NYISO/PJM
Market-to-Market Coordination

Joint Stakeholders Meeting

July 21, 2011 / Rensselaer, NY

Agenda

- Joint Operating Agreement (JOA) Overview
- Project Timeline & Progress Report
- Key Concepts
- Real-Time Coordination
- Market Flow & Entitlement
- Settlement Discussion
- Post-Processing Validation
- Next Steps

Joint Operating Agreement

- What is a Joint Operating Agreement (JOA)?
  - Provides for interregional coordination of TOP, BA, RC, and other NERC functions for interconnection systems and for reliable operations of the interconnections and efficient markets
- PJM and NYISO are adding a market-to-market (M2M) coordination process to their existing JOA
  - M2M coordination is a mechanism that permits market entities to control parallel flows in an economic manner that consistently ensures system reliability and efficient markets

Background

- On January 12, 2010, the NYISO filed a report with FERC describing the Broader Regional Markets suite of solutions, including M2M coordination, to address loop flows
- On July 1, 2011, FERC approved the schedule for implementing M2M
  - JOA Filing 4th Quarter 2011
  - M2M Implementation 4th Quarter 2012
- NYISO and PJM are required to implement M2M by the end of 2012.
  - *See* 133 FERC 61,276 at P. 32, *on reh'g* 136 FERC 61,011 at P. 16.
- Throughout 2011, the NYISO and PJM have been collaborating on M2M implementation

Market-to-Market Coordination

- ✓ Achieves **least cost re-dispatch** solution
- ✓ Provides **consistent pricing** profile across two markets
- ✓ Enhances **system reliability**
- ✓ Potomac Economics estimates production cost benefits of M2M as follows:
  - ✓ NYISO with PJM approximately **$10M annually**
  - ✓ PJM with NYISO approximately **$5M annually**
- ✓ PJM Benefits with MISO for April 2005
  - ✓ PJM to MISO settlement $367k
  - ✓ PJM estimated market costs to re-dispatch $4.3M

M2M JOA Provisions

The M2M amendments to the JOA addresses the following topics:

- Exchange of data and information
- Identifying M2M flowgates
- Determining M2M entitlements
- Calculating real-time M2M market flows
- Setting scope of appropriate use of M2M coordination
- Calculating M2M settlements
- Lessons learned from MISO-PJM JOA

Agenda

- Joint Operating Agreement (JOA) Overview
- Project Timeline & Progress Report
- Key Concepts
- Real-Time Coordination
- Market Flow & Entitlement
- Settlement
- Post-Processing Validation
- Next Steps

Project Timeline

Task	Delivery by End of
Market Flow Calculator o Includes specification, development, testing, and implementation of calculation engine, incorporating common treatment for PAR operational requirements and model representation	3rd QTR – 2011
Joint Operating Agreement o Includes defining entitlements and filing for Commission approval	4th QTR – 2011
Software Specifications o Completion of documentation defining changes necessary to administer real-time constraint coordination, settlement administration, audit and validation	3rd QTR – 2011
Software Development o Completion of software tools necessary to administer and settle Market-to-Market outcomes, and validate the results	2nd QTR – 2012
Software Ready o Completion of software validation, including finalized software development, software performance and completeness testing, process validation and operator training	4th QTR – 2012
o Implementation	4th QTR – 2012

Progress Report

- Status of JOA filing
- Status of development efforts
- Draft of JOA M2M August 2011

Agenda

- Joint Operating Agreement (JOA) Overview
- Project Timeline & Progress Report
- Key Concepts
- Real-Time Coordination
- Market Flow & Entitlement
- Settlement
- Post-Processing Validation
- Next Steps

Key Concepts

Real Time / Market-to-Market Coordination	• A mechanism for NYISO and PJM to provide more cost effective management of constraints from a larger pool of resources
Monitoring RTO (MRTO)	• The RTO that has the primary responsibility for monitoring and control of a coordinated Flowgate
Non-Monitoring RTO (NMRTO)	• The RTO that does not have the primary responsibility for monitoring and control of a Flowgate, but does have resources that impact the Flowgate

Key Concepts

Market Flow	• The flow in MW on a Flowgate that is caused by all real-time control actions to serve load in the RTO footprint
M2M Flowgate	• A Flowgate that may be significantly impacted by the dispatch of generation serving load in an adjacent market
Entitlements	• Predetermined MW amount that a market entity is entitled to per Flowgate based on its historical impacts to that Flowgate. In the M2M process, real time usage is compared to entitlement to determine settlement

Agenda

- Joint Operating Agreement (JOA) Overview
- Project Timeline & Progress Report
- Key Concepts
- Real-Time Coordination
- Market Flow & Entitlement
- Settlement
- Post-Processing Validation

Purpose

Reduces Congestion

- Expands the pool of assets that are capable of addressing the region's transmission constraints
- Provides better price convergence at the borders as a collective set of assets are used to resolve system limitations

Reduces the Overall Cost Of Congestion

- Provides an RTO with the ability to request generation re-dispatch from neighboring market
- Solves internal constraints at a lower cost

Initiation & Operation

- M2M coordination is manually invoked by NYISO and PJM operations when an M2M Flowgate is constrained
- Manual coordination of NYISO and PJM Operations:
  - M2M Initiation/Activation notifications
  - Additional Transmission Outage notifications
- Automated data exchange to manage M2M re-dispatch:
  - M2M Flowgate Identification
  - M2M Flowgate Shadow Cost
  - M2M Flowgate Relief Request MW

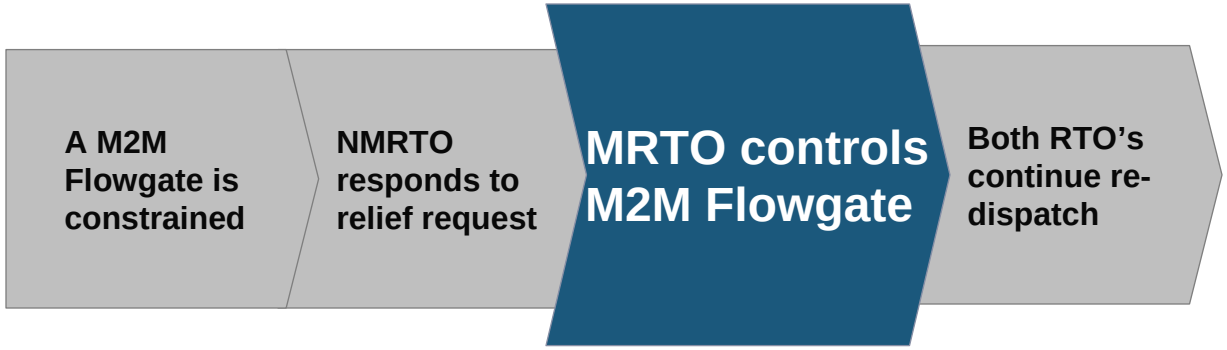
Process

- MRTO controls the constraint
- A request is sent to the NMRTO to enter into M2M coordination
- The request includes:
  - M2M Flowgate ID
  - Shadow Cost
  - Relief Request MW

