

# New Generation Outage Application Software using CROW (Control Room Operating Window)

October 7, 2010 WebEx

Revised

# Before We Begin

- Presentation available on ISO New England (ISO-NE) Web site
  - [Support > Training > Training Materials > Operator Training](#)
- General WebEx Usage
  - Q&A
  - Interactivity
- Evaluations
- References after the session

# Disclaimer for Market Training

ISO New England provides training to advance participant and stakeholder understanding of the New England Markets.

Since not all issues and requirements are addressed by the training, participants and other stakeholders should not rely solely on this training for information but should consult the effective Markets, Services and Transmission Tariff (Tariff) and the relevant Market Manuals, Operating Procedures and Planning Procedures (Procedures).

In case of a discrepancy between training provided by ISO and the Tariff or Procedures, the meaning of the Tariff and Procedures shall govern.

# Presenters

- Cheryl Mendrala – Systems Operation Support
- Mike Gilmore – Project Management

Company names and numerical values are to be considered fictitious and are not to be associated with any actual or real market system customer.

# Introduction to Generation Outage Request Software

# Course Goal

- To provide information on
  - the process for submitting generator outage information using the CROW Outage Scheduler application
  - how to use CROW for reviewing information submitted
  - the Web Services capability in CROW for generator outage submissions

# Agenda

- Part 1: User Interface for Generation Outages
- Part 2: Web Services for Lead Participants

It is advised that IT personnel be present for Part 1 to better understand business rules of CROW

# User Interface for Generator Outages

# Components

- CROW Overview
- Accessing CROW
- Options Settings
- Outage Types
- Outage Lifecycle
- Creating and Updating Outage Requests
- Reviewing Outage Request data

# CROW Overview

- CROW = Control Room Operations Window
- Currently utilized by Transmission Owners (TOs), Local Control Centers (LCCs) and ISO New England (ISO-NE) for transmission outages
- New release includes generation outages
  - Does not apply to Dispatchable Asset-related Demands (DARDs)
  - Does not apply to Import Capacity Resources
  - Does not apply to Settlement Only Generators

# CROW Overview (cont.)

- Data entry and retrieval through:
  - Internet-based User Interface
  - Web Services
- Captures all generation outage requests, plus more
  - Even if entered by ISO-NE on behalf of generator it is visible to Generator Users

# Accessing CROW

- ISO-NE will assign the CROW application in the Customer & Asset Management System (CAMS) to all companies that are generator Lead Participants
- Security Administrator (SA) assigns users
  - Each user under has access to all outage requests for all generators under that Lead Participant
- Must have a valid digital certificate issued by ISO-NE
  - Sandbox = <https://sandboxsmd.iso-ne.com/>
  - Production = <https://smd.iso-ne.com/>

# Accessing CROW (cont.)

- CAMS application group for generation outages:
  - CROW Gen User Role SBox (sandbox)
  - CROW Gen User Role (production)
- Roles available:
  - View Only
  - View Submit Only
  - Access Using Web Services (must also have either View Only or View Sub Only)
- CROW users are uniquely identified by the email address for that person in CAMS
  - An email address may only be associated with one CROW user

# Accessing CROW in Sandbox

<https://sandboxsmd.iso-ne.com/>

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## SMD Applications Sandbox Home Page

Market System → SMD Applications Sandbox Home Page

- Sandbox Legend
- Production Project**

Internal Transactions	External Transactions (Includes New Brunswick DA Pnode Change)
Bids & Offers (Registered Users)	<b>CROW Outage Scheduler</b>
Financial Transmission Rights (Registered Users)	Forward Reserve Market Auction
Submit Meter Reading	ICAP Daily Tag
Forward Reserve Assignment	Submit Network Load
Forward Capacity Tracking System	Submit Load Response Event Summary
Demand Response Market User Interface	

# Accessing CROW in Production

<https://smd.iso-ne.com/>

The screenshot shows the 'SMD Applications Home Page' with a grid of application buttons. The 'CROW Outage Scheduler' button is highlighted with a yellow background and a black border. The page title is 'SMD Applications Home Page' and the subtitle is 'Market System SMD Applications Home Page'.

SMD Applications Home Page	
Market System SMD Applications Home Page	
Internal Transactions	External Transactions
Bids & Offers (Registered Users)	Customer and Asset Management System
Financial Transmission Rights (Registered Users)	Forward Reserve Market Auction
Submit Meter Reading	<b>CROW Outage Scheduler</b>
Submit Peak Contribution	Forward Reserve Assignment
Submit Network Load	Forward Capacity Tracking System
Financial Assurance Management	Forward Capacity Market Reconfiguration Auction
Forward Capacity Market CSO Bilateral Contracts	Supplemental Availability Designation
Demand Resource Market User Interface	

# Outage Types, Operating Procedure 5 (OP-5)

- Planned Outage (PO)
  - Must be submitted through CROW
  - Option available if Start Date is  $\geq$  15 calendar days in future
- Overrun Planned Outage (OPO)
  - May be submitted through CROW
  - May continue to be called in
- Maintenance Outage (Short Term, STO) and Forced Outage (FO)
  - May be submitted through CROW
  - May continue to be called in
  - After 9 a.m. day-before must be called-in

# Outage Types, Other

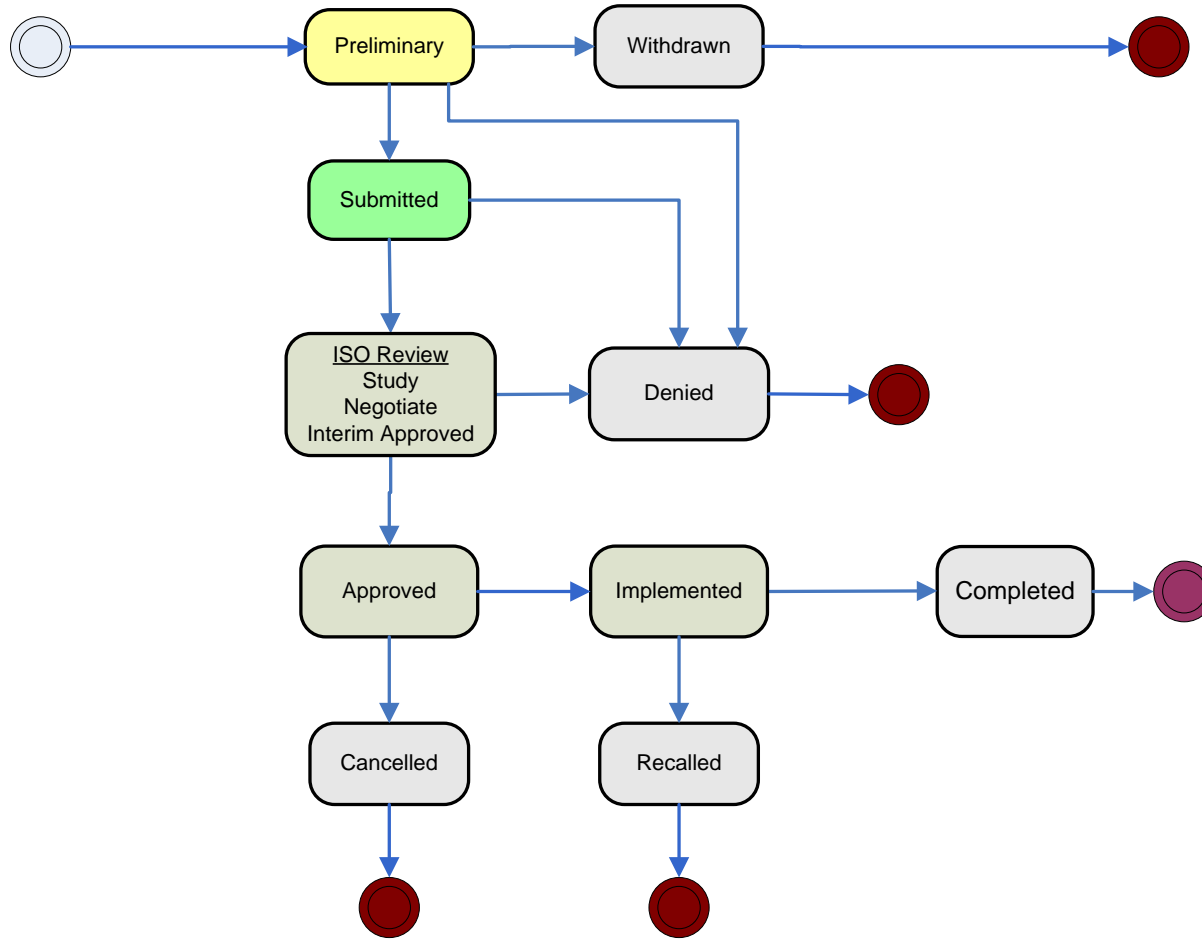
- Owner Test
  - Used when generator needs to operate at a predefined schedule to perform testing
  - NOT used to request audits
- MVAR Test
  - Used, in conjunction with Schedule 2 Business Practices, to request an MVAR test
- Informational
  - Used to capture unique conditions such as Automatic Voltage Regulator (AVR) problems, communication issues
  - Does not replace required verbal communication

