



Working to Perfect the Flow of Energy

PJM Manual 41

Managing Interchange

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Prepared by
System Operation Division

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PJM Manual 41

Managing Interchange

Table of Contents

TABLE OF CONTENTS	II
TABLE OF EXHIBITS	III
APPROVAL	4
CURRENT REVISION	4
INTRODUCTION	2
ABOUT PJM MANUALS	2
ABOUT THIS MANUAL	2
<i>Intended Audience</i>	2
<i>References</i>	2
USING THIS MANUAL	3
<i>What You Will Find In This Manual</i>	3
SECTION 1: SCHEDULING INTERCHANGE	4
OVERVIEW OF INTERCHANGE SCHEDULING	4
EXTERNAL TRANSACTION SCHEDULING BUSINESS RULES	5
<i>PJM Contact Information</i>	5
<i>External Transaction Minimum Duration Requirement</i>	5
<i>External Transaction Timing Requirements</i>	6
<i>General Information</i>	7
<i>Data Requirements</i>	7
<i>Ramp Limits</i>	8
<i>Ramp Violations</i>	9
<i>OASIS Business Rules</i>	10
<i>Entering Ramp Reservations</i>	13
<i>Entering Schedules</i>	14
<i>Entering Real-Time with Price Schedules</i>	14
<i>Entering Dynamic Schedules</i>	14
<i>Entering Two-Settlement Schedules</i>	<u>1615</u>
SECTION 2: INTERCHANGE APPROVAL PROTOCOLS	<u>1746</u>
INTERCHANGE APPROVAL PROTOCOLS	<u>1746</u>
<i>Transaction Validations, Verification and Checkout</i>	<u>1746</u>
<i>Validations</i>	<u>1746</u>
<i>Real-Time Evaluation and Checkout</i>	<u>1847</u>
<i>Real-Time with Price Evaluation and Checkout</i>	<u>1847</u>
<i>Two-Settlement Evaluation and Checkout</i>	<u>1847</u>
SECTION 3: DISTRIBUTION OF INTERCHANGE INFORMATION	<u>1948</u>
SECTION 4: IMPLEMENTATION OF INTERCHANGE	<u>2049</u>
REVISION HISTORY	<u>2120</u>



Table of Exhibits

EXHIBIT 1: EXAMPLE RAMP CALCULATION.....	8
EXHIBIT 2: ON-PEAK TRANSMISSION SERVICE OVER 16 HOUR PERIOD EXAMPLE	10
EXHIBIT 3: ON PEAK TRANSMISSION SERVICE OVER 18 HOUR PERIOD EXAMPLE	11
EXHIBIT 4: OFF-PEAK MONDAY-FRIDAY TRANSMISSION SERVICE EXAMPLE	12
EXHIBIT 5: OFF-PEAK SATURDAY-SUNDAY TRANSMISSION SERVICE EXAMPLE.....	13



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Current Revision

Revision ~~02-03~~ (05/02/2008):

~~Section 1: Scheduling Interchange~~

~~External Transaction Minimum Duration Requirement added.~~

~~Section 3: Distribution of Interchange Information~~

~~Added details necessary to demonstrate PJM Compliance with the Interchange Authority function~~

Section 1: Scheduling Interchange

Added language to further clarify PJM's position on the submission of offsetting import and export ramp reservations

Added language to further define the requirements for submitting an external Dynamic Schedule

Introduction

Welcome to the ***PJM Manual for Managing Interchange***. In this Introduction, you will find the following information:

- What you can expect from the PJM Manuals in general (see “*About PJM Manuals*”).
- What you can expect from this PJM Manual (see “*About This Manual*”).
- How to use this manual (see “*Using This Manual*”).

About PJM Manuals

The PJM Manuals are the instructions, rules, procedures, and guidelines established by PJM for the operation, planning, and accounting requirements of PJM RTO and the PJM Energy Market. The manuals are grouped under the following categories:

- Transmission
- PJM Energy Market
- Generation and transmission interconnection
- Reserve
- Accounting and Billing
- PJM administrative services

For a complete list of all PJM Manuals go to www.pjm.com and select “Manuals” under the “Documents” pull-down menu.

About This Manual

The ***PJM Manual for Managing Interchange*** focuses on how PJM and the PJM Members are expected to manage interchange.

The ***PJM Manual for Managing Interchange*** consists of four sections. These sections are listed in the table of contents beginning on page ii.

Intended Audience

The Intended Audiences for the ***PJM Manual for Managing Interchange*** are:

- *Purchasing-Selling Entities* — Schedule interchange within or through the PJM balancing area.
- *PJM system operators* — Manage interchange in real time and perform check out with adjacent balancing authorities.

References

The references to other documents that provide background or additional detail directly related to the ***PJM Manual for Managing Interchange*** are:

- PJM Manual for Pre-scheduling Operations (m-10)

- PJM Manual for Balancing Operations (m-12)
- PJM Manual for eSchedules (m-09)

Using This Manual

Because we believe that explaining concepts is just as important as presenting the procedures, we start each section with an overview. Then, we present details and procedures. This philosophy is reflected in the way we organize the material in this manual. The following paragraphs provide an orientation to the manual's structure.

