process.

10 Scheduling

The Manitoba Hydro Scheduling and interchange is controlled by the MHEB System Operator. The Operator uses an electronic scheduler that is driven by the interchange transaction system (E-Tag) specified by NERC. The electronic scheduler screens the tags and creates schedules for the three MHEB interfaces. It has several validations that it uses to ensure each tag follows the various rules for interchange specified by the Canadian Energy board and NERC. Each tag must contain the MW value, a valid MHEB Transmission Service Request, etc. Transmission Service Requests on the MH tariff are entered as to or from BORDER POINTS. For example – MHEB to MHEX (MHEB-MISO is a valid POD). The corresponding MISO tariff reservation has to be entered for the ENTIRE PATH. The coordination agreement between MH and MISO, governs the scheduling of transmission service between the MISO and MH. For the purpose of scheduling energy MHEB is considered within the MISO footprint.

10.1 MISO Real-time Dynamic Dispatchable RDD scheduling

Under MISO Day 2, the generation requirement for the entire MISO footprint is determined every five minutes and MISO will send out generation dispatch signals directly to internal market participants. Manitoba Hydro is considered an external participant and for legal reasons could not participate in this generation dispatch. However a dynamic scheduling system was developed that allows non-MISO entities to participate in the 5 minute market for MISO import only. Real-Time Dynamic Dispatchable Physical Bilateral Transactions are a

special type of dispatchable transaction available only for the MISO Real-Time Energy Market dispatch.

These transactions must adhere to the MISO Real-Time Energy Market guidelines. RDD transactions are not available for curtailment in order to get relief from congestion or from ramp. Other means of curtailment must be found in conjunction with the MISO Reliability Coordinator.

10.2 Transmission Service Needed for Dynamic Schedules

Transmission Customers are required to have arranged transmission service for the use of the system for dynamic schedules. This service used for dynamic schedules can be purchased utilizing the OASIS in the same manner as for transmission service, which will be used via static schedules. Transmission service is needed for the maximum amount of the dynamic schedule that will be used in any hour. Bi-directional services (such as regulation which is expected to flow in both directions) require two reservations (one for the expected utilization amount in each direction). Non-firm transmission service may be used if the dynamic scheduling service is interruptible.

10.3 Scheduling Rules

a) All MHEB transmission service is sold in Eastern Standard Time (EST).

b) When a transaction leaves Canada and enters the United States, an NEB permit number is required in the Contract field on the GCA (Generator Balance Authority) line on the physical path table of the tag. The license number shall be identical as shown on the permit examples are EPE-XXX (there could be 2 to 4 numbers following EPE), EL-XXX or ELO-XXX. The permit is required on all transactions from Canada and wheeling through MHEB into the states.

c) Schedules associated with the sale or purchase of reserves (MS Schedules) must be identified in the contract filed of MHEB TP row in physical path table of the tag. When MHEB is supplying reserves to a MAPP member and is exporting to the United States the MS must follow the NEB number ie. EPE-XXX,MS.

d) MHEB has a physical path to a limited number of MAPP members via MAPP's OTP.WAUE POR/POD. Transactions to directly connected MAPP members will not settle in MISO market provided MHEB.MAPP POR/POD is used for MHEB transmission and the source/sink is not a MISO member.

e) MAPP members islanded inside MISO such as **DPC**, **SMP, RPU** do not have a physical MAPP connection to other MAPP members and MISO drive through transmission service is required. Transactions to islanded MAPP members will settle in the MISO market.

f) **MPC** uses OTP as its balancing authority to schedule hourly transactions and is inaccessible from the MHEB.MAPP interface without going through the MISO market settlement system. Transactions with MPC will settle in the MISO market.

g) WAUE must be a scheduling entity in all transactions using MHEB.MAPP transmission.

h) Wheels through Manitoba - All transactions which source and sink external to MHEB shall have MISO listed as a Transmission Provider before and after MHEB in the physical path table of the tag.

i) A loss calculator is posted on the MHEB OASIS page. Transmission Customers scheduling transmission service through MHEB shall use the loss calculator to determine the loss repayment required. Losses shall appear on the MHEB column of the Energy and Transmission profile table for each hour of the tag.