# Generator Outage Request (GOR) Lifecycle

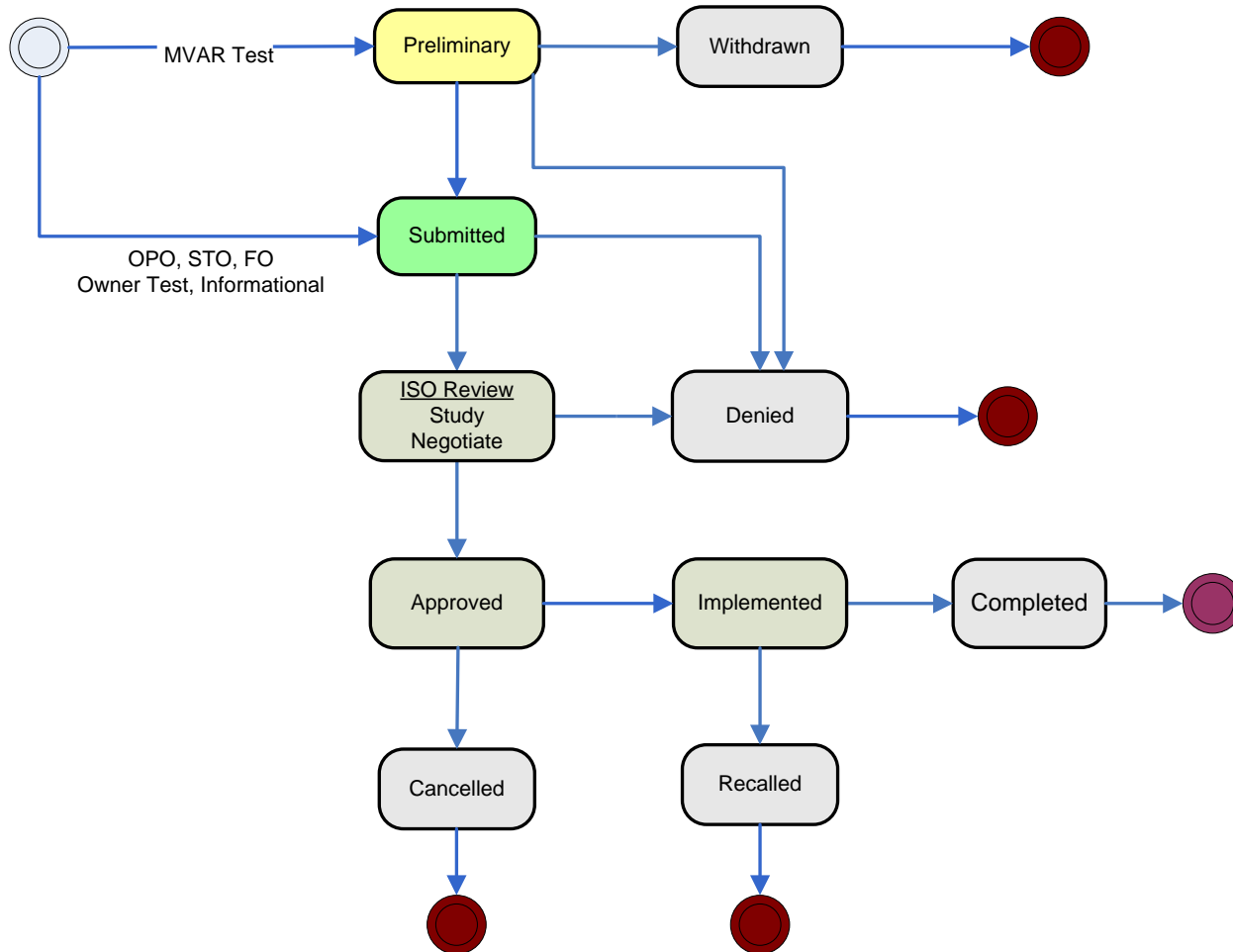
- Lifecycle is dependent on outage type
- “Status” indicates where GOR is in the lifecycle
- Ability to modify outage data is dependent on where GOR is in the lifecycle
  - Gen User can only modify while in Preliminary state
- LCC will review GORs with status = Preliminary
  - Move to Submitted if no issues noted
  - Set to Denied if issues cannot be resolved
- ISO-NE will review GORs with status = Submitted

# GOR Lifecycle, Planned Outages

Entered by Gen User



# GOR Lifecycle, non Planned Outages



# Initial Login to CROW

CROW Web 5.1.1.188 - Generation Outage Request Index

Outage Request Index

Outage Request Index - (13 of 13 records)

Outage Request Date: 09 / 21 / 2010 to 12 / 22 / 2010

Request Status: All

Constraint/Commit: All

Request Priority: All

Control Center: [Dropdown]

Requested By: [Dropdown]

Outage Number: [Input] - [Input] Find Export to Excel Export to Gantt Refresh No Auto Refresh Gen. Outage Report New Outage Request

Outage Requests appearing in red are overdue.

Outage #/ Revision/ Status	Station/ Circuit/Equipment	Required Approvals	Planned Start	Planned End	Priority	Requested By/ Reason/Priority	Asset ID	Asset Name
1-10003602 Revision #1 Submitted	LAKE_RD TRN2 Black Start, TRN1 Black Start	ISONE_CC: Pending CONVEX_CC: Pending	11/08/2010 08:00	11/08/2010 17:30	Owner Test 09/21/2010 09:21	LP_TRAINING, LP_TRAINING testing the interaction	9990	AST1
1-10003601 Revision #1 Submitted	LAKE_RD TRN2 Communications, TRN1 Communications	ISONE_CC: Pending CONVEX_CC: Pending	10/10/2010 08:00	10/11/2010 17:30	Informational 09/20/2010 15:33	LP_Employee, lam Proposed maintenance activity. Bridged on 9/20/2010 3:32:31 PM via Mike Gilmore API call.	9990	AST1
1-10003593 Revision #2 Submitted	LAKE_RD TRN2 General, TRN1 General	CONVEX_CC: Approved ISONE_CC: Pending	10/21/2010 08:00	10/21/2010 16:00	MVAR Testing 09/20/2010 12:57	LP_Employee, lam	9990	AST1
1-10003592 Revision #3 Denied	LAKE_RD TRN2 General, TRN1 General	CONVEX_CC: Approved ISONE_CC: Denied	10/21/2010 08:00	10/21/2010 16:00	MVAR Testing 09/20/2010 12:35	LP_Employee, lam	9990	AST1
1-10003588	LAKE RD TRN2 General, TRN1	CONVEX CC: n/a	10/21/2010	10/21/2010	MVAR Testing	LP_Employee, lam	9990	AST1

# Options, Settings

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Outage Requests Options

## CROW Web 5.1.1.188 - Options

My Equipment Groups Options

### Date/Time Options

Time Zone: Eastern Time (UTC - 05:00)

Daylight Savings:  Use Daylight Savings Time  
 Use Standard Time

Date Format: MM/DD/YYYY

### Asset Naming Options

Asset Naming Options: 1-Line Designation

### Outage Request Form Options

Close Outage Request Form After Saving:

Update

# Options, Settings (cont.)

**Date/Time Options**

**Time Zone:** Eastern Time (UTC - 05:00)

**Daylight Savings:**  Use Daylight Savings Time  
 Use Standard Time

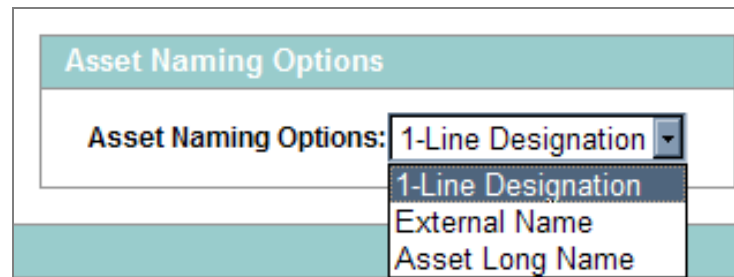
**Date Format:** MM/DD/YYYY

**Asset Naming Options**

- Time Zone will default to Eastern
  - Controls the time that appears in all date fields
- **Use Daylight Savings Time** will automatically adjust times (recommended)
- User can select the desired date format

# Options, Settings (cont.)

- 1-Line Designation is 4 character abbreviation of generator
- External Name, Asset Long Name will be equal to 1-Line Designation in nearly all cases



The image shows a screenshot of a software interface. At the top, there is a teal header bar with the text "Asset Naming Options". Below this, there is a white box containing the text "Asset Naming Options:" followed by a dropdown menu. The dropdown menu is currently open, showing three options: "1-Line Designation" (which is highlighted with a dark blue background), "External Name", and "Asset Long Name".

# Options, Settings (cont.)

- The notification process referenced here is not supported in initial release and should be left at the default state

Outage Request Notification Options	
Send Me Outage Request Approval/Denial Notifications:	<input type="checkbox"/>

- If checked, outage form will close automatically after saving

Outage Request Form Options	
Close Outage Request Form After Saving:	<input type="checkbox"/>

# GOR Outage Entry, Creation

CROW Web 5.1.1.188 - Generation Outage Request Index

Outage Request Index

Outage Request Index - (13 of 13 records)

Outage Request Date: 09 / 21 / 2010 to 12 / 22 / 2010

Request Status: All

Constraint/Commit: All

Request Priority: All

Control Center: [ ] List...

Requested By: [ ]

Outage Number: [ ] - [ ] Find

Export to Excel Export to Gantt Refresh No Auto Refresh Gen. Outage Report **New Outage Request**

Outage Requests appearing in red are overdue.

Outage #/ Revision/ Status	Station/ Circuit/Equipment	Required Approvals	Planned Start	Planned End	Priority	Requested By/ Reason/Priority	Asset ID	Asset Name
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1-10003588	LAKE_RD TRN2 General, TRN1	CONVEX_CC: n/a	10/21/2010	10/21/2010	MVAR Testing	LP_Employee, lam	9990	AST1

# GOR Outage Entry, Creation (cont.)

CROW Web 5.1.1.188 - Generation Outage Request: 0-00000000 rev. 1  
(New) by LP\_TRAINING, LP\_TRAINING 09/22/2010 08:00 -  
09/22/2010 16:00 Continuous

Request Summary Request Details/Approval Attachments

Outage #: 0-00000000 rev. 1 (current) [History](#)  
Requested by: LP\_TRAINING, LP\_TRAINING  
Company: LP FOR TRAINING  
Outage status:  
Planned start: 09 / 22 / 2010 08:00  
Planned end: 09 / 22 / 2010 16:00  
First actual start: / /

Date Requested:  
Outage priority:   
Priority date:  
Continuous/Daily: Continuous  
Outage duration: Exactly 8 Hour(s)

Asset Id: Sur  
Asset Name: Wir  
Equip. Requested:

LCC	GO	Station	Circuit/Equipment	Voltage Class	Rel Area	Constraint/Commitment
Please click the "Add..." button to add outage equipment.						

External Comments:

[Add...](#) [Clear...](#)

Click here for the [CROW Web 5.1.1.188 User Reference](#).  
CROW Web support is available at ISO New England Customer Support, or by sending email to [CROW Web Support](#).

Priority selection required before Add button active

# GOR Outage Entry, Select Market Asset

Selecting equipment on default tab requires three steps

Select Circuit(s)/Equipment

Company: <click to select>

Station: <click to select>

Equipment Type:

Equipment:

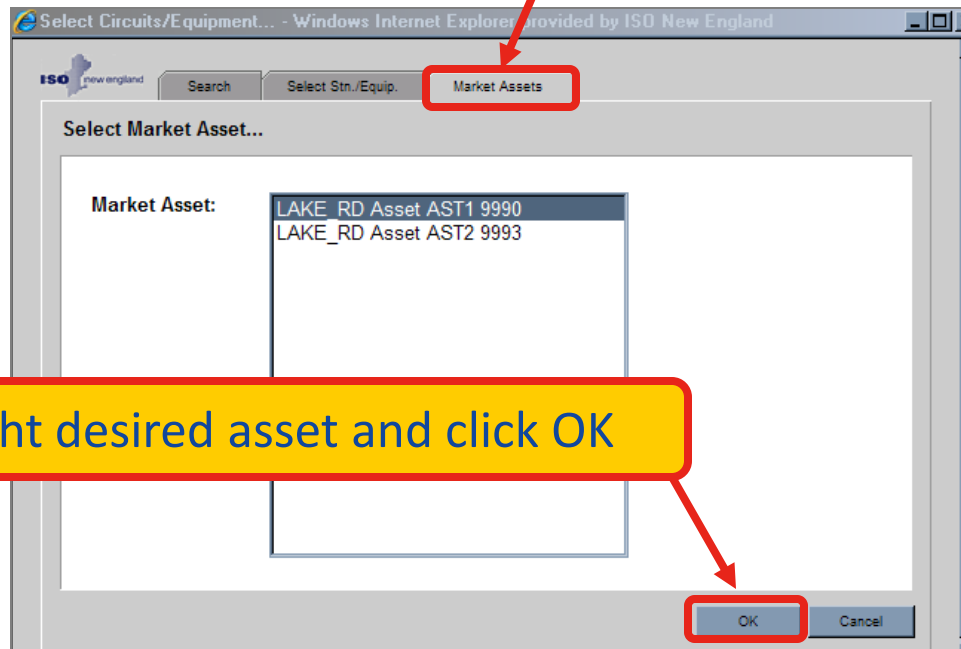
- CMP\_CC
- CONVEX\_CC
- HQT\_CC
- ISONE\_CC
- NB\_CC
- NSTAR\_CC
- NYISO\_CC
- PSNH\_CC
- PUBLIC
- REMVEC\_CC
- VELCO\_CC

OK Cancel

# GOR Outage Entry, Select Market Asset (cont.)

- Recommend using Market Asset tab

All Lead Participant Market Assets appear under this tab



Highlight desired asset and click OK

# GOR Outage Entry, Creation

CROW Web 5.1.1.188 - Generation Outage Request: 0-00000000 rev. 1  
(New) by LP\_TRAINING, LP\_TRAINING 09/22/2010 08:00 -  
09/22/2010 16:00 Continuous Short Term

Request Summary Request Details/Approval Attachments

Outage #: 0-00000000 rev. 1 (current) [History](#)  
Requested by: LP\_TRAINING, LP\_TRAINING  
Company: LP FOR TRAINING

Date Requested:  
Outage priority: Short Term  
Priority date:  
Continuous/Daily: Continuous  
Outage duration: Exactly 8 Hour(s)  
Last actual end: / /

Asset Id: [9990](#) Summer Scc: 345.678  
Asset Name: [AST1](#) Winter Scc: 356.789

Equip. Requested:

	LCC	GO	Station	Circuit/Equipment	Voltage Class	Rel Area	Constraint/Commitment
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN1 9991	21 kV	RI	<Please Choose>
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN2 9992	21 kV	RI	<Please Choose>

Outage Cause: [ ] [ ]  
Black Start Capable: <Please Select>  
Postponable: <Please Select>

External Comments:

Submit

Selecting Market Asset displays physical components in Equipment Requested

Clear removes all equipment

# GOR Outage Entry, Market Asset Data

- Clicking Asset ID or Asset Name hyperlink displays Market Asset data

The screenshot shows the 'Market Asset' properties form. The 'Station' is 'LAKE\_RD'. The '1-Line Designation' is 'AST1'. The 'External Name' is 'LAKE\_RD Asset AST1 9990'. The 'Asset Long Name' is 'LAKE\_RD Asset AST1 9990'. The 'Equipment Type' is '- Market Asset'. The 'Associated Units' list includes 'LAKE\_RD Unit TRN1 9991' and 'LAKE\_RD Unit TRN2 9992'. The 'Owned By 1' is 'LP FOR TRAINING'. The 'Operated By 1' is 'ISO New England Control Center'. The 'Operated By 2' is 'CONVEX Local Control Center Control Center'. The 'Reliability Area 1' is 'Rhode Island'. There are 'Cancel' and 'Save' buttons at the bottom.