Process

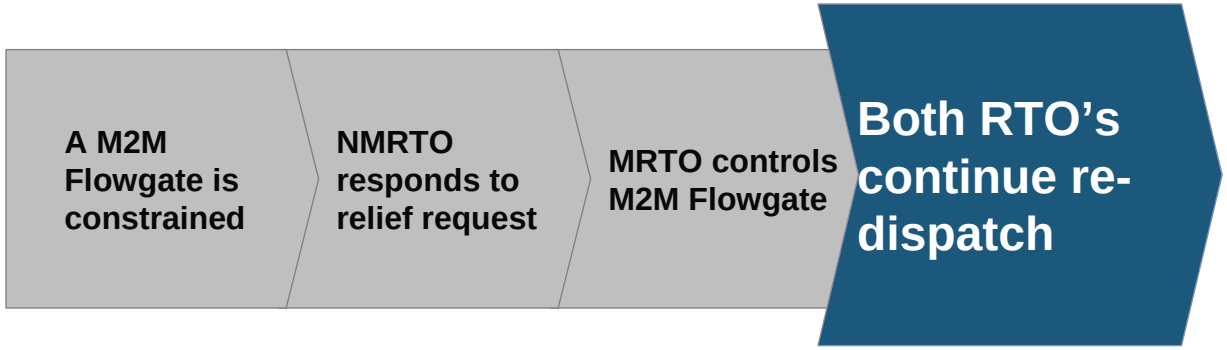
- NMRTO Responds to the relief request from the MRTO by:
  - Providing the MW relief requested by the MRTO to control the M2M Flowgate; or
  - Re-dispatching up to the current shadow price from the MRTO

Process



- The relief provided by the NMRTO is realized on the M2M Flowgate
- The MRTO should be able to control the flowgate at a lower shadow price
- The updated shadow price and relief request MW is sent to the NMRTO

Process

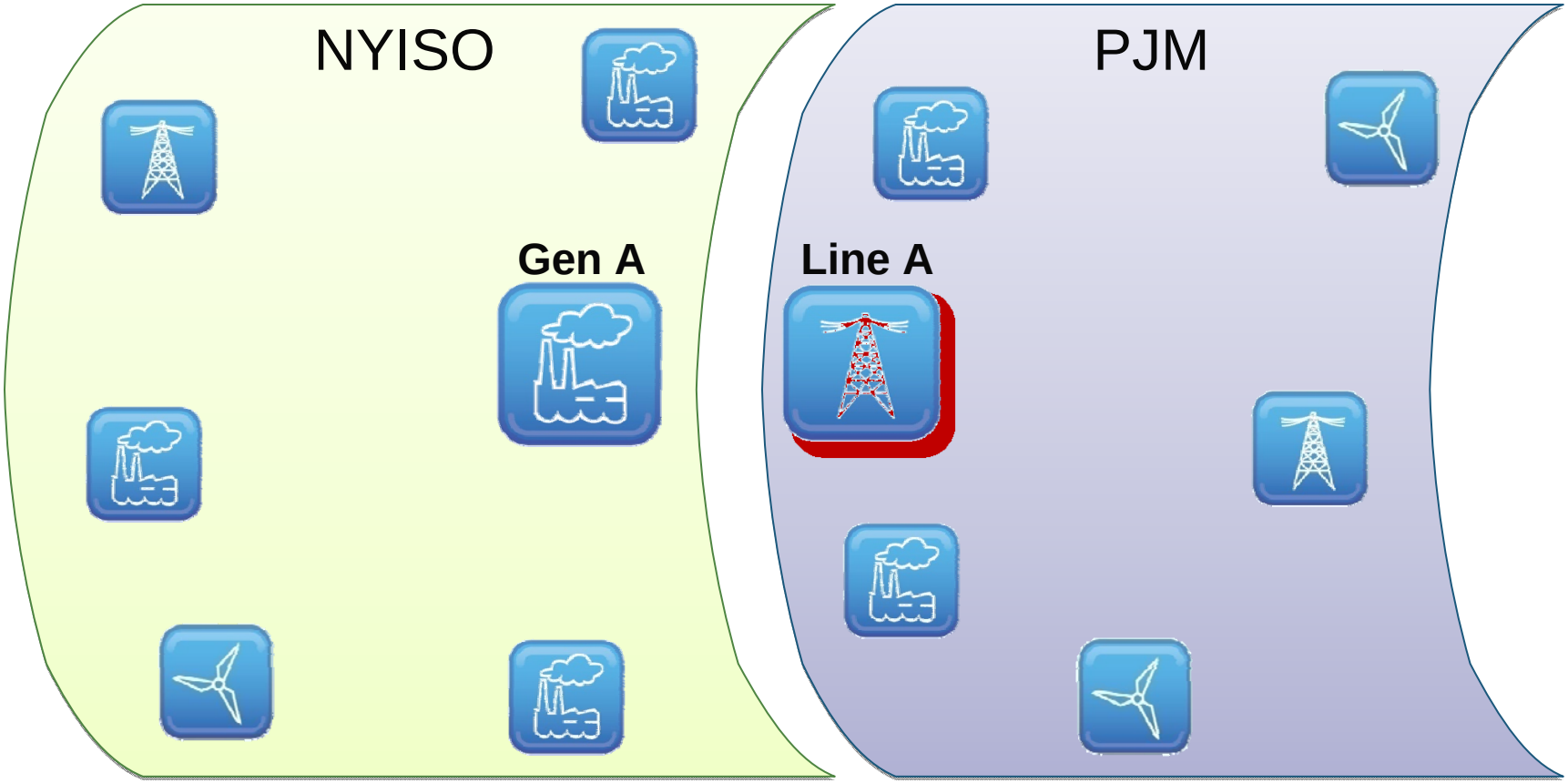


- Both RTOs continue to re-dispatch their systems, respecting the constrained M2M Flowgate, until it is no longer constrained

Outcome

- A cost effective re-dispatch solution for the combined footprint
- RTOs compensate each other for the re-dispatch provided based on the real time market flow of the NMRTO compared to the Entitlement

Management of Constraint



- Congestion on Line A causes PJM to initiate M2M
- NYISO enters Line A into security-constrained dispatch
- NYISO lowers Gen A and congestion is reduced on Line A

Agenda

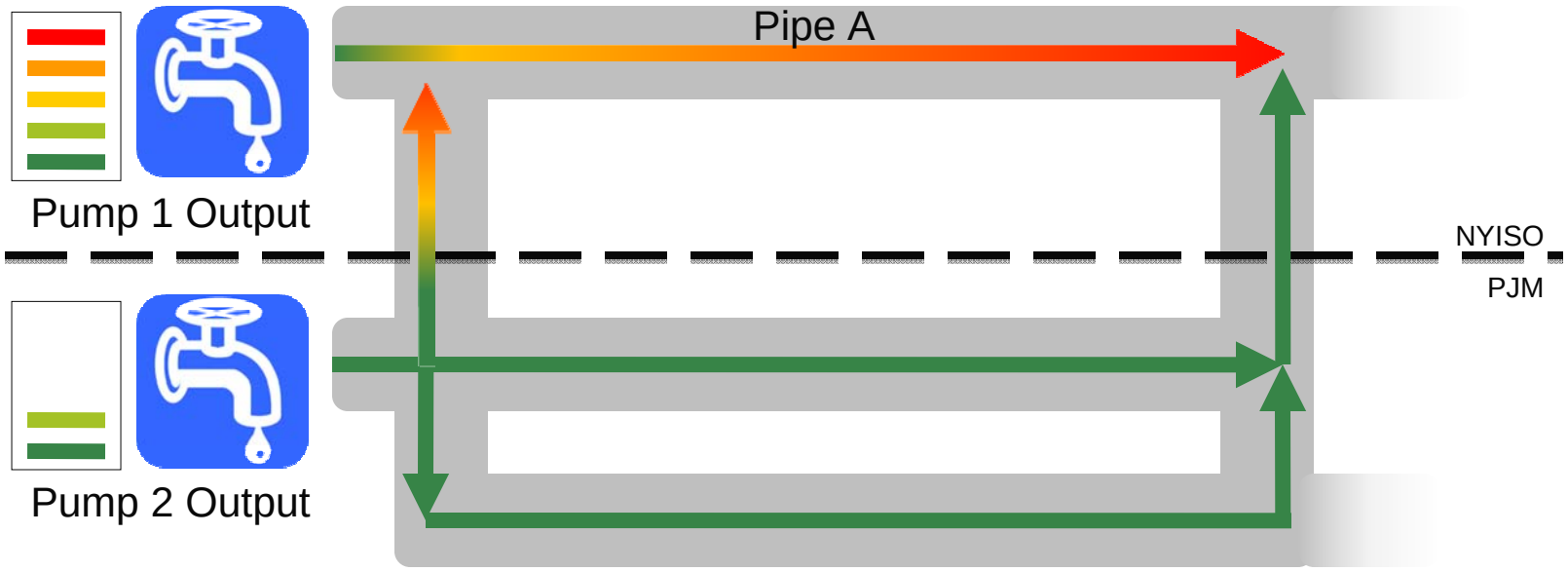
- Joint Operating Agreement (JOA) Overview
- Project Timeline & Progress Report
- Key Concepts
- Real-Time Coordination
- Market Flow & Entitlement
- Settlement
- Post-Processing Validation
- Next Steps