10.4 Scheduling Validation

The list below describes the automatic validations performed MHEB electronic Scheduler.

a) Energy Profile – checks that the 'Trans' MW is greater than or equal to the 'Gen' MW on the tag.

b) Timing – This checks the Queued Time, Start Time, Stop Time and Preconfirmed parameters match parameters required.

c) Ramp – Checks the ramp duration compares with NERC duration of 10 minutes.

d) Status – Status of the OASIS reservation must be 'Confirmed'.

e) MW – MW may not exceed OASIS reservation.

f) Losses –This check ensures that the hourly losses identified on the tag for transactions that DO NOT source or sink within Manitoba are equal to or greater than 2.333% of the greater of the POR or POD. Losses are rounded up to the nearest MW and collected hourly over the duration of the schedule. Any difference in rounding is carried forward and rounded again, for any remaining hours in the day for which the schedule is in effect. If the hourly or total scheduled losses are not sufficient the tag will fail validation. This method is consistent with the Manitoba Hydro loss calculator posted on the MHEB OASIS site.

g) Customer/TP Owner – The owner of the Midwest ISO transmission on the tag must match the customer on the MHEB OASIS reservation.

h) NERC Priority – NERC Priority on the tag must match the OASIS reservation.

i) Customer Code/PSE – PSE on same row as TP in the physical path match the customer code on the OASIS reservation.

j) POR/POD – POR and POD on the tag must match the OASIS reservation.

k) Recall/Resale – Checks the request type of the OASIS reservation is not a recall or resale reservation.

l) NEB Permit – Tag must contain a valid NEB Permit Number in the contract field on the physical path portion of the tag. The PSE listed on the tag must be a NERC registered PSE affiliated with the entity holding the permit. Tags containing expired permits will be denied.

10.5 Scheduling Examples

10.5.1 Drive-out from MHEB

Transmission reservations are required under both the MHEB and MISO Tariffs.

OASIS Requests		
Field	**MHEB Tariff**	**MISO Tariff**
TP	MHEB	MISO
POR	MHEB-MISO	MHEB
POD	SPC	SPC
Source	*	*
Sink	*	*

* Source & Sink on Transmission Reservation shall match the source and sink on the tag.

When MHEB is the GCA (Generation Balance Authority), MHEB is shown as the first TP (Transmission Provider) and must be shown in the Scheduling Entities column of the MHEB TP line of the physical path table on the tag. MISO is entered as TP and in the Sched Entities column below the MHEB TP line of the physical path table of the tag.

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
MHEB		MHEMA1	MHEB				
	MHEB	MHEMA1	MHEB	SPC	MHEB		
	MISO	MHEMA1	MHEB	SPC	MISO		
	SPC	SPC	MH.230kV	SPC	SPC		
SPC		SPC	SPC				

10.5.2 Drive-In to MHEB

Transmission reservations are required under both the MHEB and MISO Tariffs.

OASIS Requests		
Field	**MHEB Tariff**	**MISO Tariff**
TP	MHEB	MISO
POR	SPC	SPC
POD	MHEB	MHEB
Source	*	*
Sink	*	*

* Source & Sink on Transmission Reservation shall match the source and sink on the tag.

When MHEB is the LCA, MHEB is shown as the last TP and *must* be shown in the Sched Entities column on the MHEB TP line of the physical path table of the tag. MISO is entered as TP and in the Sched Entities column above the MHEB TP line of the physical path table of the tag

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
SPC		SPC	SPC				
	SPC	NRTPNT	IFHS	MH.230	SPC		
	MISO	MHEMA1	SPC	MHEB	MISO		
	MHEB	MHEMA1	SPC	MHEB	MHEB		
MHEB		MHEMA1	MHEB				

10.5.3 Drive-In to MHEB from MAPP

Transmission reservations are required for the MAPP Tariff plus both the MHEB and MISO Tariffs.