What You Will Find In This Manual

- A table of contents that lists two levels of subheadings within each of the sections and attachments
- An approval page that lists the required approvals and a brief outline of the current revision
- Sections containing the specific guidelines, requirements, or procedures including PJM actions and PJM Member actions
- Attachments that include additional supporting documents, forms, or tables A sectioni at the end detailing all previous revisions of the PJM Manual

Section 1: Scheduling Interchange

Welcome to the Scheduling Interchange section of the **PJM Manual for Managing Interchange**

- This section of the manual addresses the process of scheduling interchange:
- Overview of Interchange Scheduling
- External Transactions Scheduling Business Rules

Overview of Interchange Scheduling

Market participants that wish to transact energy in-to, out-of or through the PJM RTO are required to make their requests to PJM via the NERC Interchange Transaction Tag. These requests must be consistent with the more restrictive of either the NERC INT Standards or the PJM External Transaction Scheduling rules contained within this manual. PJM's Enhanced Energy Scheduler (EES) software interfaces with NERC Interchange Transaction Tags to create an interface that both PJM Market participants as well as PJM can use to evaluate and manage external transactions that affect the PJM RTO.

PJM has enhanced the EES tool to utilize NERC Tags as the source for its external scheduling data. Market participants are no longer required to enter schedule data in both the EES system and on a NERC Tag as the Tag data is now utilized by EES as the schedule.

Market participants scheduling in PJM are responsible for ensuring that data on PJM's EES is consistent with that which they desire to be their energy schedule. The continuity of the tagging process dictates that PJM receives Tag data in completed form from its Tag Authority Service exactly as it was entered by market participants. In order to ensure this delivery of data is complete and accurate, the market participants are responsible for confirming the data in PJM's EES to ensure it is consistent with that which they desired for their energy schedule.

An important aspect of scheduling external transactions in PJM is finding a start and end time to transact energy while respecting the PJM ramp limits that have been imposed for security (see "Ramp Limits" section for additional information on PJM's ramp limits). PJM allows market participants to reserve ramp in advance of completing their transactions via the EES application. This is an optional step in making external transaction requests, as the NERC Tag serves as the actual request for scheduling in PJM.

In cases where the NERC Tag does not have the required fields to request a PJM market specific transaction (e.g. dispatchable, two-settlement etc.) the EES application will be used in concert with the Tag (see "Entering Dispatchable Schedules" and "Entering Two-settlement transactions" sections).

External Transaction Scheduling Business Rules

This section will outline the External Transaction Business Rules that are required by PJM. This section will include:

- PJM Contact Information
- External Transaction Timing Requirements
 - General Information
 - Data Requirements
- Ramp Limits
 - OASIS Business Rules
 - Entering Ramp Reservations
 - Entering Schedules
 - Entering RealTime with Price Schedules
 - Entering Dynamic Schedules
 - Entering TwoSettlement Schedules
 - Transaction Validations, Verification and Checkout

PJM Contact Information

The following numbers can be used to contact PJM regarding External Energy Transactions:

- Scheduling Fax number – 610-666-4275
- DayAhead Scheduling phone number – 610-666-4548. 610-666-8947 and 610-666-8949
- Hourly Scheduling phone number – 610-666-4510
- EES Hotline (used to report issues, or to ask questions during normal business hours) – 610-666-2270
- PJM Helpdesk (used to report technical issues during non-business hours) – 610-666-8886

External Transaction Minimum Duration Requirement

All PJM interchange transactions are required to be at least 45 minutes in duration. Market participants may not submit transactions that do not meet this minimum duration requirement, nor may they adjust an implemented schedule's end time below this minimum threshold. Additionally, each non-zero interval of the scheduled energy profile (i.e., each MW value) must remain constant for 45 minutes. However, via the use of reliability adjustments, PJM system operators may make adjustments that cause a transaction or interval(s) of the transaction to violate this minimum duration.

External Transaction Timing Requirements

The following timing requirements are imposed by PJM for the submission of ramp reservations:

- Ramp reservations can be made up to 30 minutes prior to the scheduled start time for hourly transactions.
- Ramp reservations can be made up to 4 hours prior to start time for transactions that are more than 24 hours in duration.
- Ramp reservations utilizing the RealTime with Price option must be made prior to 1200 noon (EPT) one day prior to start time.

Ramp reservations expire if they are not used. The following timing requirements are imposed on ramp reservations that are not scheduled against:

- For ramp reservations less than or equal to 24 hours in duration:
 - If the reservation is submitted 1 hour prior to the start of the schedule or less, the reservation will be held in “Pending Tag” status for 10 minutes.
 - If the reservation is submitted more than 1 hour, but less than 4 hours prior to the start of the schedule, the reservation will be held in “Pending Tag” status for 15 minutes.
- Reservations that are less than 24 hours in duration and submitted 4 or more hours prior to the start of the schedule will be held in “Pending Tag” status for 90 minutes.
- Reservations made on a day-ahead basis will expire at 1430 EPT, one day prior to the start of the schedule. Note that a ramp reservation will not be “split” into separate days, so if a ramp reservation is made for multiple days, and not scheduled against, and if the start time for the multi-day reservation is the next day, the entire reservation will expire.

Ramp reservations that have been placed In-Queue will expire if sufficient ramp room does not become available. The following timing requirements are imposed on ramp reservations that have been placed In-Queue:

- Reservations that are 24 hours or less in duration will be held in In-Queue status until 30 minutes prior to the start of the schedule.
- Reservations that are greater than 24 hours in duration will be held in In-Queue status until 5 hours prior to the start of the schedule.