Market-to-Market (M2M)

- A mechanism for NYISO and PJM to provide more cost effective management of constraints from a larger pool of resources
- Provides for settlement between markets when assistance is provided
- Compensation is based on entitled use of the system

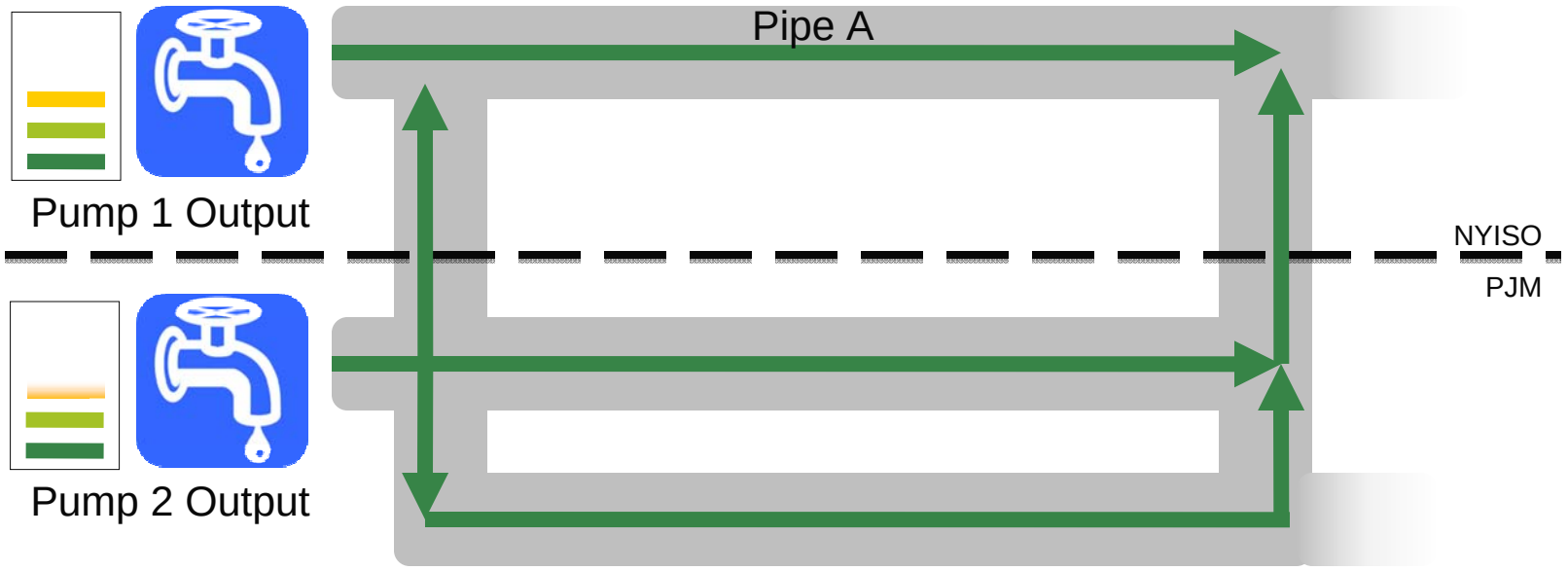
M2M Coordination

- NYISO constraint on pipe A
- NYISO's pump 1 high output
- PJM's pump 2 low output