- MAPP scheduling entity will be WAUE
- For MAPP transmission the POR = MAPP member (MEC), POD = exits MAPP (WAUE.OTP)
- For MISO transmission the POR = WAUE, POD = MHEB
- For MHEB transmission the POR = MHEB.MAPP, POD = MHEB

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
MEC		MECBUL	MEC.NL34				
	MAPP	MECBUL	MEC	WAUE.OTP	WAUE		
	MISO	MHEMA1	WAUE	MHEB	MISO		
	MHEB	MHEMA1	MHEB.MAPP	MHEB	MHEB		
MHEB		MHEMA1	MHEB				

10.5.4 Drive-within MISO/MHEB Footprint with MHEB as sink

Transmission reservations are required under both the MHEB and MISO Tariffs

OASIS Requests		
Field	**MHEB Tariff**	**MISO Tariff**
TP	MHEB	MISO
POR	MHEB-MISO	OTP
POD	MHEB	MHEB
Source	*	*
Sink	*	*

* Source & Sink on Transmission Reservation shall match the source and sink on the tag.

When MHEB is the LCA, MHEB is shown as the last TP and must be shown in the Sched Entities column on the MHEB TP line. MISO is entered as TP and in the Sched Entities column above the MHEB TP/Scheduling Entity line.

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
MISO		OTPW01	OTP				
	MISO	MHEMA1	OTP	MHEB	MISO		
	MHEB	MHEMA1	MHEB.MISO	MHEB	MHEB		
MHEB		MHEMA1	MHEB				

10.5.5 Drive-through MHEB – Island Falls Agreement

Transmission reservations are required under both the MHEB and MISO Tariffs

Field	MHEB Tariff
TP	MHEB
POR	SPC
POD	SPC
Source	*
Sink	*

* Source & Sink on Transmission Reservation shall match the source and sink on the tag.

This agreement falls under grandfathered provision thus no MISO transmission or losses are required on the tag. To accommodate this, include the following;

- MISO must appear as a transmission provider in the transmission path as in the physical path below.
- The pseudo TSR number "MISO S/A" must be included in the transmission profile.

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
SPC		NRPTRT(1)	Source:	SPC			
	MISO	SPC	SPC	MHEB	MISO		
	MHEB	MHEB	SPC	SPC	MHEB		
	MISO	SPC	MHEB	SPC	MISO		
	SPC	SPC	MH.230	SPC	SPC		
SPC		SPC	Sink:	SPC			

10.5.6 SPC Drive-In MHEB/MISO Footprint - Wheel for MHEB

Transmission reservations are required under both the MHEB and MISO Tariffs

OASIS requests		
Field	**MHEB Tariff**	**MISO Tariff**
TP	MHEB	MISO
POR	SPC	SPC
POD	MHEB.MISO	OTP
Source	*	*
Sink	*	*

* Source & Sink on Transmission Reservation shall match the source and sink on the tag.

When the transaction is a wheel for MHEB – MISO must be listed as a TP before and after MHEB in the physical path table of the tag.

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
SPC		NRPTRT	SPC			EPE-XX	
	SPC	NRPTRT	QEPS	MH.230	SPC		
	MISO	NRPTRT	SPC	OTP	MISO		
	MHEB	OTPW01	SPC	MHEB.MISO	MHEB		
	MISO	OTPW01	SPC	OTP	MISO		
MISO		OTPW01	OTP				

10.5.7 SPC Drive-Out MHEB/MISO Footprint - Wheel for MHEB

Transmission reservations are required under both the MHEB and MISO Tariffs

OASIS requests		
Field	**MHEB Tariff**	**MISO Tariff**
TP	MHEB	MISO
POR	MHEB.MISO	OTP
POD	SPC	SPC
Source	*	*
Sink	*	*

* Source & Sink on Transmission Reservation shall match the source and sink on the tag.

When the transaction is a wheel for MHEB – MISO must be listed as a TP before and after MHEB in the physical path table of the tag.

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
MISO		OTPW01	OTP				
	MISO	NRPTRT	OTP	SPC	MISO		
	MHEB	NRPTRT	MHEB.MISO	SPC	MHEB		
	MISO	NRPTRT	OTP	SPC	MISO		
	SPC	NRPTRT	MH.230	SPC	SPC		
SPC		NRPTRT	SPC				

10.5.8 Drive-Through - Wheel for MHEB

Transmission reservations are required under both the MHEB and MISO Tariffs

OASIS Requests		
Field	**MHEB Tariff**	**MISO Tariff**
TP	MHEB	MISO
POR	SPC	SPC
POD	MHEB.IMO	MHEB.ONT
Source	*	*
Sink	*	*

* Source & Sink on Transmission Reservation shall match the source and sink on the tag.

