Manitoba Hydro

Open Access Transmission Tariff Business Practices

Version 21

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Document Change History

Issue	Reason for Issue	Date
13	Added Tagging Examples for the MAPP interface	2005 08 10
14	Revised MH IESO section to clarify interface operations.	2005 08 18
15	Revised MH IESO section to clarify interface operations. Added section on dynamic schedules. Added section for MISO RDD. Added section for serving separate loads. Revised SPC separate loads. Revised release of TRM section. Added Scheduling section. Moved Scheduling examples to this section. Added RDD, IESO wheel and Separated load scheduling examples. Added ATC calculation examples.	2005 10 21
16	Included MISO TSR in SPC separated load.	2005 11 29
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

TABLE OF CONTENTS

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 Reserving Transmission Service

4.1 Transmission Reservations for Point to Point or Network 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) all year. Transmission Service is sold in EST 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.

4.2 MISO Spot Market Transmission Reservation

MISO's 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

4.3 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: MHEB-MISO

USA: MHEB-MAPP

Ontario: MH-IESO

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 service types, 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.

4.4 Transmission Service Reservation Evaluation

Manitoba Hydro and MISO have developed a webtool to calculate the ATC on the Manitoba Hydro interfaces (MHEX, IESO, and SPC). The link to the webtool is posted on Manitoba Hydro OASIS and is entitled **MHEB ATC Posting.**

The MHEB ATC webtool has three data inputs

- Input 1 – TTC, TRM and TRM coefficient
- Input 2 - Is a set of six queries of the OASIS database for firm & non-firm transmission reservations
- Input 3 - Is a query of the scheduling database for schedules

The Queries begin at 15 minutes past the hour and are finished at 23 minutes past the hour. A new spreadsheet is produced each hour at MISO. 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 webtool 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.

MISO Tariff Administration Staff have procedures in place to manually track transmission service that is sold between updates, thus the actual ATC may vary from the value posted on OASIS. Transmission Customers may have their Transmission Service request denied, even though ATC appears to be available on OASIS, if Transmission Service is sold that reduces the ATC to zero prior to the next OASIS update.

Webtool NON-FIRM ATC Calculations

The MHEB spreadsheet calculates **NON-FIRM ATC** for all interfaces using the two formulas: The formula used is dependent upon the time of day.

a) Formula I is used for same day release of non-firm ATC
b) Formula II is used if the time of day is less than 1500 hours to release unscheduled Transmission service for the next 24 hour period beginning at 0000 hours.
c) Formula I is used after 1500 hours to release unscheduled firm transmission service for the remaining hours of today and for the next 24 hour period beginning at 0000 hours. After, 1500 hours all reservations are replaced with schedules, the default schedule is 00 MW.
d) Formula III is used in all other periods.

The net effect of the formulas is that transmission customers have until 1500 hours to schedule on their transmission reservations. If the reservation is not scheduled upon the capacity is released back into the market as non-firm transmission service. This is in accordance with attachment J of the MHEB tariff.

Formula I

Non Firm ATC = TTC – (TRM * COEF) – (sum of MW from all firm schedules) - (sum of non-firm reservations, using scheduled MW if available, else using reservation MW)

Formula II

Non Firm ATC = TTC – (TRM * COEF) – (sum of firm reservations, using scheduled MW if available, else using reservation MW) – (sum of non-firm reservations, using scheduled MW if available, else using reservation MW)

Formula III

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

Note: The formulas vary slightly when calculating ATC for the MHEX_NORTH interface due to the utilization of counter flows. The counter flows are IMPLEMENTED schedules flowing south from

MHEB to the U.S. The counter flows are not to exceed 200 MW and only apply from the current time until the next day at midnight.

Webtool FIRM ATC Calculations

Firm ATC = TTC – (TRM * COEF) - (sum of MW from all confirmed firm reservations)

Note: Since renewals are not confirmed reservations, the Webtool does not decrement ATC for pending Transmission Service Request rollovers.

Example Webtool ATC Calculations

Example 1 – Interface Firm / non-firm Reservations and Schedules remain the constant to illustrate the available ATC with time.