The following timing requirements are imposed by PJM for the submission of schedules. Schedules are submitted to PJM by submitting a valid NERC Tag. (The schedule is considered submitted when the NERC Tag is received by the PJM Tag Approval Service, not when it is submitted by the market participant’s Tag Agent Service):

- Schedules can be submitted up to 20 minutes prior to the scheduled start time for hourly transactions.
- Schedules can be submitted up to 4 hours prior to the scheduled start time for transactions that are more than 24 hours in duration.

- For a schedule to be included in PJM’s Day-Ahead checkout process, they must be implemented by 1400 (EPT) one day prior to start of schedule.
- Schedules utilizing the Real-Time with Price option must be submitted prior to 1200 noon (EPT) day prior to start time.
- Schedules utilizing FIRM Point-To-Point transmission service must be submitted by 1000 (EPT) one day prior to start of schedule. Transactions submitted after 1000 (EPT) one day prior will be accommodated if practicable.

The following timing requirements are imposed by PJM for the submission of Two-Settlement Transactions:

- All Two-Settlement transactions must be submitted by 1200 noon (EPT) one day prior to start time.

General Information

- External offers can be made either on the basis of an individual generator (resource specific offer) or an aggregate of generation supply (aggregate offer).
- PJM will only accept the transaction if submitted by a member company.
- Transmission reservations that are not used due to canceled spot market offers will be subject to transmission charges as appropriate.
- PJM does not accept bids where the PJM Interchange Market is identified as both the source (GCA) and sink (LCA).
- PJM does not accept offers for resources committed to supply operating reserves to another control area. PJM does not double count resources internal to PJM for operating reserves. If energy is being offered from a resource to PJM and is already included in the PJM operating reserves, the energy can be accepted, but does not participate in PJM operating reserves accounting.
- Offers not properly submitted are rejected. The PJM member is notified of the reason for rejection and the PJM member may then take action to submit a new offer.

Data Requirements

Market participants are expected to keep PJM informed of all external transactions that involve the operation of the PJM RTO. The following information is submitted to PJM via EES and/or the market participant’s Tag Agent Service:

- Valid NERC Tag
- Valid transaction path
- Start date before end date
- Start and end times in the future
- Requested MW profile
- Valid transmission (see “OASIS Business Rules” for more information)

- Price associated with transaction (if utilizing the Real-Time with Price option)

Ramp Limits

PJM validates all external transaction requests against a net interchange ramp. The ramp limit is configurable by PJM dispatch based on operating conditions. There are two separate ramps that are evaluated, a PJM Net Interchange Ramp, and a NYISO Interchange Ramp.

PJM Variable Ramp

At no time, can the difference in the net interchange be greater than the ramp designated by the PJM dispatch at any given 15 -minute interval. Ramp room is allocated on a first come, first serve basis. Refer to Exhibit 17 for a ramp example to see how the ramp is calculated for any given 15 - minute interval.

NYISO 1000 MW Ramp

PJM also monitors a ± 1000 MW ramp with the NYISO. At no time can the difference in the interchange between NY and PJM be greater than ± 1000 MW at any 15-minute interval. Ramp room for NY transactions is allocated on a first come, first serve basis. NY transactions submitted to PJM will be evaluated against both the PJM ramp and the NYISO ramp.