When the transaction is a wheel for MHEB and MISO transmission is used, MISO must come before and after MHEB transmission.

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
SPC		NRPTRT	SPC				
	SPC	NRPTRT	QEPS	MH.230	SPC		
	MISO	NRPTRT	SPC	MH-ONT	MISO		
	MHEB	NRPTRT	SPC	MH-IMO	MHEB		
	MISO	NRPTRT	SPC	MHEB.ONT	MISO		
ONT		ONT	MHEB.ONT				

10.5.9 ONT Drive-In MHEB/MISO Footprint - Wheel for MHEB

Transmission reservations are required under both the MHEB and MISO Tariffs

OASIS requests		
Field	**MHEB Tariff**	**MISO Tariff**
TP	MHEB	MISO
POR	IMO	MH-IMO
POD	MHEB.MISO	MISO
Source	*	*
Sink	*	*

* POR/POD as well as Source & Sink on the MHEB Transmission Reservation shall match the source and sink on the MHEB TP row of the physical path portion of the tag.

When the transaction is a wheel for MHEB – MISO must be listed as a TP & SE before and after MHEB in the physical path table of the tag.

The MISO POR MH-IMO can be on the tag only once. MH-IMO indicates the phase shifter on the ONT (IMO) interface. If it were on the tag more than once it would double the energy MW value of the tag from MISO's perspective.

Losses must be entered on the MHEB line only.

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
ONT		IMO	IMO			EPE-XX	
	IMO	IMO	IMO	IMO.Whiteshell	IMO		
	MISO	IMO	MH-IMO	MHEB	MISO		
	MHEB	IMO	IMO	MHEB.MISO	MHEB		
	MISO	IMO	MHEB	MISO	MISO		
MISO		MISO	MISO				

10.5.10 Serving MHEB or SPC Separated Load

- MHEB and SPC have a grandfathered reciprocal agreement to waive transmission charges when serving separated load. A dynamic tag will be created using the estimated MW of separated load. After the fact tie line digital values shall be entered in the schedule. A dedicated reservation has been created to serve separated load see section 8.2

Example – SPC load separated onto MHEB Facilities

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
MHEB		MHEMA1	MHEB				
	MHEB	SPC	MHEB	SPC	MHEB		
	MISO	SPC	MHEB	SPC	MISO		
	SPC	SPC	MH.230kV	SPC	SPC		
SPC		SPC	SPC				

Example – MHEB load seperated onto SPC facilities

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
SPC		SPC	SPC				
	SPC	MHEMA1	SPC	MHEB.230	SPC		
	MISO	MHEMA1	SPC	MHEB	MISO		
	MHEB	MHEMA1	SPC	MHEB	MHEB		
MHEB		MHEMA1	MHEB				

10.5.11 MISO Spot Market – Source in MHEB

A Transmission reservation is required under the MHEB Tariff, and a spot market reservation is required from MISO.

OASIS Requests		
Field	**MHEB Tariff**	**MISO Tariff**
TP	MHEB	MISO
POR	MHEB	MHEB-MISO
POD	MHEB-MISO	MHEB-MISO
Source	*	*
Sink	*	*

* Source & Sink on Transmission Reservation shall match the source and sink on the tag.

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
MHEB		MHEMA1	MHEB				
	MHEB	MHEMA1	MHEB	MHEB.MISO	MHEB	EPE-XX	
	MISO	MHEMA1	MHEB	MISO	MISO		
MISO		MISO	MISO				

10.5.12MISO Real-time Dynamic Dispatchable scheduling

A Transmission reservation is required under the MHEB Tariff, and a spot market reservation is required from MISO. The Interface point is DYN (MHEB_DYN). Limit of one tag per hour.

OASIS Requests		
Field	**MHEB Tariff**	**MISO Tariff**
TP	MHEB	MISO
POR	MHEB	MHEB-MISO
POD	MHEB-MISO	MHEB-MISO
Source	*	*
Sink	*	*

* Source & Sink on Transmission Reservation shall match the source and sink on the tag.