The screenshot shows the 'Station Equipment' properties form. The 'Alert NPCC Member' has radio buttons for 'True' and 'False'. The 'Black Start' has radio buttons for 'True' and 'False'. The 'Equipment Number' is '9990'. The 'Fuel Type' is 'BLACK LIQUOR/WOOD/WOOD WASTE SOLIDS.'. The 'In-Service Date' is '09 / 15 / 2010'. The 'Market Long Name' is 'TRAINING ASSET 1'. The 'Retirement Date' is empty. The 'Seasonal Claimed Capability - Summer' is '345.678 MW'. The 'Seasonal Claimed Capability - Winter' is '356.789 MW'. The 'State' is 'Active'. The 'Voltage Class' is '21'. There are 'Cancel' and 'Save' buttons at the bottom.

# GOR Outage Entry, Unit Data

- Clicking on text in Circuit/Equipment field will display Unit data

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Station Equipment Properties

Unit

Station: LAKE\_RD

1-Line Designation: TRN1

External Name: LAKE\_RD Unit TRN1 9991

Asset Long Name: LAKE\_RD Unit TRN1 9991

Equipment Type: - Unit

Owned By 1: LP FOR TRAINING

Owned By 2:

Owned By 3:

Operated By 1: ISO New England Control Center

Operated By 2: CONVEX Local Control Center Control Center

Operated By 3:

Operated By 4:

Reliability Area1: Rhode Island

Reliability Area2:

Reliability Area3:

Cancel Save

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Station Equipment Properties

Alert NPCC Member:  True  False

EMS Key:

Equipment Number: 9992

In-Service Date: 09 / 15 / 2010

Major Transmission Element:  True  False

Retirement Date: / /

Seasonal Claimed Capability - Summer: 12.345 MW

Seasonal Claimed Capability - Winter: 23.456 MW

State: Active

Voltage Class: 21

Cancel Save

# GOR Outage Entry, Creation

CROW Web 5.1.1.188 - Generation Outage Request: 0-00000000 rev. 1  
(New) by LP\_TRAINING, LP\_TRAINING 09/22/2010 08:00 -  
09/22/2010 16:00 Continuous Short Term

Request Summary Request Details/Approval Attachments

Outage #: 0-00000000 rev. 1 (current) [History](#)  
Requested by: LP\_TRAINING, LP\_TRAINING Date Requested:  
Company: LP FOR TRAINING Outage priority: Short Term  
Outage status: Priority date:  
Planned start: 09 / 22 / 2010 08:00 Continuous/Daily: Continuous  
Planned end: 09 / 22 / 2010 16:00 Outage duration: Exactly 8 Hour(s)  
First actual start: Last actual end:

Asset Id: [9990](#) Summer Scc: 345.678  
Asset Name: [AST1](#) Winter Scc: 356.789  
Equip. Requested:

	LCC	GO	Station	Circuit/Equipment	Voltage Class	Rel Area	Constraint/Commitment
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN1 9991	21 kV	RI	<Please Choose>
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN2 9992	21 kV	RI	<Please Choose>

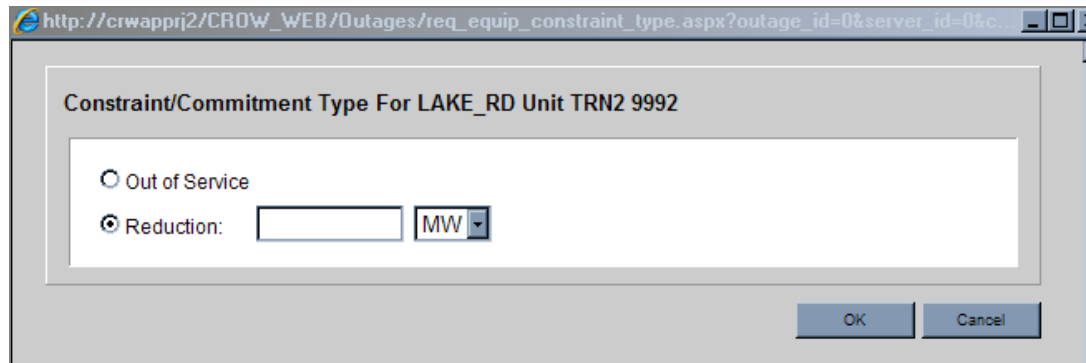
Outage Cause: Black Start Capable: Postponable:

External Comments:

Must enter Constraint/Commitment type for each physical component

# GOR Outage Entry, Availability

- User defines physical reduction for outage request
  - Must be constant for duration of outage request
  - EcoMax associated with outage =  $[SCC - \text{physical reduction}]$
- When selecting constraint/commitment type:
  - Reduction always requires MW amount
  - OOS sometimes requires MW amount



The screenshot shows a web browser window with the address bar displaying `http://crwappri2/CROW_WEB/Outages/req equip_constraint_type.aspx?outage_id=0&server_id=0&c`. The main content area of the browser displays a dialog box titled "Constraint/Commitment Type For LAKE\_RD Unit TRN2 9992". Inside the dialog box, there are two radio button options: "Out of Service" (which is unselected) and "Reduction:" (which is selected). Next to the "Reduction:" option is a text input field and a dropdown menu currently set to "MW". At the bottom right of the dialog box, there are two buttons: "OK" and "Cancel".

NOTE: SCC = Seasonal Claimed Capability

# GOR Outage Entry, Availability (cont.)

- If all units are Out of Service (OOS):
  - No MW entry required
  - Physical Reduction defaults to SCC; updated if SCC changes while outage still active

Asset Id: [9990](#) Summer Scc: **345.678** Physical Reduction: **345.678**

Asset Name: [AST1](#) Winter Scc: 356.789 EcoMax: 0

Equip. Requested:

	LCC	GO	Station	Circuit/Equipment	Voltage Class	Rel Area	Constraint/Commitment
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN1 9991	21 kV	RI	OOS <input type="button" value="..."/>
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN2 9992	21 kV	RI	OOS <input type="button" value="..."/>

# GOR Outage Entry, Availability (cont.)

- If single unit and not OOS:
  - Must enter how many MWs the unit is reduced
  - NOT what the unit is *reduced to*
  - EcoMax is calculated value,  $222.222 - 100 = 122.222$

Asset Id:	<a href="#">9993</a>	Summer Scc:	222.222	Physical Reduction:	100		
Asset Name:	<a href="#">AST2</a>	Winter Scc:	333.333	EcoMax:	122.222		
Equip. Requested:							
	LCC	GO	Station	Circuit/Equipment	Voltage Class	Rel Area	Constraint/Commitment
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN3 9993	21 kV	RI	Reduction: 100 MW <input type="text"/>
					<input type="button" value="Add..."/>	<input type="button" value="Clear..."/>	

# GOR Outage Entry, Availability (cont.)

- If multiple units and not all OOS:
  - Must enter how many megawatts (MW) each individual unit is reduced