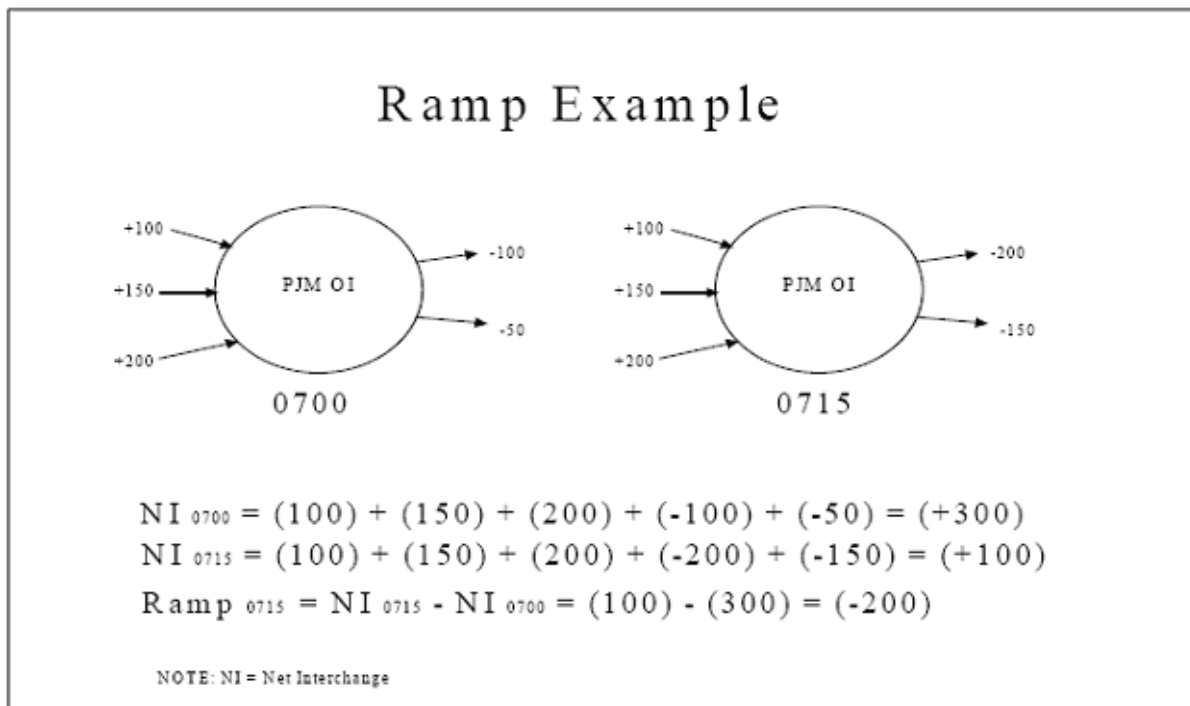


Exhibit 1: Example Ramp Calculation

Ramp Violations

Though EES actively prevents many of the user-initiated actions that could cause the PJM variable ramp limit to be exceeded, there are still certain actions, such as the expiration of a “Pending Tag” ramp reservation, which can cause a ramp violation. The ramp limit may also be exceeded as a result of both Balancing Authority (BA)-issued transaction curtailments and Transmission Loading Relief procedures enacted by either PJM or another BA.

Corrective actions are not pursued in the case of ramp limit violations caused by a TLR; however, violations in all other cases will be analyzed by PJM generation dispatchers in order to assess the criticality of the event. The generation dispatchers will determine whether PJM shall remediate a ramp limit violation by taking into account the current and expected system conditions. In the event that a violation merits corrective action, transaction curtailments will be used to bring the ramp in that 15-minute interval back within the established limit. Due to the extremely volatile nature of ramp, these transaction curtailments may be submitted close enough to the start of the ramp interval that the Minimum Total Reliability Period as outlined in NERC Reliability Standard INT-006 cannot be met.

PJM utilizes a last-in, first-out methodology to determine which schedules will be subject to curtailment, and NERC transmission priority plays no role in the process. Therefore, all transactions are eligible for curtailment, and if the need is great enough, it is possible that a transaction implemented many days in advance may be curtailed in order to provide sufficient relief. Tag curtailments will always be issued for the shortest possible duration, meaning that the minimum curtailment interval will be 15 minutes in length. As is necessary, the eligible transactions may be terminated earlier than the originally requested stop time or pushed to start later than the originally requested start time. Additionally, if the next eligible transaction holds a constant MW value over the time of the violation, that transaction may be curtailed at the time of the violation in order to provide relief.

If PJM dispatchers determine that a Market Participant has caused a ramp limit violation as a result of possessing offsetting import and export ramp reservations, but only scheduling on one of the reservations while withdrawing the other or allowing ~~the other~~ to expire, then PJM dispatchers will specifically curtail transactions belonging to that Market Participant in order to correct the violation. In the event that curtailments to the Market Participant’s schedules are insufficient to correct the violation, PJM dispatchers will default to the last-in, first-out curtailment policy.

For emergency circumstances in which a Market Participant needs to terminate a transaction but is prevented from doing so by the ramp limit, PJM must be contacted. PJM dispatchers will then manually approve the tag adjustment and notify the Market Participant of the resulting ramp violation. If the Market Participant has additional transactions that could be used to bring the ramp back within the limit, they will be required to modify those transactions to fix the violation. If they do not have a transaction that can be used to correct the ramp violation, PJM will default to the last-in, first-out curtailment policy.

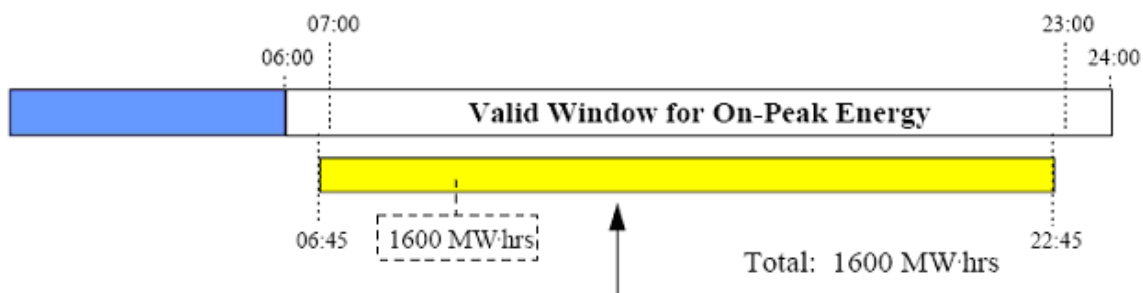
All observed cases of inappropriate behavior surrounding the reservation and use of ramp will be reported to the PJM Market Monitoring Unit.

OASIS Business Rules

All external transaction requests require a CONFIRMED transmission reservation from the PJM OASIS. PJM offers several transmission product types, such as hourly, daily, weekly, monthly, yearly, on and off-peak, non-firm, firm and network transmission. PJM also offers the opportunity to state whether or not the market participant is willing to pay congestion. These, and additional options, are further explained in the “PJM Regional Practices” document, which can be found on the PJM OASIS home page at <http://oasis.pjm.com>.