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
MHEB		MHEMA1	MHEB_DYN			EPE-XX	
	MHEB	MHEMA1	MHEB	MHEB.MISO	MHEB		
	MISO	MHEMA1	MHEB	MISO	MISO		
MISO		MISO	MISO				

10.5.13MISO Spot Market – Source External to MHEB

Three Transmission reservations are required under the MHEB Tariff, the MISO tariff and a spot market reservation is required from MISO

The MISO TSR will be the first MISO transmission listed on the tag, followed by the MHEB TSR, followed by the 2nd MISO Spot TSR.

OASIS Requests		
Field	**MHEB Tariff**	**MISO Tariff**
TP	MHEB	MISO
POR	MHEB	MHEB-MISO
POD	MHEB-MISO	MHEB-MISO
Source	*	*
Sink	*	*

* Source & Sink on Transmission Reservation shall match the source and sink on the tag.

When the transaction is a wheel for MHEB – MISO must be listed as a TP before and after MHEB in the physical path table of the tag.

Physical Path							
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value**
SPC							
	SPC		SPC	MHEB	SPC		
	MISO		SPC	MISO	MISO		
	MHEB		SPC	MHEB.MISO	MHEB		
	MISO		SPC	MISO	MISO		
MISO			MISO				

10.5.14MHEB Drive In to MAPP

For transactions to qualifying MAPP members the following rules apply to ensure schedules do not enter the MISO market settlement system.

- For MHEB transmission the POR = MHEB, POD = MHEB.MAPP
- For MISO transmission the POR = MHEB, POD = WAUE
- For MAPP transmission the POR = WAUE.OTP, POD = delivery point in MAPP
- MAPP scheduling entity will be WAUE only

Physical Path						
CA	**TP**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc**
MHEB		**Source:** MHEB			EPE-XXX	
	MHEB	MHEB	MHEB.MAPP	MHEB		
	MISO	MHEB	WAUE	MISO		
	MAPP	WAUE.OTP	OAHE	WAUE		
WAUE		**Sink:** WAPA				

Physical Path						
CA	**TP**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc**
MHEB		**Source:** MHEB			EPE-XXX	
	MHEB	MHEB	MHEB.MAPP	MHEB		
	MISO	MHEB	WAUE	MISO		
	MAPP	WAUE.OTP	FTCALHOUN1	WAUE		
OPPD		**Sink:** FTCALHOUN1				

Physical Path						
CA	**TP**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc**
MHEB		**Source:** MHEB			EPE-XXX	
	MHEB	MHEB	MHEB.MAPP	MHEB		
	MISO	MHEB	WAUE	MISO		
	MAPP	WAUE.OTP	GENTLEMAN	WAUE		
NPPD		**Sink:** NPPD				

Physical Path						
CA	**TP**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc**
MHEB		**Source:** MHEB			EPE-XXX	
	MHEB	MHEB	MHEB.MAPP	MHEB		
	MISO	MHEB	WAUE	MISO		
	MAPP	WAUE.OTP	NEAL34	WAUE		
MEC		**Sink:** MEC				

Physical Path						
CA	**TP**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc**
MHEB		**Source:** MHEB			EPE-XXX	
	MHEB	MHEB	MHEB.MAPP	MHEB		
	MISO	MHEB	WAUE	MISO		
	MAPP	WAUE.OTP	LINCOLNGEN	WAUE		
LES		**Sink:** LES				

10.5.15MHEB Drive Through MAPP

For transactions that drive through MAPP (and do not sink in MISO) the following rules apply to ensure that schedules do not enter the MISO market settlement system.

- For MHEB transmission the POR = MHEB, POD = MHEB.MAPP
- For MISO transmission the POR = MHEB, POD = WAUE
- For MAPP transmission the POR = WAUE.OTP, POD = MAPP border point
- MAPP scheduling entities will be WAUE (enters MAPP) and ____ (exits MAPP)

MHEB to SPP (not in the MISO market)

Physical Path						
CA	**TP**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc**
MHEB		**Source:** MHEB			EPE-XXX	
	MHEB	MHEB	MHEB.MAPP	MHEB		
	MISO	MHEB	WAUE	MISO		
	MAPP	WAUE.OTP	SECI.WR	WAUE, SECI		
	SWPP	SECI	WR	SWPP		
WR		**Sink:** WR				