Asset Id:	<a href="#">9990</a>	Summer Scc:	345.678	Physical Reduction: 120			
Asset Name:	<a href="#">AST1</a>	Winter Scc:	356.789	EcoMax:	225.678		
Equip. Requested:							
	LCC	GO	Station	Circuit/Equipment	Voltage Class	Rel Area	Constraint/Commitment
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN1 9991	21 kV	RI	OOS: 120 MW <input type="text"/>
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN2 9992	21 kV	RI	Reduction: 0 MW <input type="text"/>
					<input type="button" value="Add..."/>	<input type="button" value="Clear..."/>	

- If unit not impacted → Reduction = 0 MW
- If unit is OOS user must define how many MW that unit is reduced
  - 0 MW is not a valid entry for OOS

# GOR Outage Entry, Availability (cont.)

- If multiple units and not all OOS:
  - MW entry field not present if OOS is applied to first unit selected
  - Calculated values will not appear until ALL units have MW entry

Asset Id:	<a href="#">9990</a>	Summer Scc:	345.678	Physical Reduction:			
Asset Name:	<a href="#">AST1</a>	Winter Scc:	356.789	EcoMax:			
Equip. Requested:							
	LCC	GO	Station	Circuit/Equipment	Voltage Class	Rel Area	Constraint/Commitment
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN1 9991	21 kV	RI	OOS: <input type="text"/>
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN2 9992	21 kV	RI	Reduction: 200 MW <input type="text"/>

- This example would produce error message upon submit

**! Errors in Submit...**

The Outage Request could not be updated because of the following error:

All MW amounts are required.

Tip: Always enter Units with Reductions BEFORE Units that are OOS

# GOR Outage Entry, Other Fields

- Fields for a Planned Outage

Outage Cause:

Fcm Exempt:

Forced Rescheduling:

Black Start Capable:

<b>Outage Cause</b>	Not required
<b>Forced Rescheduling</b>	Set by ISO-NE if OP-5 rescheduling process applied
<b>Black Start Capable</b>	If generator flagged as such in CAMS, user must indicate whether generator will continue to be Black Start Capable during the requested outage

# GOR Outage Entry, Other Fields (cont.)

- Fields for a Planned Outage

Outage Cause:

Fcm Exempt:

Forced Rescheduling:

Black Start Capable:

FCM Exempt = "Y"	FCM Exempt = "N"
If approved, physical reduction impacting CSO considered 'available' during a shortage event	Even if approved, outage does not provide any protection during shortage event
Outage counted in Equivalent Planned Outage Hours calculation	Outage not counted in Equivalent Planned Outage Hours calculation

NOTE: CSO = Capacity Supply Obligation

# GOR Outage Entry, Other Fields (cont.)

- Miscellaneous fields for other outages

	Planned Overrun	Short Term	Forced
Outage Cause	Required	Required	Required
Black Start Capable	Required	Required	Required
Postponable	Not applicable	Required	Not applicable

# GOR Outage Entry, Dates

- Date can be entered manually or using calendar

Planned start:	<input type="text" value="09"/> / <input type="text" value="28"/> / <input type="text" value="2010"/> <input type="button" value="📅"/>	<input type="text" value="08:00"/>	Continuous/Daily:	<input type="text" value="Continuous"/>
Planned end:	<input type="text" value="09"/> / <input type="text" value="28"/> / <input type="text" value="2010"/> <input type="button" value="📅"/>	<input type="text" value="16:00"/>	Outage duration:	<input type="text" value="Exactly"/> <input type="text" value="8"/> <input type="text" value="Hour(s)"/>
First actual start:	<input type="text"/> / <input type="text"/> / <input type="text"/>	<input type="text"/>	Last actual end:	<input type="text"/> / <input type="text"/> / <input type="text"/>

- Outage may not cross summer/winter boundary
  - Since EcoMax based SCC, submitter must notify ISO-NE of impact of season change
  - Example: Desired outage 9/20-10/15
    - User must submit two outage requests 9/20-9/30 and 10/1-10/15
    - Recommend entering text in External Comment indicating outage is one of two parts
    - ISO-NE will link the outages and study as one whole outage request

# GOR Outage Entry, Dates (cont.)

**Planned start:** 05 / 20 / 2011 00:00  
**Planned end:** 05 / 31 / 2011 23:59  
**First actual start:** / / /  
**Continuous/Daily:** Continuous  
**Outage duration:** Exactly 12 Day(s)  
**Last actual end:** / / /

**Asset Id:** [9993](#)      **Summer Sc:** 222.222  
**Asset Name:** [AST2](#)      **Winter Sc:** 333.333  
**Equip. Requested:**

**Physical Reduction:** 171  
**EcoMax:** 162.333

	LCC	GO	Station	Circuit/Equipment	Voltage Class	Rel Area	Constraint/Commitment
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN3 9993	21 kV	RI	Reduction: 171 MW

For example, Physical Reduction is noticeably different but EcoMax is relatively constant

**Planned start:** 06 / 01 / 2011 00:00  
**Planned end:** 06 / 06 / 2011 07:59  
**First actual start:** / / /

**Asset Id:** [9993](#)      **Summer Sc:** 222.222  
**Asset Name:** [AST2](#)      **Winter Sc:** 333.333  
**Equip. Requested:**

**Physical Reduction:** 60  
**EcoMax:** 162.222

	LCC	GO	Station	Circuit/Equipment	Voltage Class	Rel Area	Constraint/Commitment
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN3 9993	21 kV	RI	Reduction: 60 MW

# GOR Outage Entry, Creation

CROW Web 5.1.1.188 - Generation Outage Request: 0-00000000 rev. 1  
(New) by LP\_TRAINING, LP\_TRAINING 09/22/2010 08:00 -  
09/22/2010 16:00 Continuous Short Term

Request Summary Request Details/Approval Attachments

Outage #: 0-00000000 rev. 1 (current) History  
Requested by: LP\_TRAINING, LP\_TRAINING Date Requested:  
Company: LP FOR TRAINING Outage priority: Short Term  
Outage status: Outage priority: Short Term  
Planned start: 09 / 22 / 2010 08:00 Priority date:  
Planned end: 09 / 22 / 2010 16:00 Continuous/Daily: Continuous  
First actual start: Continuous/Daily: Continuous  
Outage duration: Exactly 8 Hour(s)  
Last actual end:

Allows user to provide additional information about the outage request

Outage Class	Rel Area	Constraint/Commitment
CONVEX_CC	TRAINLP	LAKE_RD
CONVEX_CC	TRAINLP	LAKE_RD Unit TRN2 9992

Outage Cause: Black Start Capable: Postponable:

External Comments:

Submit

# GOR Outage Entry, Attachments

- Attachments can be added/removed when outage is being created; or if in Preliminary state

The screenshot displays the CROW Web 5.1.1.188 interface for a Generation Outage Request. The page title is "CROW Web 5.1.1.188 - Generation Outage Request: 0-00000000 rev. 1 (New) by LP\_TRAINING, LP\_TRAINING 11/10/2010 08:00 - 11/10/2010 16:00 Continuous Planned". The interface includes navigation tabs for "Request Summary", "Request Details/Approval", and "Attachments (1)". The "Attachments (1)" tab is highlighted with a red box. Below the tabs is a table with the following data:

Attachments				
	Attached By	Attached When	File Name	Title
<input type="checkbox"/>	LP_TRAINING, LP_TRAINING	09/30/2010 11:53:34	Timing of Generator data updates.docx	name for example

Below the table is an "Add..." button and a "Submit" button at the bottom right of the page.

