

# Introduction to Demand Response

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**Vijay Ganugula**

Manager, Distributed Resources Operations, NYISO

**Demand Response In-Depth**

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Rensselaer, NY

# Session Objectives

- **Define Demand Response**
- **Distinguish between reliability-based and economic-based programs**
- **Differentiate the basic requirements of each of the programs**
- **Define Behind-the-Meter Net Generation Resources**
- **Identify NYISO systems for accessing, entering, updating, and reviewing Demand Response and other related information**

# Demand Response Defined

# Demand Response

- Demand Response (DR) is the act of reducing energy consumption from the grid at the direction of the NYISO
- Demand Response is provided by Demand Side Resources, which are:
  - Electricity consumers located in NYS that enroll to take part in a specific DR program
  - Capable of reducing the power consumed from the grid for discrete periods of time as directed by the NYISO
  - Examples:
    - Industrial companies
    - Commercial buildings
    - Big box stores
    - Small retail stores
    - Hospitals
    - Colleges/Universities

# Demand Response

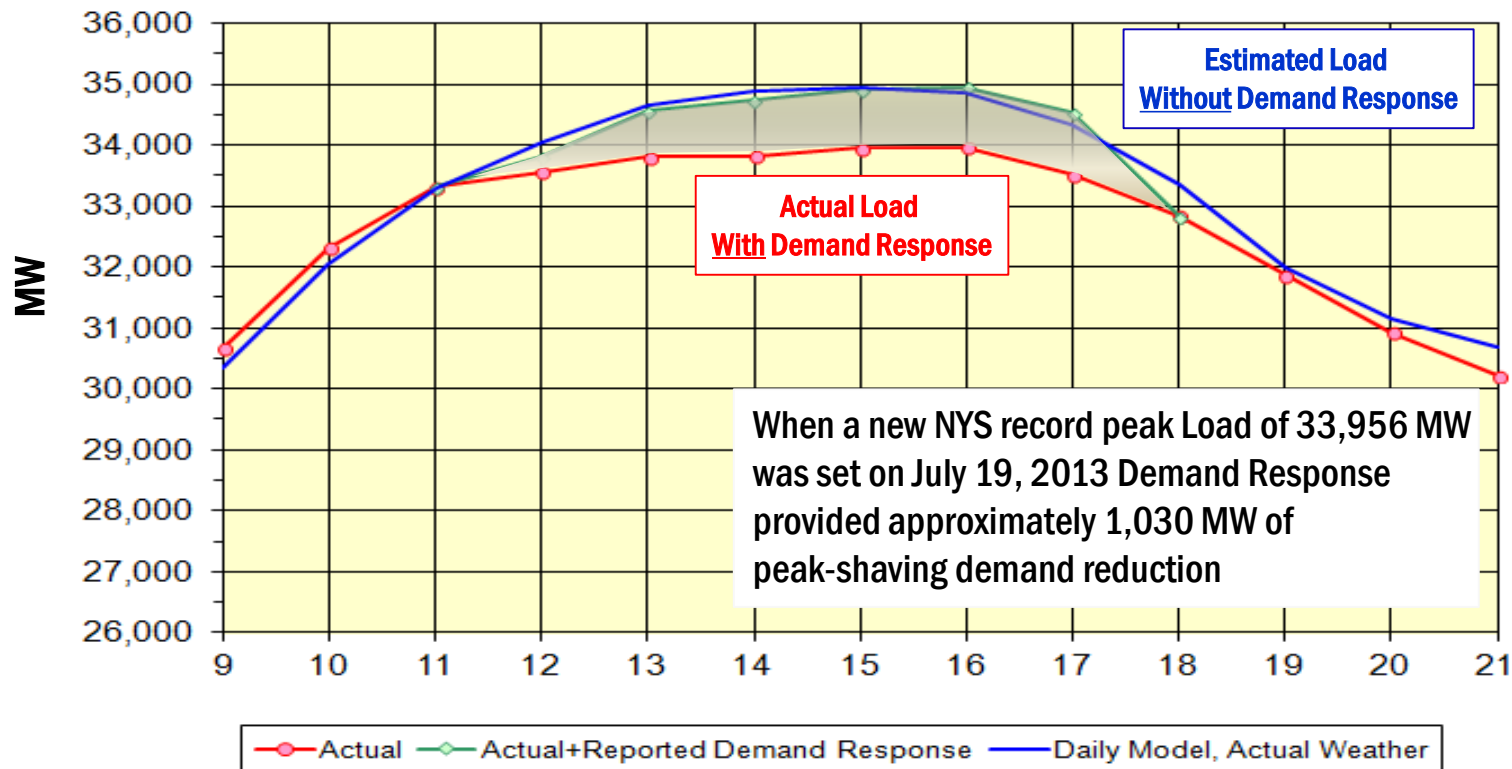
## ■ Demand Side Resource Response Types