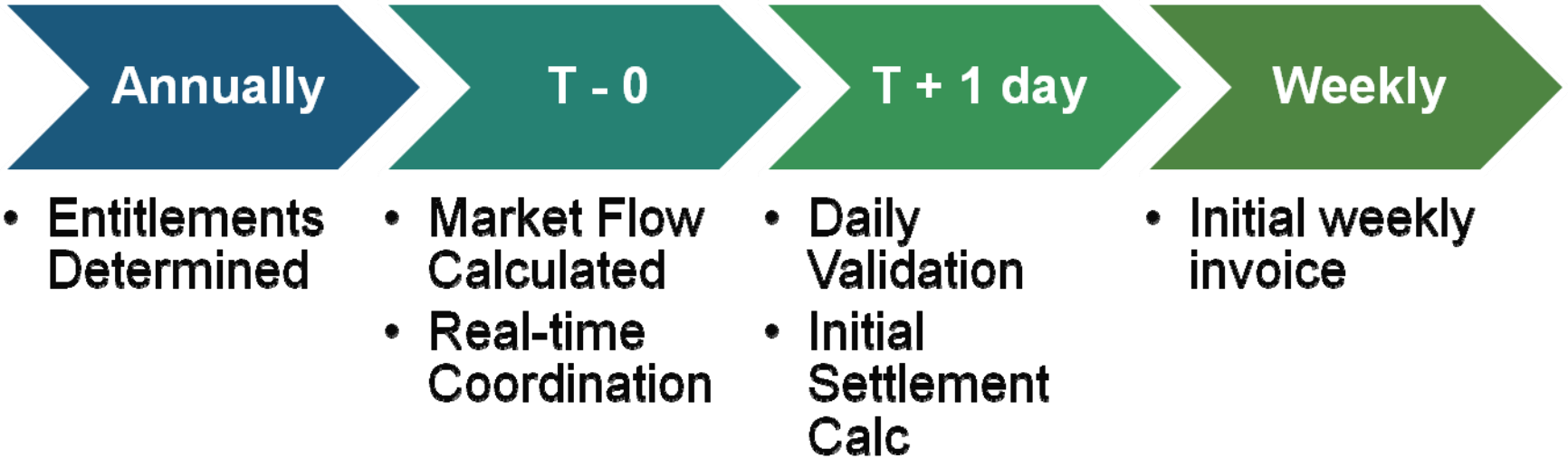


M2M Coordination

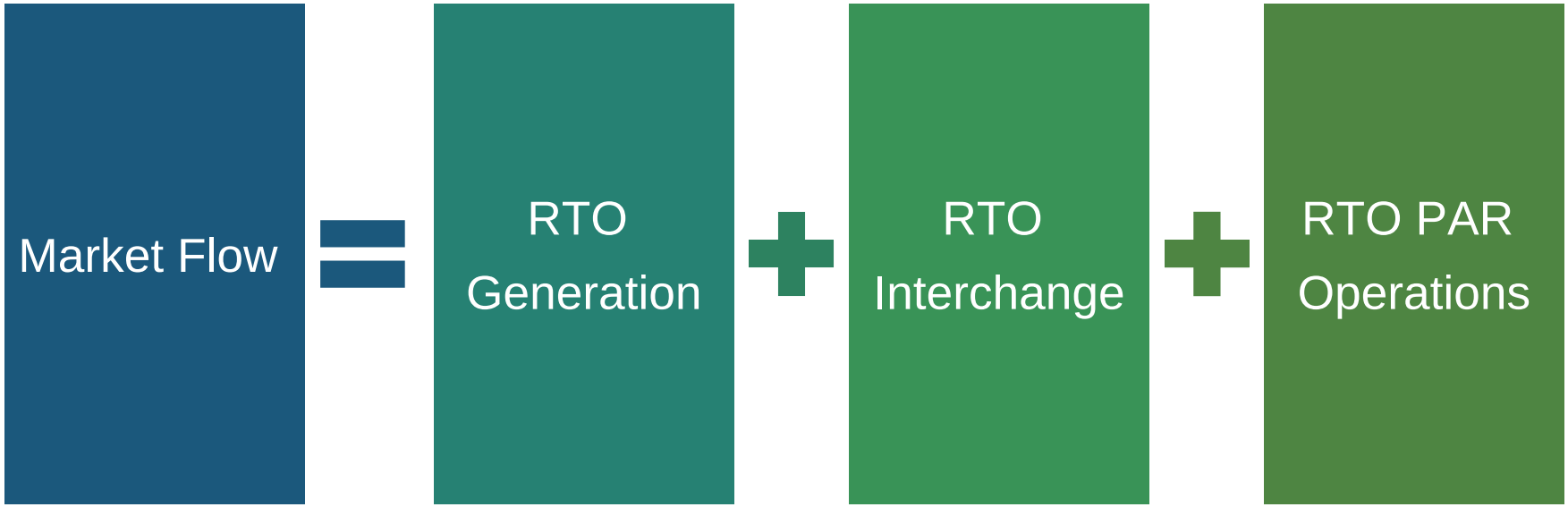
- NYISO reduces pump 1
- PJM increases pump 2 to assist NYISO
- Pipe A flow reduces by joint control