# GOR Form, Request Details/Approval

- Information on this page is for information only
- Notification section may indicate communications that have occurred

Planned Start/ Planned End		Actual Start	Actual Complete	Circuit/Equipment	Constraint/ Commitment	Overrun	Reason/ Sub Code/Com	Status/ By/ When/ Code
10	10	2010	08:00	-	-	<input checked="" type="checkbox"/>	LAKE_RD Unit TRN1 9991	Out of Service
10	11	2010	17:30	-	-	<input checked="" type="checkbox"/>	LAKE_RD Unit TRN2 9992	Out of Service

Range: 10 / 10 / 2010 To 10 / 11 / 2010

Notification Type	Notify	Contact Information	Accepted/ Result	By/ When	Comments
Requested By	Iam Training	413-555-5000	Success	Mendrala, Cheryl - VSA 09/27/2010 11:36	

Required Approval	Status	Status Update By/ When	Scheduler's Comments
CONVEX_CC	Pending		
ISONE_CC	Pending		

# GOR Outage Entry, Conflicts

- Upon clicking “Submit” a warning will be presented if another outage exists in the same time period
  - Outages in Preliminary state will NOT be considered

Request Summary Request Details/Approval Attachments

**Warnings in Submit...**

The following warning was generated:

The following conflict(s) exist for this outage request:  
[1-10003571](#), Generation, Short Term  
[1-10003570](#), Generation, Short Term

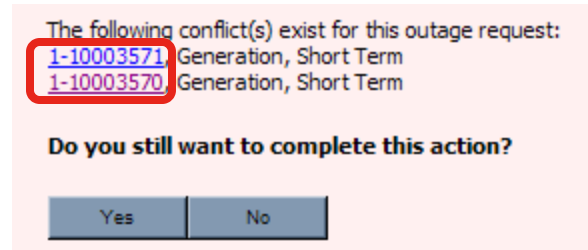
**Do you still want to complete this action?**

Yes No

“Yes” continues with submittal

“No” returns to entry form

# GOR Outage Entry, Conflicts (cont.)



- Clicking on the hyperlink in the warning will open a new window with the selected outage

# GOR Outage Entry, Submittal

Requested by and Company reflect 'who' created GOR.  
If called in by generator, will reflect ISO person and company

Requested by: LP\_TRAINING, LP\_TRAINING  
09/27/2010 11:53:26  
Company: LP FOR TRAINING

Outage status: Submitted  
09/27/2010 11:53:26  
by LP\_TRAINING, LP\_TRAINING

Planned start: 10 / 10 / 2010 08:00

Planned end: 10 / 11 / 2010 17:30

First actual start: / / /

Date Requested reflects 'when' the GOR was first saved

Date Requested: 09/27/2010 11:53

Outage priority: Short Term

Priority date: 09/27/2010 11:53

Priority date reflects 'when' the GOR reached state= Submitted

Asset Id: [9990](#) Summer Scc: 345.678 Physical Reduction: 356.789  
Asset Name: [AST1](#) Winter Scc: 356.789 EcoMax: 0

Equip. Requested:

	LCC	GO	Station	Circuit/Equipment	Voltage Class	Rel Area	Constraint/Commitment
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN1 9991	21 kV	RI	OOS
	CONVEX_CC	TRAINLP	LAKE_RD	LAKE_RD Unit TRN2 9992	21 kV	RI	OOS

Outage Cause: 928 928 - FLAME FAILURE

Black Start Capable: Yes

Postponable: Yes

External Comments:

duplicated on same date to see conflict message

# GOR Outage Entry, Modifications

- In Submitted state Gen User cannot make any changes to GOR
  - Any changes must be requested through ISO-NE
  - Any change increasing scope of GOR may require new GOR
- In Preliminary state the following can be modified
  - Planned Start/End Date/Time
  - Constraint/Commitment type and MW
  - Outage Cause
  - FCM Exempt flag
  - Black Start flag
  - External Comments

# Reviewing Data, History

User can scroll through revision history using dropdown

History button produces Excel file of outage revision history

Field	Value
Outage #:	1-10003578
Requested by:	Gilmore, Mike P. 09/17/2010 14:13:25
Date Requested:	09/17/2010 14:13
Company:	ISO New England
Outage priority:	Planned
Priority date:	09/17/2010 14:13
Outage status:	Withdrawn 09/20/2010 10:38:57 by Gilmore, Mike P.
Planned start:	10 / 19 / 2010 08:00
Continuous/Daily:	Continuous
Planned end:	10 / 19 / 2010 16:00
Outage duration:	Exactly 8 Hour(s)
First actual start:	
Last actual end:	
Reason Code:	OTHER
Reason Comments:	xxx

Outage status:

Reason Code:

Reason Comments:

Fields changed from previous revision highlighted in red

# Reviewing Data, GOR Web Index

ISO new england | Outage Requests | Options

## CROW Web 5.1.1.188 - Generation Outage Request Index

Outage Request Index

Outage Request Index - (22 of 22 records)

Outage Request Date: 10/01/2010 to 12/03/2010

Request Status: All

Constraint/Commit: All

Request Priority: All

Control Center: [List...]

Requested By: [...]

Outage Number: [ ] - [ ]

Find | Export to Excel | Export to Gantt | Refresh | No Auto Refresh | Gen. Outage Report | New Outage Request

Outage Requests appearing in red are overdue.

Outage #/ Revision/ Status	Station/ Circuit/Equipment	Required Approvals	Planned Start	Planned End	Priority	Requested By/ Reason/Priority	Asset ID	Asset Name
1-10003691 Revision #2 Withdrawn	LAKE_RD TRN2 Reduction: 30.5 MW, TRN1 Reduction: 25.5	CONVEX_CC: n/a	11/10/2010	11/11/2010	Planned	LP_Employee, lam Proposed maintenance activity. Bridged on 8/2010 7:02:08 PM via Mike Gilmore API call.	9990	AST1
1-10003677 Revision #3 Denied	LAKE_RD TRN1 OOS, TRN2 OOS					LP_Employee, lam	9990	AST1
1-10003676 Revision #3 Denied	LAKE_RD TRN1 OOS, TRN2 OOS					LP_Employee, lam Testing mpg	9990	AST1
1-10003673 Revision #3 Denied	LAKE_RD TRN1 Black Start, TRN2 Black Start	CONVEX_CC: Denied ISONE_CC: Pending	10/28/2010 08:00	10/28/2010 16:00	Owner Test	LP_Employee, lam 09/27/2010 14:01	9990	AST1
1-10003672 Revision #2 Denied	LAKE_RD TRN3 OOS	CONVEX_CC: Pending ISONE_CC: Denied	10/28/2010 08:00	10/28/2010 16:00	Planned	LP_TRAINING, LP_TRAINING started with 9993, hit submit	9993	AST2
1-10003671 Revision #2 Denied	LAKE_RD TRN1 OOS, TRN2 OOS	CONVEX_CC: Pending ISONE_CC: Denied	10/10/2010 08:00	10/11/2010 17:30	Short Term	LP_TRAINING, LP_TRAINING duplicated on same date to see conflict message	9990	AST1
1-10003668	LAKE_RD TRN2 General, TRN1	CONVEX_CC: Denied	10/28/2010	10/28/2010	MVAR Testing	LP_Employee, lam	9990	AST1

Indicates total returned by query and total in current filtered view, 300 maximum in view

Yellow highlighting shows a revision has been made by another user

# Reviewing Data, GOR Web Index (cont.)

Select Planned Start and Planned End range

Outage Request Date: 09 / 26 / 2010 to 12 / 28 / 2010

Control Center [dropdown] [List...]

Requested By: [dropdown]

Outage Number [dropdown] - [input] [Find] [Export to Excel] [Export to Gantt] [Refresh] [No Auto Refresh] [Gen. Outage Report] [New Outage Request]

Request Status: All [dropdown]  
Constraint/Commit: All [dropdown]  
Request Priority: All [dropdown]

Outage Request Index - (18 of 18 records)

Reduce outage list by selecting specific LCC(s)

Control Center [dropdown] [List...]

Requested By: [dropdown]

Outage Number [dropdown] - [input] [Find] [Export to Excel] [Export to Gantt] [Refresh] [No Auto Refresh] [Gen. Outage Report] [New Outage Request]

Request Status: All [dropdown]  
Constraint/Commit: All [dropdown]  
Request Priority: All [dropdown]

Outage Request Index - (18 of 18 records)

Outage Request Date: 09 / 26 / 2010 to 12 / 28 / 2010

Control Center [dropdown] [List...]