On some occasions, due to PJM ramp rules, market participants are required to shift their energy requests. If the market participant shifts their energy up to one hour in either direction, they are not required to purchase additional transmission. Likewise, if the market participant chooses to fix their ramp violation by extending the duration of the transaction, they do not have to purchase additional transmission if the total MWh capacity of the transmission request is not exceeded. For graphical representations of these scenarios, refer to Exhibit 2 through Exhibit 5.

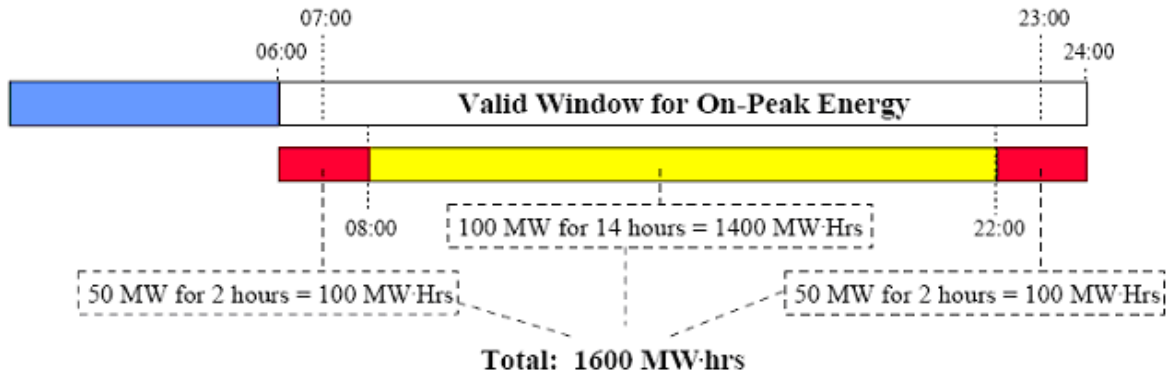
On-Peak Monday-Friday



Example of Valid Energy Schedule using a 100MW Capacity
On-Peak Transmission Service Reservation
Over 16 Hour Period

Exhibit 2: On-Peak Transmission Service over 16 hour period Example

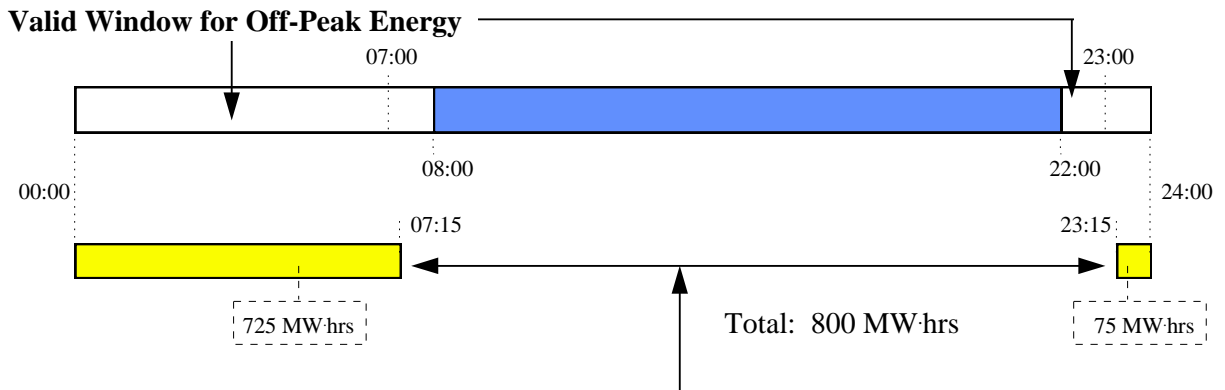
On-Peak Monday-Friday



Example of Valid Energy Schedule using a 100MW Capacity
On-Peak Transmission Service Reservation
Over 18 Hour Period

Exhibit 3: On Peak Transmission Service over 18 hour period Example

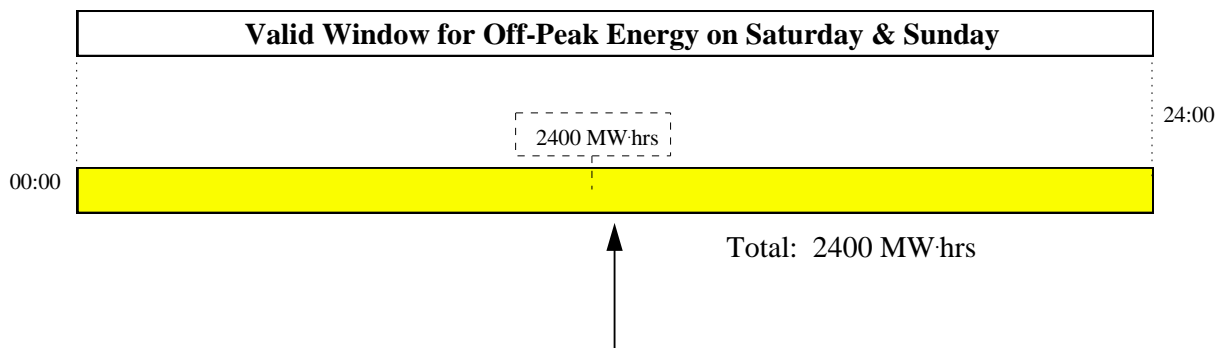
Off-Peak Monday-Friday



Example of Valid Energy Schedule using a 100MW Capacity
Off-Peak Transmission Service Reservation

Exhibit 4: Off-Peak Monday-Friday Transmission Service Example

Off-Peak Saturday & Sunday



Example of Valid Energy Schedule using a 100MW Capacity Off-Peak Transmission Service Reservation

Exhibit 5: Off-Peak Saturday-Sunday Transmission Service Example

Entering Ramp Reservations

Each PJM Member Company that is authorized to do business in PJM's energy market is given an EES account. It is in the EES application that ramp reservations are made.