MHEB to MAIN (not in the MISO market)

Physical Path						
CA	**TP**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc**
MHEB		**Source:** MHEB			EPE-XXX	
	MHEB	MHEB	MHEB.MAPP	MHEB		
	MISO	MHEB	WAUE	MISO		
	MAPP	WAUE.OTP	MEC.CE	WAUE, MEC		
	PJM	MEC	PJM			
PJM		**Sink:** pjmsysload				

MHEB to WECC (not in the MISO market)

Physical Path						
CA	**TP**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc**
MHEB		**Source:** MHEB			EPE-XXX	
	MHEB	MHEB	MHEB.MAPP	MHEB		
	MISO	MHEB	WAUE	MISO		
	MAPP	WAUE.OTP	NPPD.WACM	WAUE, NPPD		
	LAPT	NPPD.WACM	SCSW	WACM		
	PSCO	SCSW	NYUM	WACM		
	TSGT	NYUM	STY	WACM		
	PSCO	STY	PSCO	PSCO		
PSCO		**Sink:** PSCM				

10.5.16MHEB Drive In to MISO through MAPP

For transactions that drive through MAPP (and do sink in the MISO market) the following rules apply to ensure that schedules do enter the MISO market settlement system.

- For MHEB transmission the POR = MHEB, POD = MHEB.MAPP
- For MISO transmission the POR = MHEB, POD = MISO
- For MAPP transmission the POR = MPC.OTP, POD = MTC.OTP
- MAPP scheduling entity will be WAUE

Physical Path						
CA	**TP**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc**
MHEB		**Source:** MHEB			EPE-XXX	
	MHEB	MHEB	MHEB.MAPP	MHEB		
	MISO	MHEB	MISO	MISO		
	MAPP	MPC.OTP	MPC.OTP	WAUE		
	MISO	MHEB	MISO	MISO		
MISO		**Sink:** MISO				

10.5.17MHEB Drive in to MAPP Island

For transactions with MAPP islanded members the following rules apply to ensure that schedules do enter the MISO market settlement system.

- For MHEB transmission the POR = MHEB, POD = MHEB.MISO
- For MISO transmission the POR = MHEB, POD = (Islanded MAPP, ie. DPC, SMP)
- For MAPP transmission the POR = MPC.OTP, POD = _____ of Islanded Member
- MAPP scheduling entity will be WAUE

Physical Path						
CA	**TP**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc**
MHEB		**Source:** MHEB			EPE-XXX	
	MHEB	MHEB	MHEB.MISO	MHEB		
	MISO	MHEB	DPC	MISO		
	MAPP	MPC.OTP	GENOA	WAUE		
	MISO	MHEB	DPC	MISO		
MISO		**Sink:** DPC				

Physical Path						
CA	**TP**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc**
MHEB		**Source:** MHEB			EPE-XXX	
	MHEB	MHEB	MHEB.MISO	MHEB		
	MISO	MHEB	SMP	MISO		
	MAPP	OTP.MPC	CASCADECREEK	WAUE		
	MISO	MHEB	SMP	MISO		
MISO		**Sink:** SMP				

10.5.18 Wheel through MHEB and MAPP into MISO

For transactions that drive through MHEB and MAPP (and do sink in the MISO market) the following rules apply to ensure that schedules do enter the MISO market settlement system.

- First Line shall designate the incoming transmission POR & POD & Scheduling entity
- For MHEB transmission the POR = SPC, POD = MHEB.MAPP
- For MISO transmission the POR = SPC, POD = MISO
- For MAPP transmission the POR = MPC.OTP, POD = MTC.OTP
- MAPP scheduling entity will be WAUE

Physical Path						
CA	**TP**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc**
SPC		**Source:** SPC			EPE-XXX	
	SPC	NIHS	MH.230	SPC		
	MISO	SPC	MHEB	MISO		
	MHEB	SPC	MHEB.MAPP	MHEB		
	MISO	SPC	MISO	MISO		
	MAPP	MPC.OTP	MPC.OTP	WAUE		
	MISO	SPC	MISO	MISO		
MISO		**Sink:** MISO				