Requested By: [dropdown]

Outage Number [dropdown] - [input] [Find] [Export to Excel] [Export to Gantt] [Refresh] [No Auto Refresh] [Gen. Outage Report] [New Outage Request]

Request Status: All [dropdown]  
Constraint/Commit: All [dropdown]

Select by who created the outage request

# Reviewing Data, GOR Web Index (cont.)

Outage Request Index - (18 of 18 records)

Outage Request Date: 09 / 26 / 2010 to 12 / 28 / 2010

Request Status: All  
Constraint/Commit: All  
Request Priority: All

Select by specific outage number

Outage Number - Find

Export to Excel Export to Gantt Refresh No Auto Refresh Gen. Outage Report New Outage Request

Select by Status, Priority or Constraint/Commitment:

- Dropdown list allows selection of ALL, a single value or multiple values
- Click outside dropdown menu to activate selection

Outage Request Index - (18 of 18 records)

Outage Request Date: 09 / 26 / 2010 to 12 / 28 / 2010

Control Center List...

Requested By: ...

Request Status: All  
Constraint/Commit: All  
Request Priority: All

Outage Number - Find

Export to Excel Export to Gantt Refresh No Auto Refresh Gen. Outage Report New Outage Request

# Reviewing Data, Reports

- User can select filters to produce Word or Excel report

**Generation Outages Report Filters** [X]

**Format:**  Excel  Word

**Date Range:**  Today  Tomorrow  7-Days  Custom

Start Date On or After: [ ] / [ ] / [ ]      Start Date Before: 09 / 28 / 2010

End Date On or After: 09 / 28 / 2010      End Date Before: [ ] / [ ] / [ ]

Compare Against:  Planned Dates  Actual Dates  Planned or Actual Dates

**Status:** All [v]

**Priority:** All [v]

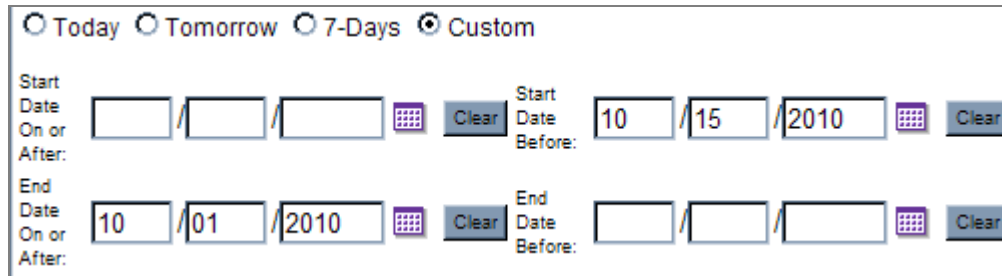
**Constraint/Commitment:** All [v]

**Asset Name:** [ ] [List...]

**Request ID:** [ ] - [ ]

# Reviewing Data, Report Date Selection

- Typical Custom date setup

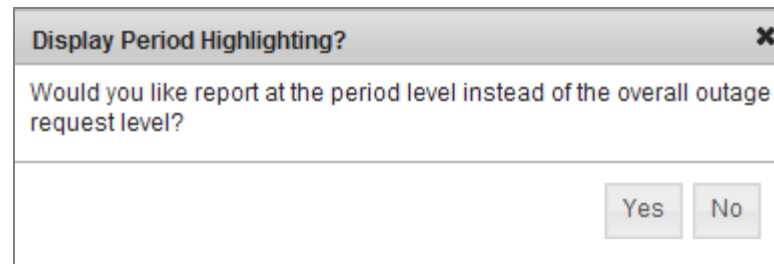


The screenshot shows a date selection interface with four radio buttons: 'Today', 'Tomorrow', '7-Days', and 'Custom'. The 'Custom' option is selected. Below the radio buttons are two rows of date input fields. The first row is for the 'Start Date' and is labeled 'Start Date On or After:'. It contains three input boxes for the day, month, and year, followed by a calendar icon and a 'Clear' button. The values entered are 10, 15, and 2010. The second row is for the 'End Date' and is labeled 'End Date On or After:'. It also contains three input boxes for the day, month, and year, followed by a calendar icon and a 'Clear' button. The values entered are 10, 01, and 2010.

- To search on START dates use top two fields
- To search on END dates use bottom two fields
- If selecting 'Actual Dates' be sure outages exist with Actual Start/Actual Stop in the range you have selected

# Exporting Data from Web Index

- Export to Excel
  - Exports data associated with the current GORs on Web Index to an Excel file
- Export to GANTT
  - Exports data associated with the current GORs on Web Index to an Excel file formatted as a GANTT chart
  - Following question will be asked  
(Yes/No produces same results for GORs)



Display Period Highlighting? X

Would you like report at the period level instead of the overall outage request level?

Yes No

# CROW Go Live

- CROW go-live before end of year 2010
- Sandbox release before end of October 2010
- What will be in CROW at go-live
  - All GORs requested for dates on or after go-live
  - Historical Planned Outages back to 6/1/2010



# Web Services for Lead Participants

Lead Participant Interaction

# Discussion Items

- Why Web Services?
- Sandbox URLs
- Sandbox CAMS Roles Needed
- Web Services CROW User
- Documentation and Code Examples
  - Web Services Documentation
  - Web Services Definition Language (WSDLs)
  - Code Snippets
- Help and Support
- Production Information

# Why Web Services?

- Allows for integration between your company's existing outage coordination tools and ISO-NE CROW system.
- For companies with many assets to manage, may prove to be a more efficient means of outage management.
- For companies with their own outage management systems, allows for a one-stop-shop vs. having to manage outages in multiple tools.
- It is your choice!

# Sandbox URLs

- The URLs for the CROW **SANDBOX** Web Services are:
  - [https:// sandboxsmd.iso-ne.com/os\\_crow/api/service.asmx](https://sandboxsmd.iso-ne.com/os_crow/api/service.asmx)
  - [https:// sandboxsmd.iso-ne.com/os\\_crow/api/OutageScheduling.asmx](https:// sandboxsmd.iso-ne.com/os_crow/api/OutageScheduling.asmx)
- Each provides a set of CROW Web Services that are fully described in the Web Services documentation to be provided

# Sandbox CAMS Roles Needed

- Web Services interaction with the ISO-NE CROW system requires the use of a digital certificate. This certificate is similar to the one used to interact with the CROW Web User Interface.
- Please contact your Security Administrator (SA) to ensure you have a person with access to the CROW **SANDBOX** with the following permissions:
  - CAMS Application Group - **CROW Gen User Role SBox**
    - Roles under that application
      - **Access Using Web Services** –Allows Web Services interaction
      - And Either**
      - **View Only** – Allows Web Service interface to query for information and **not** submit/change generation outage requests;
      - **View Submit Only** –Allows Web Service interface to submit/change generation outage requests for equipment you own.

# Web Services CROW User

- Initially your Web Services user will have the following default Options applied to it:
  - Time Zone will default to Eastern
    - Controls the time that applies to all date fields
  - Use Daylight Savings Time
- If you want to change those for your web services user you need to log into the CROW Web Client UI as that web services user and go to the Options tab
- The Web Services CROW User you use should be separate from your employees' CROW Users.

# Documentation and Code Examples

## General Information

- In order to support your development efforts, documentation has been created and can be requested from ISO-NE Customer Support.
- The documentation includes:
  - Web Services documentation – This describes the various type specifications, enumerations and methods that make up the CROW Web Services.
  - Web Service Definition Language (WSDL) extracts
  - Code Snippets – These are various Visual Basic code snippets that provide examples of the types of CROW Web Service interactions you might expect.

# Documentation and Code Examples

## Web Services Documentation

- Based upon Equinox expanded Web Services document.
- **Must read before any development effort starts.**
- Describes the various Web Services complex type specifications, enumerations and methods.
- Points out details about use of the CROW Web Services.
- Method section breaks down the various business examples and methods to be used.

# Documentation and Code Examples

## Web Services Documentation (cont.)

- Reference Table section gives detailed information on data passed and received. Key areas to read are:
  - Outage/Period Status IDs
  - Outage Priority IDs, applicability, and timing
  - Constraints IDs
  - Cause and Sub-cause Codes
  - Outage Request – Withdrawal and Reason Codes
- Note: CROW can accept a reference to outage identification that your internal system may have. If used, this may be helpful in communication between ISO-NE Outage Coordination staff and your staff.