Ramp reservations are an optional step in scheduling transactions in PJM. A ramp reservation can be made to "hold" ramp room while market participants complete their scheduling responsibilities. Ramp reservations are then associated on the NERC Tag when the market participant wishes to submit the schedule. The ramp reservation is validated against the submitted NERC Tag to ensure the energy profile and path matches. Ramp reservations are generally used to ensure the ability to schedule prior to purchasing transmission or making other potentially cost affecting decisions.

To make a ramp reservation, the market participant enters the EES application and navigates to the Reserve Ramp screen. On this screen, the market participant enters the path for which they are interested in transacting energy, their energy profile, and any other unique information that may apply to a schedule (i.e. special exceptions, notes, outside ID's, internal naming conventions etc.). Upon submission of a ramp reservation, PJM validates the information against ramp availability. If the energy profile passes the current ramp limits, the ramp reservation will move into a status of "Pending Tag". At this point, the market participant is holding a valid reservation that can then be associated with a NERC Tag to complete the scheduling process.

Entering Schedules

Market participants enter schedules in PJM by submitting a valid NERC Tag. As noted in the previous section, if the market participant holds a ramp reservation in the status of “Pending Tag”, they can associate that ramp reservation with the NERC Tag that will be their ultimate schedule. This is done by placing the ramp reservation in the “miscellaneous” column on the PJM Transmission Provider line of the “physical path” portion of the NERC Tag.

If no ramp reservation was made prior to scheduling, a NERC Tag can be submitted without a reservation. When EES detects a NERC Tag that has been submitted without a ramp reservation, it will automatically create a ramp reservation that matches the energy profile and path of the NERC Tag. This newly created reservation will be evaluated against ramp, and an approval or denial will be made based on that validation. If there is enough ramp room, PJM will continue with other validations (See “Transaction Verification and Checkout”). If all validations pass, an approval message will be sent to the NERC Tag, and upon Implementation of the Tag, the transaction will be officially scheduled in PJM.

Because of the nature of tagging, it is possible for the market participant submitting the NERC Tag to be inconsistent with the market participants listed for each TP segment on a particular Tag. In this instance, the financially responsible party (FRP) entering the tag is effectively acting on behalf of other market participants that are listed. Because PJM treats the NERC Tag as a market participant’s schedule, it will be necessary for those market participants who have had a Tag entered on their behalf to acknowledge this transaction through EES.

Entering Real-Time with Price Schedules

Real-Time with Price schedules differ from other schedules in that an action **must** be made in EES in addition to the submission of a NERC Tag. To enter a Real-Time with Price schedule, the market participant must first make a ramp reservation in EES using the “Real-Time with Price” tab in the notebook section of the Reserve Ramp screen. In addition to the information entered for a Real-Time schedule, market participants are also required to enter a price associated with each energy block. Upon submission, the Real-Time with Price request will automatically move to the “Pending Tag” status, as Real-Time with Price schedules do not hold ramp.

Once the information is entered in EES, a NERC Tag must be submitted with the ramp reservation associated on the NERC Tag. This is done by placing the ramp reservation in the “miscellaneous” column on the PJM Transmission Provider line, of the “physical path” portion of the NERC Tag. For Real-Time with Price schedules, the NERC Tag energy profile must match exactly for the tag to be approved. Upon Implementation of the NERC Tag, PJM will curtail the tag to 0 MW in preparation for the real-time loading/unloading of the transaction.

Entering Dynamic Schedules

~~Dynamic schedules differ from other schedules in that, due to their complex nature, they must each be explicitly pre-defined in EES before they will be accepted via NERC Tag submission. Once the necessary coordination has taken place between all involved parties, a tagging special exception will be created for the sole use of red-flagging the dynamic NERC Tag in EES. This exception is attached by placing it in the “miscellaneous” column~~

on the PJM Transmission Provider line of the “physical path” portion of the Tag. After the Tag has been submitted, no further actions will be required by the market participant as EES will handle the transaction based on the pre-defined setup.

An entity that owns or controls a generating resource in the PJM Region may request to have all or part of the generating resource’s output electrically removed from the PJM Region via dynamic scheduling of the output to a load outside the PJM Region. Likewise, an entity that owns or controls a generating resource outside of the PJM Region may request to have all or part of the generating resource’s output electrically added to the PJM Region via dynamic scheduling of the output to a load inside the PJM Region.

Due to the complexity of these arrangements, requesting entities must coordinate extensively with PJM and complete several steps before a dynamic schedule can be implemented. Among the required setup items:

- The requesting entity must arrange for the provision of signal processing and communications between the generator, PJM, and other participating Balancing Authorities.
- The requesting entity must reserve a quantity of firm or non-firm transmission service sufficient to deliver the range of the dynamic transfer and any required ancillary services.
- The requesting entity must assist PJM in defining the appropriate external nodes in the PJM network model to be utilized in developing an interface pricing point for the dynamic schedule.