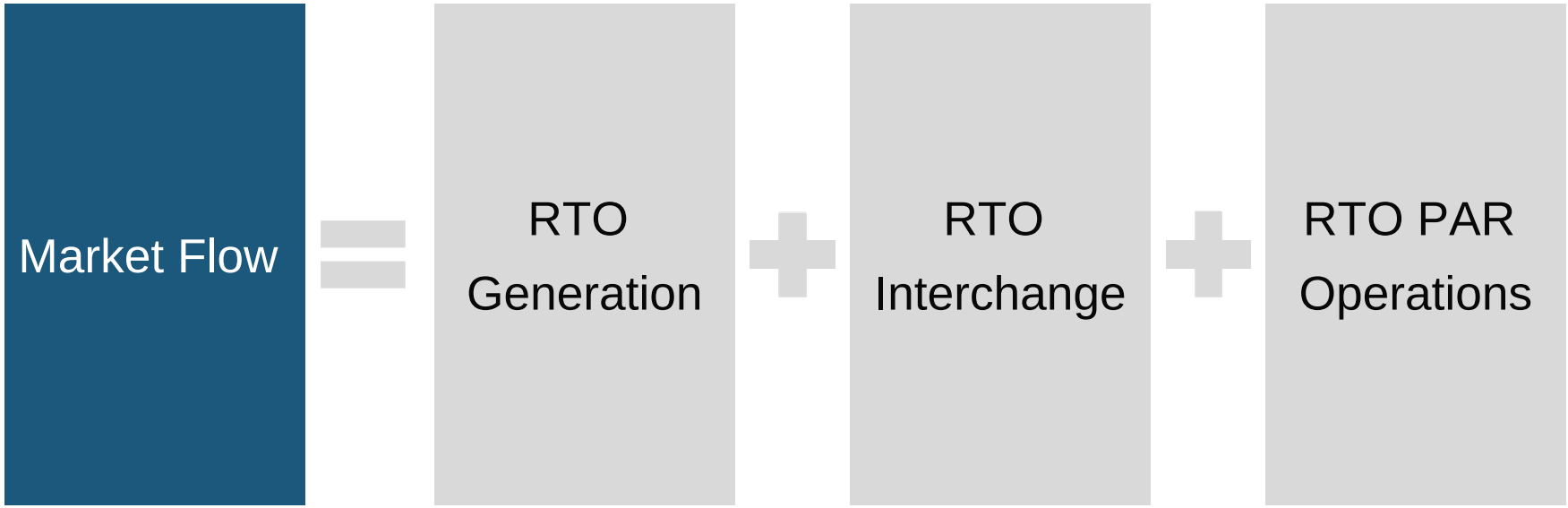
M2M Coordination Timeline



Market Flow Calculation

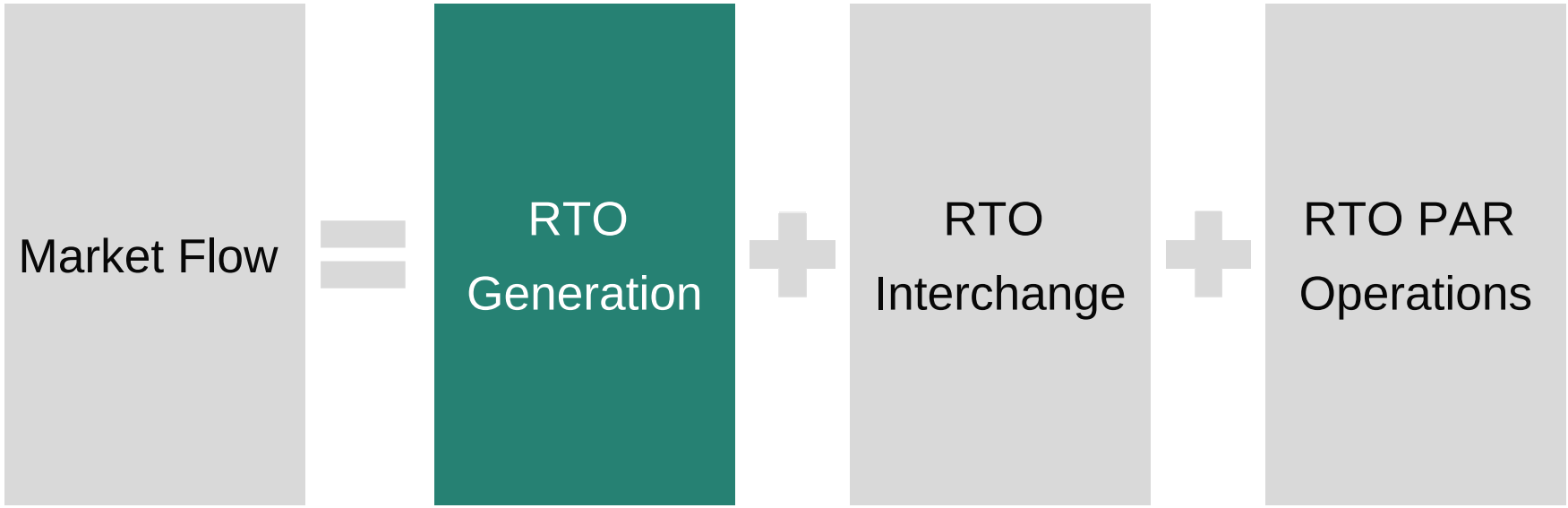


Market Flow Calculation



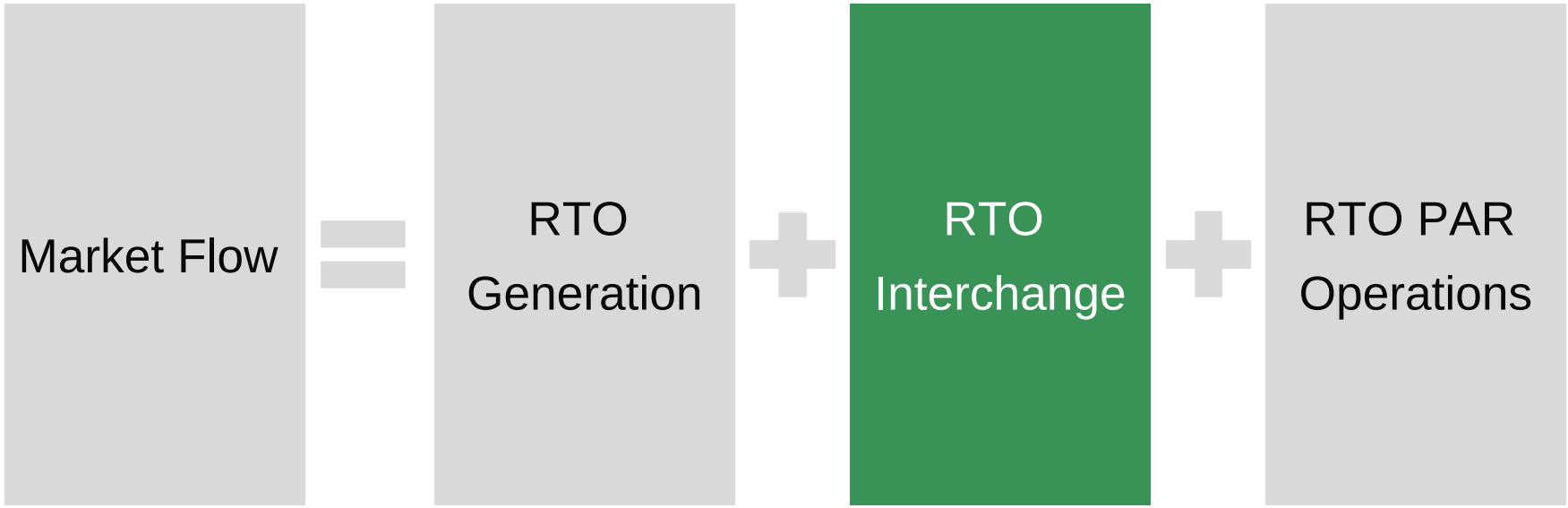
- The measure of flow on a transmission facility that is caused by RTO market operations
- Based on a common set of equations
- NYISO and PJM will compute their own Market Flows

Market Flow Calculation



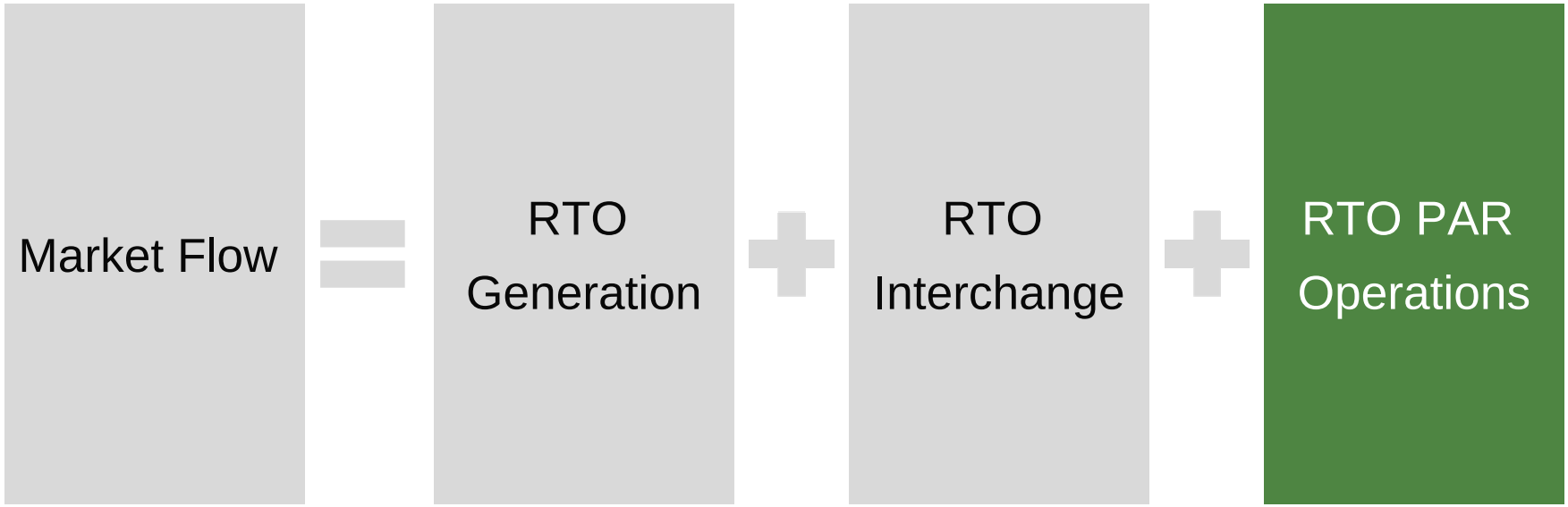
- RTO Generation impacts are determined by computing generation-to-load distribution factor on the M2M Flowgate

Market Flow Calculation



- RTO Interchange impacts are determined by computing the transfer distribution factor on the M2M Flowgate

Market Flow Calculation



- PAR Operation impacts are determined by computing the PAR distribution factor on the M2M Flowgate

M2M Example

- Assume a NYISO transmission line is constrained:
  - Flowgate rating = 400
  - Flow on flowgate approachs 400 MW limit

Market	Status	Shadow Price (SP)	Initial Market Flow	Action
NYISO	Monitoring RTO	$300	150 MW	Bind
PJM	Non-Monitoring RTO	$250	200 MW	Bind based on SP

- It is more economic for PJM to control the constraint because of the lower shadow price of $250/MW
- Non-Monitoring RTO (PJM) redispatches when its shadow price warrants

M2M Flowgates

- A Flowgate that may be significantly impacted by the dispatch of generation serving load in an adjacent market
- A Monitoring RTO Flowgate will be considered a M2M Flowgate if the Non-Monitoring RTO generation impacts the Monitoring RTO Flowgate

M2M Flowgates

- NY Flowgates – Initial Set
  - Dysinger East Interface
  - West Central Interface
  - Central East Interface
  - Leeds - Pleasant Valley Line for the loss of:
    - Athens – Pleasant Valley Line
    - Leeds – Hurley Avenue Line
    - Athens – Pleasant Valley & Leeds – Hurley Avenue Lines
  - Additional Flowgates may be added in later phases

M2M Flowgates

- PJM Flowgates – Initial Set
  - PJM East Interface
  - Erie West TX1 for the loss of Erie West-Erie South Line
  - Erie West TX3 for the loss of Erie West-Erie South Line
  - Keystone-Juniata & Conemaugh-Juniata Parallel Lines for the loss of:
    - BlackOak-Bedington Line
    - Conemaugh-Keystone Line
    - Pruntytown-Mt. Storm Line
  - Additional Flowgates may be added in later phases

Entitlements

- Predetermined MW amount that a market entity is entitled to based on its historical impacts to a Flowgate
- Calculated based on prior usage of neighboring system:
  - Historic transmission representation with “No Outages”
  - Recognition of additional transmission investment (new facilities) by the market participants in a particular market
  - Consistent with the real-time Market Flow calculation