# Documentation and Code Examples

## Business Needs – Method Examples

- As mentioned, the Web Services document will breakdown the various examples based on business needs.
- Examples include:
  - Submit a proposed (preliminary or submitted state, depending on type of outage) Outage Request (not yet approved by ISO-NE or LCC), if required.
    - **OutageScheduling.InitializeRequest**  
(to initialize default values applicable to your company)
    - **OutageScheduling.PerformAction**  
(passing the CROW user identified with this Outage, outageSchedule object, the OutageActionType of SubmitRequest and null for the InputParameters).

# Documentation and Code Examples

## Business Needs – Method Examples (cont.)

- Examples include (cont.):
  - Submit a Request to Withdraw a previously submitted Outage Request (while an Outage Request is in the preliminary state, the Lead Participant can withdraw the Outage Request from CROW)
    - `OutageScheduling.PerformActionByNumber`(using the outage number along with the `OutageActionType` of `WithdrawRequest` and `InputParameters` for `returnType` being `EntireOutageReq`, `reasonCode/reasonSubCode` as appropriate and `reason`[text optional unless `reasonCode` is `Other`]).

# Documentation and Code Examples

## Business Needs – Method Examples (cont.)

- Examples include (cont.):
  - Submit a Change Request for a previously submitted Outage Request (while an Outage Request is in the preliminary state, the Lead Participant can make some changes (as noted on next slide) to the outage request. Beyond that state, changes can only be made by calling ISO-NE)
    - OutageScheduling.LoadItem (using outagenumber, load the subject outage request)
    - OutageScheduling.PerformAction (passing the CROW user identified with this Outage change, outageSchedule object, the OutageActionType of Save and null for the InputParameters).

# Documentation and Code Examples

## Business Needs – Method Examples (cont.)

- Changes can include:
  - Planned start date/time
  - Planned end date/time
  - Constraint/Commitment Type (including MW if applicable)
  - Outage Cause (and sub cause, if appropriate)
  - Black Start Capable indicator (if applicable)
  - FCM Exempt indicator (if applicable)
  - External Comments
  - Add Attachments – this is done with method `OutageScheduling.AddAttachment`

# Documentation and Code Examples

## Business Needs – Method Examples (cont.)

- As mentioned, the Web Services document will include details of each applicable method. Below is an example of one method, as described in the document:

<u>OutageScheduling.LoadItem</u>		
<b>Method Name:</b>	<u>OutageScheduling.LoadItem</u>	
<b>Description:</b>	This method returns the <u>OutageSchedule</u> object which matches the input parameters. The <u>revisionNumber</u> and <u>changeReqNumber</u> parameters are optional.	
<b>Input Parameters:</b>		
<u>Parameter Name</u>	<u>Parameter Type</u>	<u>Description</u>
<u>outageNumber</u>	String	The outage request number of the outage schedule to load.
<u>revisionNumber</u>	Integer	The revision number to use in retrieving the outage schedule data. Passing 0 will result in loading the most current revision.
<u>changeReqNumber</u>	Integer	The change request number to identify the change request to load. <b>NOT APPLICABLE TO ISO-NE so pass as 0.</b>
<u>OutageScheduling.LoadItemResponse</u>		
Returns: <u>OutageSchedule</u> This method returns the <u>OutageSchedule</u> object that was indicated by the input information. Check the <u>errorCodes</u> array in the returned object for error codes. If the <u>errorCode</u> for the first element in the array is not 0, the " <u>LoadItem</u> " method failed.		

# Documentation and Code Examples

## Business Needs – Method Examples (cont.)

- With the previous method example, the following is an excerpt of the OutageSchedule object referenced by that method as described in the documentation:

<u>OutageSchedule</u>				
<b>Type Name:</b>	<u>OutageSchedule</u>			
<b>Description:</b>	This represents the main type used to define an outage request. As such it is the main object for which other objects are referenced or are children of.			
<b>Type Elements:</b>				
<u>Element Name</u>	<u>Element Type</u>	<u>Description</u>	<u>Applicable to ISO-NE Implementation</u>	<u>Input/Output/BOTH</u>
<u>outageNumber</u>	String(15)	A unique formatted string identifying the outage. Please see A.2.4 for implementation specific details.	YES –Will contain the year in the string.	OUTPUT – When created, CROW assigns the number.
<u>revisionNumber</u>	Integer	The outage request revision number.	YES	OUTPUT – When created or revised, CROW assigns the number.
<u>requestTypeID</u>	Integer	This is an enumeration identifying the Outage Request Type. Valid values are: 0 Planned Outage Request 1 Forced Outage Request This field is read-only.	NO	
<u>changeReqNumber</u>	Integer	The change request number. If this object is a change request, this value is >= 1. Otherwise this value is 0.	NO	
<u>changeReqTypeID</u>	Integer	This is an enumeration identifying the change request type. Valid values are: 0 Change Request	NO	

# Documentation and Code Examples

## Web Services Definition Language (WSDL)

- Documentation from Customer Support will contain the current WSDLs for CROW.
- Most up-to-date WSDLs are accessible from the URLs referenced in the Web Services document
- Any changes by Equinox to the WSDL that may affect you will be communicated in the future and in advance of the change

# Documentation and Code Examples

## Code Snippets

- Documentation from Customer Support will contain various code snippets(extracts) written in Visual Basic.
- These are NOT production grade but are representative examples of the various calls you will be making to perform your business needs.

# Documentation and Code Examples

## Code Snippets (cont.)

- An example of a code snippet that is provided to assist your development efforts:

```
Public Sub mpgTestWithdrawGORByNumber ()

    'This subroutine is an example of withdrawing a Generation Outage Request by its outage number
    ' vs. loading the outageschedule object first.

    'Define various people involved in this GOR. This needs to be
    ' a valid CROW user for your company and is identified in CROW by
    ' their e-mail address.
    theSubmitter.emailAddress = Constants.SubmitteruserEmailAddress

    'Set the withdrawal reason and sub-reason codes that are require parameters
    theParameters.returnType = CROWAPI_GEN.OutageReqReturnType.EntireOutageReq '<--This needs to be this all the time
    theParameters.reasonCode = "C305"
    ''theParameters.reasonSubCode = "gs08"
    theParameters.reason = "Testing API withdraw - mpg"

    'Method call to withdraw the outage request.
    theOutageSchedule = theService.PerformActionByNumber("1-10003615", theSubmitter, CROWAPI_GEN.OutageActionType.WithdrawRequest, theParameters)

    'Error handling and messaging
    If theOutageSchedule.errorCodes(0).errorCode = 0 Then
        Console.WriteLine("Withdraw Generation Outage Schedule By Number OK")
    Else
        Console.WriteLine("Withdraw Generation Outage Schedule By Number Failed")
        bOutageScheduleSuccess = False
    End If

End Sub
```

# Help and Support

- If you run into any Web Service related issues or have general questions, please communicate directly with Customer Support.
  - Phone: 413-540-4220
  - Email: [custserv@iso-ne.com](mailto:custserv@iso-ne.com)
- Please include any XML Request and Reply data, if applicable, to help expedite the response.
- Request the zip file containing web services documentation, WSDLs and code snippets through Customer Support

# Production Information

- Prior to the project going into production, ISO-NE will communicate the in-service date.
- Upon going into service, if you desire Web Services interaction, you will need to:
  - Request the appropriate PRODUCTION roles in CAMS
  - Ensure your software references the URL for the production vs. sandbox system
  - This information is detailed in the Web Services documentation.





# References for After Session

- Customer Support
  - 413-540-5220
  - [custserv@iso-ne.com](mailto:custserv@iso-ne.com)
- Training Materials
  - Presentation and recorded WebEx session file:
    - [Support > Training > Training Materials > Operator Training](#)
- Web Services documentation
  - Contact Customer Support
- CROW Sandbox (available by 11/1/2010)
  - <https://sandboxsmd.iso-ne.com/>
- Crow Application (by late 2010)
  - <https://smd.iso-ne.com/>