When the necessary coordination is complete, the requesting entity will be responsible for issuing a dynamic NERC Tag to match the scheduled output of the generating resource. An EES tagging special exception will be made available for the sole use of the requesting entity in flagging the dynamic NERC Tag as a special case in PJM’s scheduling system. This exception must be attached to the tag by placing it in the “miscellaneous” column on the PJM Transmission Provider line of the “physical path” portion of the tag.

The tag will allow the NERC IDC to determine the reliability impact of the dynamically scheduled transaction. In order to ensure that the IDC always has the most accurate information regarding the expected energy schedule, the tag must be updated for the next available scheduling hour, and for future hours, when any one of the following occurs:

- The average energy profile in an hour is greater than 250 MW and in that hour the actual hourly integrated energy deviates from the hourly average energy profile indicated on the tag by more than +10%.
- The average energy profile in an hour is less than or equal to 250 MW and in that hour the actual hourly integrated energy deviates from the hourly average energy profile indicated on the tag by more than +25 megawatt-hours.
- PJM determines that the deviation, regardless of magnitude, is a reliability concern and notifies the requesting entity of that determination and the reasons.

In the event that system conditions dictate a need to reduce the energy profile of the dynamic schedule, a reliability limit will be placed on the schedule in the form of a tag curtailment request. When system conditions improve to a point that would allow for the

reloading of the dynamic schedule, the reliability limit will be released via a tag reload request.

Entering Two-Settlement Schedules

Market participants can submit Two-Settlement schedules to the eMarket application through EES. These schedules do not require a NERC Tag, as they are only financial obligations, and are not considered physical schedules for actual flow. Two-Settlement schedules are submitted using the “Two-Settlement” tab in the notepad section of the Reserve Ramp screen in EES.

Two-Settlement schedules require an OASIS number to be associated upon submission. The path is identified on the OASIS reservation.

In addition to the selection of OASIS and pricing points, the market participant must enter their energy profile. The option to choose “fixed”, “dispatchable” and “up-to” are also displayed in the notepad section. The type “fixed” acts as a price taker, “dispatchable” sets a floor or ceiling price criteria for acceptance and “up-to” sets the maximum amount of congestion the market participant is willing to pay for acceptance in the Two-Settlement Market up to \$25. Graphing energy is done the same way as a Real-Time or Real-Time with Price request.

Section 2: Interchange Approval Protocols

Welcome to the *Interchange Approval Protocols* section of the **PJM Manual for Managing Interchange**. In this section, you will find the following information:

- Interchange Approval Protocols

Interchange Approval Protocols

Transaction Validations, Verification and Checkout

Transactions must pass specific validations and evaluations prior to being scheduled. The following validations and evaluation and checkout procedures are done to ensure accurate information and reliable scheduling in PJM. [NERC Standard INT-006, R1]

Validations

All validations are programmatically performed by PJM's Enhanced Energy Scheduler (EES) application. In the event of an application failure, PJM dispatchers will manually evaluate each Arranged Interchange and communicate the results of their reliability assessment to the Interchange Authority.

On submission, the following validations are performed on ramp reservations:

- Path Identified
- Stop time after start time
- Energy Profile Identified
- Price associated with Energy Profile (only applicable for Real-Time with Price)
- Ramp Availability (not applicable for Real-Time with Price)
- Timing Requirements are met for submission deadlines

On submission, the following validations are performed on NERC Tags:

- Syntax validation (See NERC Tagging Policy for complete list of syntax validations for NERC Tags)
- Path on NERC Tag matches ramp reservation (if identified) and OASIS path
- Timing requirements are met for submission deadlines
- PJM Loss type must be financial (FIN)
- Ramp availability (if no ramp reservation is identified)
- OASIS validation for valid OASIS, valid path, instantaneous capacity, total capacity, date-time, priority and vertical stacking (not allowed)
- Token and Value fields (in miscellaneous column) have valid inputs
- FRP check

On submission, the following validations are performed for Two-Settlement requests:

- -Timing requirements are met for submission deadlines
- -OASIS validation for valid OASIS, ensure that the reservation is willing to pay congestion and OASIS is valid for period covered by the two-settlement contract
- -Pricing point(s) have been identified
- -Stop time is after start time
- -Energy profile is identified
- -Price is associated for energy profile (for dispatchable option only)
- -Congestion amount is identified for energy profile (for up-to congestion option only)

Real-Time Evaluation and Checkout

If all validations pass on a Real-Time schedule, PJM will approve the Tag. Once the Tag has been approved by all parties defined on the tag and the Tag status moves to “Implemented”, the schedule will be ready for the Adjacent Balancing Authority Checkout. If during this checkout, both parties agree to the interchange on the NERC Tag, the schedule will flow.