Consistent MF & Entitlement

	Market Flow	Entitlement
Model / Topology	Real-Time	“No outage” model
Topology	Real-Time	“No outage” model
Generation	Real-Time	Historic
Load	Real-Time	Historic
Interchange	Scheduled	Zero
PAR Redirect	Schedule - Actual	Zero

M2M Summary

- Entitlement with historic based topology
- Consistent Market Flow and Entitlement
  - Generation + Interchange + PAR Operations
- Ongoing validation; limited dispute

Agenda

- Joint Operating Agreement (JOA) Overview
- Project Timeline & Progress Report
- Key Concepts
- Real-Time Coordination
- Market Flow & Entitlement
- Settlement
- Post-Processing Validation
- Next Steps

Market Settlements

- Compare RT market flow contribution from Non-Monitoring RTO dispatch to flow entitlement

Flow > Entitlement	Flow < Entitlement
Non-Monitoring RTO is overusing the Monitoring RTO's transmission system	Non-Monitoring RTO is underutilizing its entitlement on the Monitoring RTO's transmission system
Non-Monitoring RTO payment to Monitoring RTO	Monitoring RTO payment to Non-Monitoring RTO
Payment = (Market Flow - Entitlement) * Shadow Price in Monitoring RTO	Payment = (Market Flow - Entitlement) * Shadow Price in Non-Monitoring RTO

M2M Example (cont'd)

- Assume PJM provides 20 MW of relief (decreasing market flow)
  - Flowgate rating = 400

Market	Status	Shadow Price	Initial Market Flow	New Market Flow	Entitlement
NYISO	Monitoring RTO	$300	150 MW	150 MW	200 MW
PJM	Non-Monitoring RTO	$250	200 MW	180 MW	200 MW

- PJM Market Flow < Entitlement
  - Monitoring RTO payment to Non-Monitoring RTO
  - Settlement from NYISO to PJM
  - Payment = (New Market Flow - Entitlement) * Shadow Price$_{PJM}$
  - = (180 – 200) * $250 = -$5,000

M2M Example 2

- Assume PJM provides 20 MW of relief (decreasing market flow)
  - Flowgate rating = 400

Market	Status	Shadow Price	Initial Market Flow	New Market Flow	Entitlement
NYISO	Monitoring RTO	$300	150 MW	150 MW	240MW
PJM	Non-Monitoring RTO	$250	200 MW	180 MW	160 MW

- PJM Market Flow **>** Entitlement
  - Non-Monitoring RTO payment to Monitoring RTO
  - Settlement from PJM to NYISO
  - Payment = (New Market Flow - Entitlement) * Shadow Price$_{NYISO}$
  - = (180 – 160) * $300 = +$6,000

M2M Settlement

- Since the M2M Real-Time Coordination Process is reducing congestion, NYISO will allocate the M2M hourly credit or charge to the loads through Real-Time Congestion Residuals

- M2M Coordination Settlements will be invoiced weekly by the NYISO

Agenda

- Joint Operating Agreement (JOA) Overview
- Project Timeline & Progress Report
- Key Concepts
- Real-Time Coordination
- Market Flow & Entitlement
- Settlement
- Post-Processing Validation
- Next Steps

Post-Processing Validation

- Processes to identify and respond to any unexpected market outcomes that are a result of a M2M coordination
- Market Flow Calculation Verification
  - The MRTO is responsible for re-calculating the NMRTO's Market Flows on the MRTO flowgates
  - Market Flow Calculator used for validation will be the same as the Real Time Market Flow Calculator
- Settlement Data Validation
  - Verify Market-to-Market components used for invoicing
- Trending Analysis
  - Understand performance and market impacts of Market-to-Market

Agenda

- Joint Operating Agreement (JOA) Overview
- Project Timeline & Progress Report
- Key Concepts
- Real-Time Coordination
- Market Flow & Entitlement
- Settlement
- Post-Processing Validation
- Next Steps

Next Steps

- JOA Draft for Stakeholder Review in August
- Incremental feedback should be provided via individual stakeholder process
- Additional joint stakeholder meeting in October as needed

Appendix

July 21, 2011 / Rensselaer, NY

Acronyms

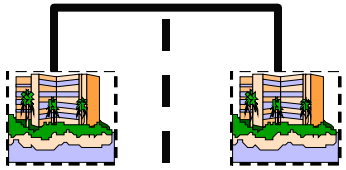
- CF - Coordinated Flow Gate
- FFE – Firm Flow Entitlement
- JOA – Joint Operating Agreement
- MRTO – Monitoring RTO
- M2M – Market-to-Market
- MF – Market Flow
- NMRTO – Non-Monitoring RTO
- NNL – Network Native Load
- SP – Shadow Price

REAL-TIME COORDINATION EXAMPLE

Market-to-Market Example – Stage 1

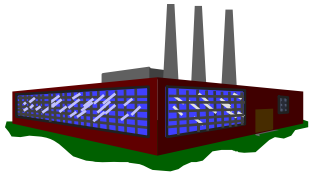
NYISO
System Price $48

PJM (Monitoring RTO)
System Price $48

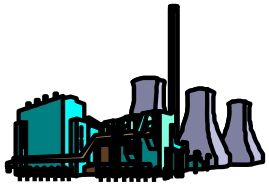


LOAD Y
+15% Dfax
LMP = $48

LOAD X
+15% Dfax
LMP = $48

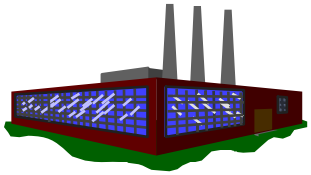


GEN 3
$60 Offer; - 25% Dfax
Dispatch = 0 MW (Max 20)
LMP = $48



GEN 1
$40 Offer; +27.5% Dfax
Dispatch = 200 MW
(Econ min 100)
LMP = $48

Flowgate A
80 MW
(limit 100)
NYISO MF = 35



GEN 2
$58 Offer; - 30% Dfax
Dispatch = 0 MW (Max 20)
LMP = $48

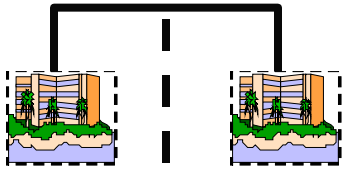
LOAD X (in PJM) and LOAD Y (in NYISO) are electrically close to each other and have the same impact on Flowgate A.

The initial NYISO Market Flow on Flowgate A is 35 MW.

Market-to-Market Example – Stage 2a

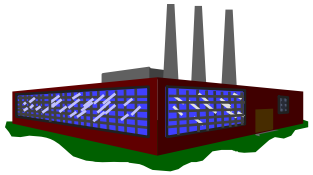
NYISO
System Price $48

PJM (Monitoring RTO)
System Price $48

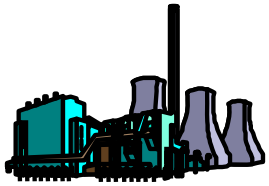


LOAD Y
+15% Dfax
LMP = $48

LOAD X
+15% Dfax
LMP = $48

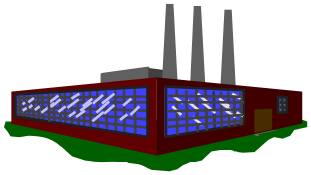


GEN 3
$60 Offer; - 25% Dfax
Dispatch = 0 MW (Max 20)
LMP = $48



GEN 1
$40 Offer; +27.5% Dfax
Dispatch = 200 MW
(Econ min 100)
LMP = $48

Flowgate A
111 MW
(limit 100)