Interface A **Time of day = 00:00**

Day	Time Point	TTC	TRM	COEF	Reservation	Schedule	Reservation	Schedule	Firm ATC	Non-Firm ATC
					Firm	Firm	non-firm	non-firm		
1	00:00-15:00	1000	100	0.5	900	500	200	100	50	350 formula I
1	15:00 - 24:00	1000	100	0.5	900	500	200	100	50	350 formula I
2	00:00 - 24:00	1000	100	0.5	900	500	200	100	50	350 formula II
3	00:00 - 24:00	1000	100	0.5	900	500	200	100	50	-150 formula III

Interface A **Time of day = 15:00**

Day	Time Point	TTC	TRM	COEF	Reservation	Schedule	Reservation	Schedule	Firm ATC	Non-Firm ATC
					Firm	Firm	non-firm	non-firm		
1	15:00 - 24:00	1000	100	0.5	900	500	100	50	50	400 formula II
2	00:00 - 24:00	1000	100	0.5	900	500	100	50	50	400 formula II
3	00:00 - 24:00	1000	100	0.5	900	500	100	50	50	-50 formula III

Example 2 - Interface Firm / non-firm Reservations and Schedules differ to illustrate changing available ATC with the different formulas

		Interface A		Time of day = 00:00						
Day	Time Point	TTC	TRM	COEF	Reservation	Schedule	Reservation	Schedule	Firm ATC	Non-Firm ATC
					Firm	Firm	non-firm	non-firm		
1	00:00-15:00	1000	100	0.5	900	900	50	0	50	0 formula I
1	15:00 - 24:00	1000	100	0.5	900	100	50	10	50	840 formula I
2	00:00 - 24:00	1000	100	0.5	400	50	400	0	550	500 formula II
3	00:00 - 24:00	1000	100	0.5	900	0	0	0	50	50 formula III

		Interface A		Time of day = 15:00						
Day	Time Point	TTC	TRM	COEF	Reservation	Schedule	Reservation	Schedule	Firm ATC	Non-Firm ATC
					Firm	Firm	non-firm	non-firm		
1	15:00 - 24:00	1000	100	0.5	900	900	50	10	50	40 formula II
2	00:00 - 24:00	1000	100	0.5	800	500	100	0	150	350 formula II
3	00:00 - 24:00	1000	100	0.5	800	50	50	10	150	100 formula III

4.5 Transmission Line Outages and Transmission Service Requests

The available AFC for a rolling twelve month period will be decremented by planned transmission outages. This may result in a transmission request failing evaluation and being denied due to reduced AFC for the period of the line outage.

If a transmission service request fails the evaluation process, MISO will check the planned outage schedule and determine if the request failed due to insufficient AFC as a result of a planned transmission line outage. Upon determination that the request failed due to a planned

outage MISO will use the following criteria to allow the transmission customer the option of accepting restricted transmission service:

a) Weekly firm service request that fails for any day - The transmission service request will be denied and the transmission customer may submit a request for daily service.

b) Monthly or Long Term firm service request that fails for 2 or less consecutive days in any one month: The transmission customer will be contacted and offered the option of accepting partial service by profiling the request to match available AFC, or in the event that AFC is negative, profiling the request to zero for the line outage period.

4.6 Processing Transmission Service Requests

Manitoba Hydro has contracted out the administration of transmission reservations to MISO. Transmission requests less than one week will be processed by MISO utilizing ATC values in the scheduling horizon. Transmission requests greater than one week will be processed depending upon the contract path.

For Transmission service requests greater than one week, 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 IESO, SPC to MHEB, or SPC to IESO through MHEB):

a) MISO will notify Manitoba Hydro of the firm request.

b) Manitoba Hydro staff will contact the transmission customer and process/evaluate the request and administer the system impact & facilities studies as outlined in attachment D of the Manitoba Hydro OATT tariff.

c) Following the evaluation, Manitoba Hydro staff will notify MISO of the evaluation results.

d) MISO staff will make the necessary updates on MISO/MHEB OASIS.

For transmission service requests greater than one week, where the source/sink is in Manitoba or Manitoba is on the contract path to a source/sink outside the MISO zone (i.e. IESO 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 IESO through MHEB, MHEB to NSP, or MEC to MHEB through MISO:

a) MISO will review the requests for service. Following a preliminary review MISO will notify MHEB if the requests should be accepted, refused or if additional studies are required.

b) If additional studies are required Manitoba Hydro and MISO will perform studies with separate study agreements for each portion of the contract path.

c) MISO will be responsible for administering the correspondence between the transmission customer, MISO and Manitoba Hydro.

d) Manitoba Hydro staff will forward agreements for system impact & facilities studies as outlined in attachment D of the Manitoba Hydro OATT tariff for the Manitoba portion of the contract path to MISO.

e) MISO will forward both the MHEB/MISO system impact/facility study agreements to the customer at the same time and administer the study processes between MISO and Manitoba Hydro.

f) Following completion of the studies. MISO will forward the completed MHEB studies & MISO studies to the transmission customer.

g) MISO will process the request, and upon completion of the studies require execution of a MISO Specification Sheet and Designated Network Resource form for the MISO portion of the contract path.

h) Both MISO and Manitoba Hydro must approve the request under their respective tariffs.

i) MISO staff will make the necessary updates on MISO/MHEB OASIS.