Resources can reduce consumption from the grid by:	
Response Type C	<ul style="list-style-type: none"><li>Decreasing power consumption in the facility (Interruptible loads)</li></ul>
Response Type G	<ul style="list-style-type: none"><li>Using a qualified behind-the-meter Local Generator to supply part of the resource's load</li></ul>
Response Type B	<ul style="list-style-type: none"><li>Using both load curtailment and a Local Generator</li></ul>

# Demand Response

- Advantages of Demand Response Programs
  - Contribute to maintaining system reliability by:
    - Effectively increasing the supply available to manage peak demand periods
    - Allow qualified load to provide ancillary services to the wholesale electricity market
  - Maintain price stability in the market by:
    - Allowing qualified load to respond to wholesale market prices, which can moderate high prices in the NYISO Day-Ahead Market

# Demand Response & System Reliability



*Equivalent to the output of two medium-sized generating plants or the electricity needs of 300,000 - 400,000 households*

# Demand Response Primary Program Categories

Reliability-Based vs. Economic-Based



# Categories of Demand Response Programs

## Reliability-Based Programs – NYISO determines activation

- **Purpose: Reduce load in response to NYISO instructions for a discrete period of time to supplement generation when Operating Reserves are forecast to be short or when there is an actual Operating Reserve Deficiency or other system emergency**
  - Emergency Demand Response Program (EDRP)
  - ICAP-Special Case Resources (SCR)
  - Targeted Demand Response Program (TDRP)

# Categories of Demand Response Programs

Economic-Based Programs – Resource determines when to participate (through supply offers)

- Purpose: Load reduction, competing with generation, is scheduled by NYISO based upon economic offers
  - Day-Ahead Demand Response Program (DADRP)
  - Demand-Side Ancillary Service Program (DSASP)

# Summary of Demand Response Programs



Program Name	Program Type	Performance Requirement	Size Requirement	Enrolled By	Metering	Payment Type
<b>EDRP</b>	Reliability-based	Voluntary	<ul style="list-style-type: none"> <li>• Minimum 100 kW Reduction</li> </ul>	Curtailment Service Provider	Hourly Interval Meter	Performance Payment
<b>SCR</b>	Reliability-based	Mandatory if notification timeline is met	<ul style="list-style-type: none"> <li>• Minimum 100 kW Reduction</li> <li>• Grouping by zone allowed</li> </ul>	Responsible Interface Party	Hourly Interval Meter	Performance Payment <u>and</u> Monthly ICAP Payment
<b>DADRP</b>	Economic-based	Mandatory when scheduled	<ul style="list-style-type: none"> <li>• Minimum 1 MW Reduction</li> <li>• Grouping by zone and LSE allowed</li> </ul>	DADRP Provider	Hourly Interval Meter	Performance Payment
<b>DSASP</b>	Economic-based	Mandatory when scheduled	<ul style="list-style-type: none"> <li>• Minimum 1 MW Reduction</li> <li>• Grouping by zone allowed</li> </ul>	DSASP Provider	Six Second Real-Time Metering	Reserve Capacity Payment <u>and/or</u> Regulation Capacity and Movement Payments

# How Program Participants Enroll

Retail  
Consumer

Participates in NYISO  
wholesale markets through



Registered NYISO Market  
Participant

Retail Consumers may be:

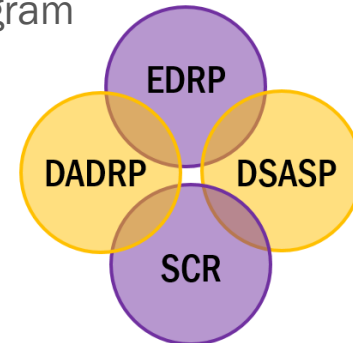
- *Industrial companies*
- *Big box stores*
- *Commercial buildings*
- *Hospitals*
- *Colleges/Universities*

Market Participants include:

- *Transmission Owner – local distribution utility*
- *Load-Serving Entity – competitive energy supplier*
- *Aggregator – company that transacts with NYISO on behalf of retail consumers*
- *Direct Customer – handles own supply requirements in NYISO market*