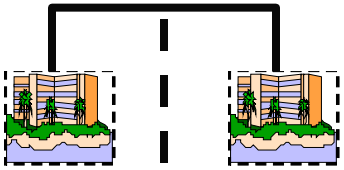
GEN 2
$58 Offer; - 30% Dfax
Dispatch = 0 MW (Max 20)
LMP = $48

The flow on Flowgate A increases to 111 MW due to higher load in PJM

Market-to-Market Example – Stage 2b

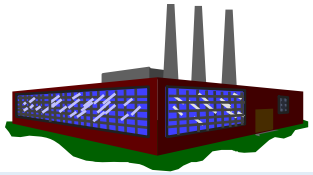
NYISO
System Price $48

PJM (Monitoring RTO)
System Price $48

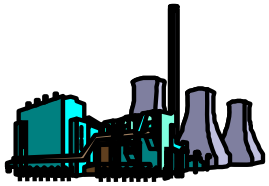


LOAD Y
+15% Dfax
LMP = $48

LOAD X
+15% Dfax

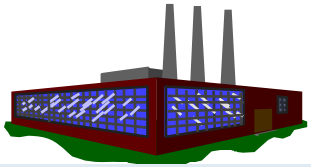


GEN 3
$60 Offer; - 25% Dfax
Dispatch = 20 MW (Max 20)
20 * 0.25 = 5 MW of relief



GEN 1
$40 Offer; +27.5% Dfax
Dispatch = 200 MW
(Econ min 100)
LMP = $48

Flowgate A
111 MW
(limit 100)



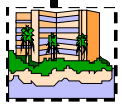
GEN 2
$58 Offer; - 30% Dfax
Dispatch = 20 MW (Max 20)
20 * 0.30 = 6 MW of relief

PJM dispatches GEN 2 and GEN 3 to control the Flowgate A

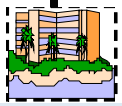
Market-to-Market Example – Stage 2c

NYISO
System Price $48

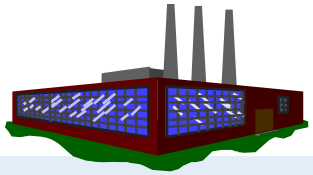
PJM (Monitoring RTO)
System Price $48
Shadow Price = - 48



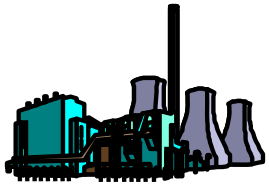
LOAD Y
+15% Dfax
LMP = $48



LOAD X
+15% Dfax
LMP = $40.8

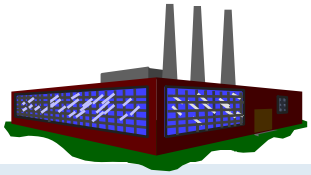


GEN 3
$60 Offer; - 25% Dfax
Dispatch = 20 MW (Max 20)
20 * 0.25 = 5 MW of relief
LMP = $60



GEN 1
$40 Offer; +27.5% Dfax
Dispatch = 200 MW
(Econ min 100)
LMP = $48

Flowgate A
100 MW
(limit 100)



GEN 2
$58 Offer; - 30% Dfax
Dispatch = 20 MW (Max 20)
20 * 0.30 = 6 MW of relief
LMP = $62.4

PJM dispatches GEN 2 and GEN 3 to control the Flowgate A

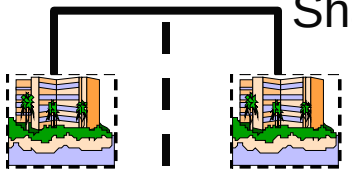
GEN 3 is the marginal unit and constraint shadow price is (60-48)/(-.25)= -48

GEN 2 LMP = 48+(-0.30 * -48) = $62.4; LOAD X LMP =48+(0.15 * -48) =$40.8

Market-to-Market Example – Stage 3a

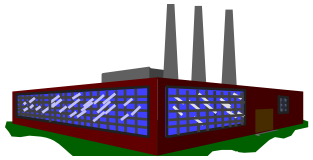
NYISO
System Price $48

PJM (Monitoring RTO)
System Price $48
Shadow Price = - 48

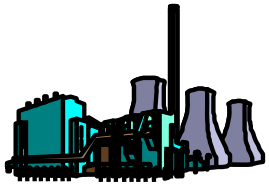


LOAD Y
+15% Dfax

LOAD X
+15% Dfax
LMP = $40.8

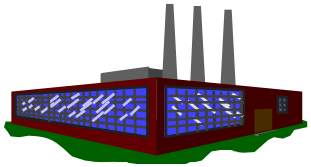


GEN 3
$60 Offer; - 25% Dfax
Dispatch = 20 MW (Max 20)
20 * 0.25 = 5 MW of relief
LMP = $60



GEN 1
$40 Offer; +27.5% Dfax

Flowgate A
100 MW
(limit 100)



GEN 2
$58 Offer; - 30% Dfax
Dispatch = 20 MW (Max 20)
20 * 0.30 = 6 MW of relief
LMP = $62.4

PJM notifies NYISO to invoke M2M to control Flowgate A.

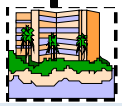
PJM requests 5 MW of relief at the current shadow price of -48.

NYISO reduces GEN 1 to provide the relief requested by PJM

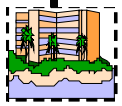
Market-to-Market Example – Stage 3b

NYISO
System Price $48
Shadow Price= - 29.1

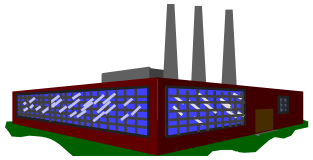
PJM (Monitoring RTO)
System Price $48
Shadow Price = - 48



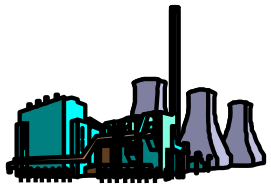
LOAD Y
+15% Dfax
LMP = $43.6



LOAD X
+15% Dfax
LMP = $40.8

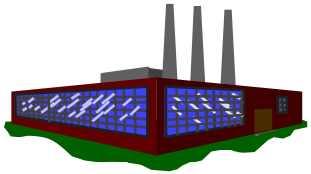


GEN 3
$60 Offer; - 25% Dfax
Dispatch = 20 MW (Max 20)
20 * 0.25 = 5 MW of relief
LMP = $60



GEN 1
$40 Offer; +27.5% Dfax
Dispatch = 181.8 MW
(Econ min 100)
18.2 * 0.275 = 5 MW of relief
LMP = $40

Flowgate A
95 MW
(limit 100)
NYISO MF = 30



GEN 2
$58 Offer; - 30% Dfax
Dispatch = 20 MW (Max 20)
20 * 0.30 = 6 MW of relief
LMP = $62.4

GEN 1 is reduced by 18.2 MW (to 181.8 MW) to provide 5 MW of relief.