4.7 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.

4.8 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.

4.9 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 utility no transmission service is required. Manitoba Hydro will wheel energy through the MISO transmission to serve Manitoba Hydro load at no charge.

MISO load separated onto Manitoba Hydro no transmission service is required. MISO will wheel energy through the Manitoba Hydro Transmission system to serve MISO load at no charge.

Transmission Service for separated load on the SPC interface falls under a grand fathered agreement; see section 6.0 for Transmission Service Reservation numbers and details.

4.10 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.

5 Manitoba – USA Interface

5.1 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://laws.justice.gc.ca/en/N-7/index.html

5.2 MHEX Counter flow

To make additional ATC available on MHEX_N interface, Manitoba Hydro 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 OASIS Webtool will automatically release TRM on the MHEX_N interface for the next hourly update.

5.3 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 outlined in operating guides and posted on OASIS.

MHEB calculates the portion of transmission required to honour the Midwest CRSG. To ensure this Transmission is available, the transmission required is included in the TRM and is not released on the MHEX_S interface ATC. Details for the use and application of Contingency Reserves relative to the Midwest CRSG can be found in the Midwest CSRG Operating Protocols document.

The MHEX interface is divided into the MHEX_MISO and the MHEX_MAPP interfaces. When MHEB calls for Contingency Reserves, the Transmission required on the MHEX_N interface is;

(i) MHEX_MISO_N when the Contingency Reserves are supplied from MISO market entities.
(ii) MHEX_MAPP_N when the Contingency Reserves are supplied from MAPP Schedule F entities.

When another member of the CRSG calls for Contingency Reserves, the Transmission required on the MHEX_S interface is;

(iii) MHEX_MISO_S when the Contingency Reserves are supplied to MISO market entities up to 60 MW. When the Transmission required exceeds 60 MW, the remaining Transmission shall be purchased from MAPP on the MHEX_MAPP_S interface.
(iv) MHEX_MAPP_S when the Contingency Reserves are supplied to MAPP Schedule F entities up to 53 MW. When the Transmission required exceeds 53 MW, the remaining Transmission shall be purchased from MISO on the MHEX_MISO_S interface.

5.4 Transfer of Contingency Reserve Obligation

Transmission customers are permitted to designate a specific transmission service request (or a portion thereof) in order to supply the Midwest "CRSG" Contingency Reserve Sharing Group (formerly the MAPP Generation Reserve Sharing Pool (GRSP)) obligation on behalf of another CRSG member.

In order to reserve transmission to supply a CRSG obligation for another member, a specific transmission service request (or a portion thereof) must be designated to reserve the transmission for the additional CRSG obligation. The amount of transmission designated by the transmission customer will be transferred to the TRM posting component and as a result will not be released to the non firm market.

a) A transmission customer holding a firm transmission service request and wishing to designate the entire request (or a portion thereof) for exclusive supply of a Midwest CRSG obligation must contact MHEB Transmission Tariff Administration staff and identify the transmission service request to be designated for supplying the Midwest CRSG obligation, the associated member of the CRSG that the obligation is for, the amount of the designation, start date, and end date.

b) MHEB Tariff Administration staff will verify the transmission service request eligibility for the requested designation and notify the transmission customer of eligibility.

c) The transmission customer must apply for relocation of Midwest CRSG (formerly called MAPP Schedule D) approval as per the Midwest CRSG Operating Protocols.

d) MHEB Transmission Tariff Administration staff will notify Midwest CRSG Group Administrator identifying the transmission service request and designated amount to serve the CRSG obligation.

e) The Midwest CRSG Group Administrator will request all applicable Transmission Service Providers to review the impact on TRM. If the request for relocation of Midwest CRSG reserves is approved, MHEB Tariff Administration staff will notify MISO Carmel Tariff administration staff to prohibit releasing the designated amount to serve the CRSG obligation to the non firm market for the duration of the approved Midwest CRSG relocation.

f) The Transmission Customer will not be eligible to change the terms of the reservation, or schedule transactions other than the CRSG obligation on the designated Midwest CRSG portion of transmission service request for the duration that the associated Midwest CRSG relocation is in affect.