Real-Time with Price Evaluation and Checkout

Real-Time with Price schedules are verified differently than Real-Time schedules. Real-Time with Price schedules are evaluated hourly to determine whether or not they will be loaded for the upcoming hour. When it is determined that the economics for the schedule warrant the transaction to be loaded or unloaded, they transaction will be modified by PJM personnel. This evaluation is based on a very conservative approach and works similar to the way generation is called on and off. In addition to the economics of the transaction, the PJM may also take into consideration the ramp availability for the loading or unloading of the schedule. Since Real-Time with Price schedules do not hold ramp room, there may be times where the economics warrant a schedule to be loaded, but due to security issues related to ramp, the schedule will not be called on to flow. Once a Real-Time with Price schedule has been called on to flow, a reload request will be issued by PJM. If all external parties approve the reload request, and it passes the Control Area to Control Area checkout process, the schedule will flow.

Two-Settlement Evaluation and Checkout

For Two-Settlement scheduling, EES serves only as an interface to the eMarket application. Two-Settlement transactions are evaluated by the PJM Markets Department, and the results are then fed back to EES in order to allow market participants to view the results. No checkout is performed on Two-Settlement schedules as they are considered financially binding transactions and not physical schedules.

Section 3: Distribution of Interchange Information

Welcome to the *Distribution of Tagging Information* section of the **PJM Manual for Managing Interchange**. In this section, you will find the following information:

- Process for the Distribution of Interchange Information

In order to comply with the NERC INT Standards that pertain to the actions required of an Interchange Authority, PJM has contracted with a vendor that provides these services on its behalf. Although the responsibility for carrying out these actions ultimately remains with PJM, the third-party Tag Authority Service provides for:

- The receipt of Arranged Interchange
- The distribution of Arranged Interchange to all reliability entities involved in the Interchange
- The transition of an Arranged Interchange to a Confirmed Interchange after verification of the following:
 - Source Balancing Authority megawatts equal sink Balancing Authority megawatts (adjusted for losses)
 - All reliability entities involved in the Interchange are listed in the NERC registry
 - Generation source and load sink are defined
 - Megawatt profile is defined
 - Ramp start and stop times are defined
 - Interchange duration is defined
 - Each Balancing Authority and Transmission Service Provider that received the Arranged Interchange information for reliability assessment has provided approval.
- The collection and distribution of Balancing Authority Reliability Assessments on Arranged Interchange
- The distribution of the status of both Arranged Interchange and Confirmed Interchange to all Balancing Authorities, Transmission Service Providers, and Purchasing-Selling Entities involved in the Interchange
- The communication of Confirmed Interchange start and stop times, ramps, and megawatt profile to Balancing Authorities
- The communication of necessary Interchange information to NERC identified reliability analysis services

Section 4: Implementation of Interchange

Welcome to the *Implementation of Interchange* section of the **PJM Manual for Managing Interchange**. In this section, you will find the following information:

- Process for the Implementation of Interchange

PJM conducts an hourly checkout with each Adjacent Balancing Authority and any Balancing Authority operated by an independent transmission company. PJM performs the checkout using both the electronic approval of schedules and telephone calls.

PJM requires all schedules, other than reserve sharing or other emergency events, to be tagged in accordance with the NERC INT Standards. For reserve sharing and other emergency schedules that are not tagged, the involved parties will enter after the fact schedules into their respective scheduling systems in order to facilitate checkout between the parties.

When there is a scheduling conflict, PJM will work with the Adjacent Balancing Authority to modify the schedule as soon as practical. If there is a scheduling conflict that is identified before the schedule has started, then each BA will make the correction in real-time and not wait until the next quarter-hour. If the schedule has already started and an error is identified, then each BA will make the correction at the earliest quarter hour increment. If a scheduling conflict cannot be resolved between the BAs (but the source and sink have agreed to a MW value), then the BAs will both adjust their numbers to that same MW value. If the Source BA and Sink BA are unable to agree to a MW value, then the previously tagged value will stand for both BAs.

For non-member first-tier entities that choose not to use the PJM electronic scheduling interfaces, PJM will perform checkouts via telephone.

PJM and the Adjacent Balancing Authorities will perform the following types of checkouts:

- Pre-schedule (Day-Ahead) daily between 1600 and 2000 hours:
 - Intra-hour checkout/schedule confirmation will occur as required due to intra-hour scheduled changes.
- Hourly Before-the-Fact (Real-Time):
 - Hourly before-the-fact checkout includes the verification of Net Scheduled Interchange with each Adjacent Balancing Authority.
 - Hourly checkout is performed starting at the half hour and ending at the ramp hour.
- After the fact (day end) daily starting at 0100 hours; and
- After the fact (monthly) daily on a month to date basis (usually via email) starting on the first business day of the following month and ending by the tenth (10th) business day of that month.

PJM requires that when a checkout discrepancy is discovered, the BAs will use the NERC Tag to determine where the discrepancy exists. PJM requires any entity that conducts business within its Region to checkout using NERC Tag numbers; special naming conventions used by that entity or other naming conventions given to schedules by other entities will not be permitted. [NERC Standard INT-003, R1; INT-007, R1]

Revision History

Revision 02 (05/02/2008):

Section 1: Scheduling Interchange

External Transaction Minimum Duration Requirement added.

Section 3: Distribution of Interchange Information

Added details necessary to demonstrate PJM Compliance with the Interchange Authority function

Revision 01 (07/25/07)

Section 1: Scheduling Interchange

- Minor formatting changes
- Ramp violations section added

Section 2: Interchange Approval Protocols

- All validations are programmatically performed by PJM's Enhanced Energy
- Scheduler (EES) application

Revision 00 (05/15/2007)

New manual