NYISO constraint shadow price is (40 - 48) / 0.275 = - 29.1

LOAD Y LMP = 48 + (0.15 * - 29.1) = 43.6 ; **NYISO MF decreases to 30**

Market-to-Market Example – Stage 4a

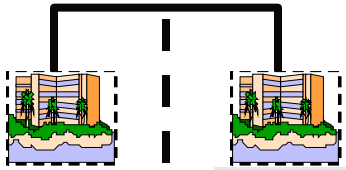
NYISO

System Price $48

Shadow Price= - 29.1

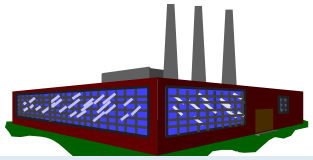
PJM (Monitoring RTO)

System Price $48

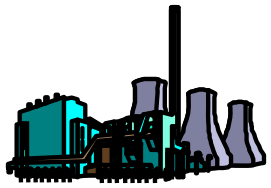


LOAD Y
+15% Dfax
LMP = $43.6

LOAD X
+15% Dfax

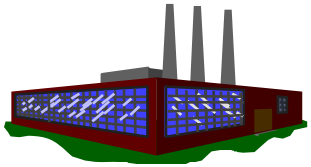


GEN 3
$60 Offer; - 25% Dfax
Dispatch = 0 MW (Max 20)
0 * 0.25 = 0 MW of relief



GEN 1
$40 Offer; +27.5% Dfax
Dispatch = 181.8 MW
(Econ min 100)
18.2 * 0.275 = 10 MW of relief
LMP = $40

Flowgate A
100 MW
(limit 100)
NYISO MF = 30



GEN 2
$58 Offer; - 30% Dfax
Dispatch = 20 MW (Max 20)
20 * 0.30 = 6 MW of relief

With loading decreases on Flowgate A, PJM can release the less cost-effective GEN 3.

-20 * -0.25 = 5 MW of flow is added back to Flowgate A which is now at its limit.

Market-to-Market Example – Stage 4b

NYISO

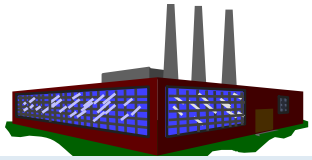
System Price $48

Shadow Price= - 29.1

PJM (Monitoring RTO)

System Price $48

Shadow Price = - 33.3



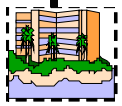
GEN 3

$60 Offer; - 25% Dfax

Dispatch = 0 MW (Max 20)

0 * 0.25 = 0 MW of relief

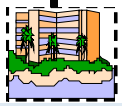
LMP = $56.3



LOAD Y

+15% Dfax

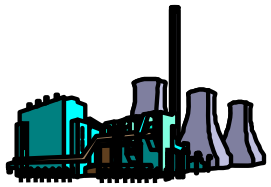
LMP = $43.6



LOAD X

+15% Dfax

LMP = $43



GEN 1

$40 Offer; +27.5% Dfax

Dispatch = 181.8 MW

(Econ min 100)

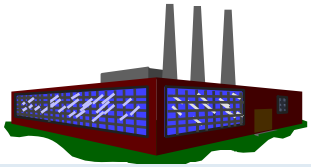
18.2 * 0.275 = 10 MW of relief

LMP = $40

Flowgate A

100 MW

(limit 100)



GEN 2

$58 Offer; - 30% Dfax

Dispatch = 20 MW (Max 20)

20 * 0.30 = 6 MW of relief

LMP = $58

With GEN 3 offline, GEN 2 becomes the new marginal unit for the constraint

Constraint shadow price is (58 - 48) / (- 0.30) = - 33.3

GEN 3 LMP = 48+(-0.25 * -33.3) = 56.3; LOAD X LMP = 48+(0.15 * -33.3)=43

Market-to-Market Example – Stage 4b

NYISO

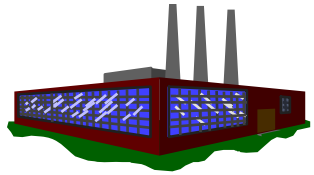
System Price $48

Shadow Price= - 29.1

PJM (Monitoring RTO)

System Price $48

Shadow Price = - 33.3



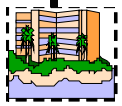
GEN 3

$60 Offer; - 25% Dfax

Dispatch = 0 MW (Max 20)

0 * 0.25 = 0 MW of relief

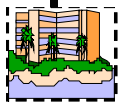
LMP = $56.3



LOAD Y

+15% Dfax

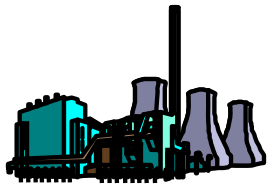
LMP = $43.6



LOAD X

+15% Dfax

LMP = $43



GEN 1

$40 Offer; +27.5% Dfax

Dispatch = 181.8 MW

(Econ min 100)

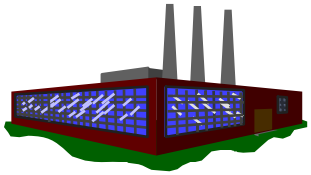
18.2 * 0.275 = 10 MW of relief

LMP = $40

Flowgate A

100 MW

(limit 100)



GEN 2

$58 Offer; - 30% Dfax

Dispatch = 20 MW (Max 20)

20 * 0.30 = 6 MW of relief

LMP = $58

Note the constraint shadow price convergence between PJM and NYISO and the LMP convergence between LOAD X (in PJM) and LOADY (in NYISO).

MARKET FLOW CALCULATION EXAMPLE

Market Flow Calculation

- Market Flow = Sum(GLDF*Gen) + Sum(TDF*Transfer) + Sum(PAR Redirects)

  where:

  GLDF = $GSF_{Gen} - LDF_{Area}$, for a M2M Flowgate

  TDF = $GSF_{Area} - LDF_{Area}$, for a M2M Flowgate

  PAR Redirect =

  (Sum(GLDF(PAR)*Gen) + Sum(TDF(PAR)*Transfer)) - ((Desired PAR flow – Actual PAR flow) * PAR DF) , for a M2M Flowgate

Market Flow Calculation

- Market Flow is the impact one market area has on a flowgate.
- Market Flow includes impacts
  - Gen-to-Load impacts: generators serving load
  - Transfer Impacts: interchange
  - Recognizes "PAR Redirect"
- Market Flow =

  Gen-to-Load + Transfers + PAR Redirect

Market Flow Calc: GLDF

- Gen-to-Load Distribution Factor (GLDF)
- GLDF is a distribution factor calculated from one generator to a weighted average load shift factor

- Shift Factors for a Flowgate

  Unit 1 GSF: -0.146

  Load 1 LSF: -0.104

- Distribution Factor for a Flowgate

  GLDF = (-0.146) – (-0.104) = -0.042

Market Flow Calc: TDF

- Transfer Distribution Factor: TDF
- TDF = Weighted generation in one area to weighted load in another area = GSF_{Area} – LSF_{Area}
- TDF applies between areas
- Internal to a market (control zone transfers)
- Interchange transactions between a market and other areas (eTags)

SETTLEMENT EXAMPLE

Settlement Algorithm

The settlement for each M2M flowgate will be calculated based on the following equation:

- $Settlement_i = (MF_i – Ent_i) \times Shad_i \times s_i / 3600$

  Where:

  $Settlement_i$ = Settlement for $interval_i$.

- A positive value indicates a payment from the NMRTO to the MRTO.
- A negative value indicates a payment from the MRTO to the NMRTO.

Settlement Algorithm (Cont.)

Other Definitions:

MF_i = Real-Time Market Flow for $interval_i$.

Ent_i = M2M Entitlement for $interval_i$.

$Shad_i$ = ex-ante Constraint Shadow Price for $interval_i$.

s_i = Number of seconds for $interval_i$.

Each interval will be calculated separately and then summed to hourly and daily values for this M2M flowgate and repeated for all M2M flowgates.

Real-Time Coordination Example

MF_i = 25 MW

Ent_i = 35 MW

$Shad_i$ = $40 (Shadow price of NMRTO)

S_i = 300

$Settlement_i$ = (25 – 35) x 40 x 300/3600

= -$33.33

This will be paid from PJM (MRTO) to the NYISO (NMRTO).

Invoicing

- M2M Coordination Settlements will be invoiced weekly by the NYISO for the previous week.