5.5 Release of TRM on MHEX_N

Manitoba Hydro's system is comprised of primarily hydraulic generation and although there are sufficient reserves at all times, under certain water conditions, the equivalent energy may not be available 24 hours per day. As a result, Manitoba Hydro often imports energy to permit re-ponding of the reservoirs. Manitoba Hydro will determine how much and when to self-supply reserves and not rely on the Midwest CRSG for reserves. Manitoba Hydro will then release transmission capability to the non-firm market equivalent to the amount of reserves that are self-supplied.

The Midwest CRSG is part of the TRM, therefore a portion of the TRM is released. The portion of the TRM is released daily at midnight for the next seven days out. Once the TRM is released, the available ATC on MHEX_N will be updated and posted on OASIS via the webtool.

5.6 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.

5.7 Processing TSRs on MHEX_S Interface

The MHEX_S interface is comprised of two interfaces MHEX_MISO_S plus MHEX_MAPP_S. The available transmission on each interface is determined by the amount of transmission investment made by MISO utilities and MAPP utilities.

Processing Non-Firm TSRs

a. MISO shall independently process all daily Non-Firm TSRs without consultation with MHEB transmission. Daily Non-Firm is released one day at a time, one week in advance.

b. Non-Firm Transmission service requests greater then one week in duration shall not be approved without consultation with MHEB transmission services

department, unless the TSR is a redirect from a Confirmed Firm p-t-p TSR already decrementing AFCs

c. If the MHEB TSR has a POD of MHEB-MISO or NSP

i. MISO Tariff Administrator shall use the MHEX_MISO_S tab on the MHEB webtool to determine if there is sufficient Non-Firm AFC for the period requested.

ii. If there is sufficient Non-Firm AFC on MHEX_MISO_S tab, the MISO Tariff Administrator shall then check MHEX_S tab to determine if there is sufficient Non-Firm AFC for the period requested. MISO Tariff Administrator will then approve the request if the Non-Firm AFC is sufficient on MHEX_S.

iii. If the Non-Firm AFC is insufficient the Tariff Administrator shall refuse the request. Comments shall be - **STUDY: Non-Firm Constraints are over limit; Non-Firm Constraints: MHEX_MISO_S or MHEX_S; Suggest customer resubmit with MHEB-MAPP POD if MAPP transmission is available**

d. If the MHEB TSR has a POD of MHEB-MAPP

i. MISO Tariff Administrator shall use the MHEX_MAPP_S tab on the MHEB webtool to determine if there is sufficient Non-Firm AFC for the period requested.

ii. If there is sufficient Non-Firm AFC on MHEX_MAPP_S tab, the MISO Tariff Administrator shall then check MHEX_S tab to determine if there is sufficient Non-Firm AFC for the period requested. MISO Tariff Administrator will then approve the request if the Non-Firm AFC is sufficient on MHEX_S.

iii. If the Non-Firm AFC is insufficient the Tariff Administrator shall refuse the request. Comments shall be - **STUDY: Non-Firm Constraints are over limit; Non-Firm Constraints: MHEX_MAPP_S or MHEX_S**

Processing Firm TSRs

Note: Parties processing transmission service requests shall be aware that the webtool does not decrement ATC for renewal TSRs currently in study mode. All current long-term firm TSRs on the MHEB interface currently terminate either on April 30th or October 31st of each year.

a. MISO shall independently processes all daily, weekly Firm TSRs without consultation with MHEB transmission.

b. Firm Transmission service requests greater then one week in duration shall not be approved without consultation with MHEB transmission services department, unless the TSR is a redirect from a Confirmed firm p-t-p TSR already decrementing AFCs

c. If the MHEB TSR has a POD of MHEB-MISO or NSP

i. MISO Tariff Administrator shall use the MHEX_MISO_S tab on the MHEB webtool to determine if there is sufficient Firm AFC for the period requested.

ii. If there is sufficient Firm AFC on MHEX_MISO_S tab, the MISO Tariff Administrator shall then check MHEX_S tab to determine if there is sufficient Firm AFC for the period requested and approve the request if the Firm AFC is sufficient on MHEX_S.

iii. If the Firm AFC is insufficient the Tariff Administrator shall refuse the request. Comments shall be - **STUDY: Firm Constraints are over limit; Firm Constraints: MHEX_MISO_S or MHEX_S; Suggest customer resubmit with MHEB-MAPP POD if MAPP transmission is available**

d. If the MHEB TSR has a POD of MHEB-MAPP

i. MISO Tariff Administrator shall use the MHEX_MAPP_S tab on the MHEB webtool to determine if there is sufficient Firm AFC for the period requested.

ii. If there is sufficient Firm AFC on MHEX_MAPP_S tab, the MISO Tariff Administrator shall then check MHEX_S tab to determine if there is sufficient Firm AFC for the period requested and approve the request if the Firm AFC is sufficient on MHEX_S.

iii. If the Firm AFC is insufficient the Tariff Administrator shall refuse the request. Comments shall be - **STUDY: Firm Constraints are over limit; Firm Constraints: MHEX_MAPP_S or MHEX_S**

5.8 Processing TSRs on MHEX_N Interface

The MHEX_N interface is comprised of two interfaces MHEX_MISO_N plus MHEX_MAPP_N. Until further notice, no transmission will be released on the MHEX_MAPP_N interface. Transmission Service requests with a POR of MHEX_MAPP_N or MHEX_MISO_N shall be evaluated against MHEX_N tab.

Processing Non-Firm TSRs

a. MISO shall independently process all daily Non-Firm TSRs without consultation with MHEB transmission. Daily Non-Firm is released one day at a time, one week in advance.

b. Non-Firm Transmission service requests greater then one week in duration shall not be approved without consultation with MHEB transmission services department, unless the TSR is a redirect from a Confirmed Firm p-t-p TSR already decrementing AFCs

c. To approve Non-Firm Transmission service requests, the MISO Tariff Administrator shall use the MHEX_N tab on the MHEB Webtool to determine if there is sufficient Non-Firm AFC for the period requested.

Processing Firm TSRs

a. MISO shall independently processes all daily, weekly Firm TSRs without consultation with MHEB transmission.

b. Firm Transmission service requests greater then one week in duration shall not be approved without consultation with MHEB transmission services department, unless the TSR is a redirect from a Confirmed firm p-t-p TSR already decrementing AFCs

c. To approve Firm Transmission service requests, the MISO Tariff Administrator shall use the MHEX_N tab on the MHEB Webtool to determine if there is sufficient Firm AFC for the period requested.

6 Manitoba – Saskatchewan Interface

6.1 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.

6.2 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 Saskatchewan resources or Saskatchewan load becomes separated from the Saskatchewan transmission system and the load is served by Manitoba resources.

Transferred loads can be served by resources from the system the load is connected to, resources of the system responsible for the load by creating a separate schedule to the system supplying the load or a separate transaction from a third party.

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

6.2.1 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.

SaskPower have 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.

Manitoba Hydro has created a transmission reservation on the MHEB MISO 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.

6.3 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 MHEB/MISO OASIS site and conditions in Saskatchewan impact the ATC posting on the SaskPower OASIS site.

6.3.1 Curtailment Criteria:

A. 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.

B. Reallocation

a) If a tag is received that exceeds the Manitoba Hydro posted ATC for the SP/MH interface, the IDC 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 IDC 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 IDC 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

6.4 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.

6.4.1 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.

6.4.2 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.

6.4.3 Limitations:

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

6.4.4 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: Chris Mickey Phone: (204) 487-5349 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	

7 Manitoba - Ontario Interface

7.1 General - MH_IESO_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_IESO_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 IESO is the sink, IESO will decide which schedules to curtail.

Off-Load Phase Shifter
The MH_IESO 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 IESO 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.

7.2 MH_IESO_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 IESO system, or to transfer the IESO 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.

8 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 MHEB-MISO. 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.

8.1 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.

The RDD tags will be a dynamic schedule. For more information see section for "Transmission Service Needed for Dynamic Schedules".

8.2 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.

8.3 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.

8.4 Scheduling Examples

8.4.1 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				

8.4.2 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				

8.4.3 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				

8.4.4 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				

8.4.5 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			

8.4.6 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				

8.4.7 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				

8.4.8 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.IESO	MHEB.IESO
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-IESO	MISO		
	MHEB	NRPTRT	SPC	MH-IESO	MHEB		
	MISO	NRPTRT	SPC	MHEB.IESO	MISO		
IESO		IESO	MHEB.IESO				

8.4.9 IESO 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	IESO	MH-IESO
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-IESO can be on the tag only once. MH-IESO indicates the phase shifter on the IESO 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**
IESO		IESO	IESO			EPE-XX	
	IESO	IESO	IESO	IESO.Whiteshell	IESO		
	MISO	IESO	MH-IESO	MHEB	MISO		
	MHEB	IESO	IESO	MHEB.MISO	MHEB		
	MISO	IESO	MHEB	MISO	MISO		
MISO		MISO	MISO				

8.4.10 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 6.2

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				

8.4.11 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				

8.4.12 MISO 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				

8.4.13 MISO 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				

8.4.14 MHEB 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				

8.4.15 MHEB 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				

8.4.16 MHEB 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				

8.4.17 MHEB 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				

8.4.18 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				