# Mutually Exclusive Participation

- Demand Side Resources may participate in one reliability-based program and one economic-based program simultaneously
- If a reliability event is called and a resource is participating in both a reliability-based program and an economic based program:
  - The resource's real time dispatch schedule in the economic based program will be terminated for the duration of the event
  - Only the resource performance above its Day-Ahead Market schedule for the economic based program will be considered for the reliability based program settlements



# Behind-the-Meter Net Generation Resources Defined

# Behind-the-Meter Net Generation Resources

- **BTM:NG Resources are -**
  - Facilities with on-site generation routinely serving host load
  - Having net generation after serving host load to offer in to NYISO markets
  - Examples:
    - Factories
    - Co-Ops
    - Colleges/Universities

# NYISO Systems

ICAP AMS

MIS

DRIS



# Accessing NYISO Systems

## ■ Initial Requirements

- Organization Specific System Administrator
- Valid NAESB Digital Certificate
- User Account
  - Assigned user ID and password



# ICAP Automated Market System

## ■ ICAP AMS

- NYISO's automated system for supporting Installed Capacity (ICAP) market
- Information may be viewed for SCRs and BTM:NG Resources:
  - Upload/download ICAP market related information
    - Bids and Offers
  - Auction details
  - Settlement related information to support customer invoicing
  - Event Calendar

# ICAP Automated Market System

## ■ Accessing ICAP AMS from NYISO Home Page



### Market Access Login

Pricing Data	Power Grid Data	Load Data	Reports & Info	Postings by Date	Maps	Charts & Graphs	Market Access Login
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#### Market Access Logins

<p><b>Marketplace Bidding &amp; Scheduling</b></p> <ul style="list-style-type: none"> <li>Marketplace Login (User &amp; Admin)</li> <li>Marketplace Upload/Download</li> <li>Self-Service Account Management (SSAM)</li> </ul> <p><b>Joint Energy Scheduling System (JESS)</b></p> <ul style="list-style-type: none"> <li>JESS User Login</li> <li>JESS Upload/Download</li> <li>JESS User's Guide</li> </ul> <p><b>Settlement Data Applications</b></p> <ul style="list-style-type: none"> <li>SDX Upload/Download</li> <li>Customer Settlements Interface</li> <li>Settlement Data Application User Guide</li> </ul> <p><b>ICAP Automated Markets</b></p> <ul style="list-style-type: none"> <li>User Login</li> <li>ICAP Upload</li> <li>ICAP Download</li> </ul> <p><b>Demand Response Information System</b></p> <ul style="list-style-type: none"> <li>User Login</li> <li>DRIS User Guide</li> </ul>	<p><b>TCC Automated Market</b></p> <ul style="list-style-type: none"> <li>User Login</li> <li>TCC Upload/Download</li> <li>TCC User Documents</li> </ul> <p><b>Decision Support System (DSS)</b></p> <ul style="list-style-type: none"> <li>User Login</li> <li>Account Request</li> </ul> <p><b>Outage Schedule (TOA)</b></p> <ul style="list-style-type: none"> <li>User Login</li> <li>Outage Schedule User's Guide</li> </ul> <p><b>Power Contracts Bulletin Board (IRC)</b></p> <ul style="list-style-type: none"> <li>User Login</li> <li>Information</li> <li>View as Guest (read only)</li> </ul> <p><b>Credit Management System (CMS)</b></p> <ul style="list-style-type: none"> <li>User Login</li> <li>CMS User Guide</li> </ul> <p><b>ICAP Reference System (IRS)</b></p> <ul style="list-style-type: none"> <li>User Login</li> </ul>	<p><b>MIS Instructions</b></p> <ul style="list-style-type: none"> <li>Market Participant User Guide (MPUG)</li> </ul> <p><b>Note:</b> A Valid NAEBS or NYISO Digital Certificate is required for all Sandbox links</p> <p><b>Need Help? Got a Question?</b> Should you require any assistance - you may email NYISO Stakeholder Services</p> <p>Send An Email - Click Here Now »</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>Sandbox Access</b> Click here to access NYISO Sandbox Links</p> </div>
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# Market Information System

## ■ MIS

- Web-based interface between NYISO and Market Participants
- Used to manage administration of organization and resource details, and the following additional Energy and Ancillary Services market data:
  - Offer/bid submittals
  - Offer/bid updates
  - Accepted schedules

# Market Information System

## ■ Accessing MIS from NYISO Home Page



### Market Access Login

Pricing Data	Power Grid Data	Load Data	Reports & Info	Postings by Date	Maps	Charts & Graphs	Market Access Login
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**Market Access Logins**

- Marketplace Bidding & Scheduling**
  - Marketplace Login (User & Admin)
  - Marketplace Upload/Download
  - Self-Service Marketplace Settlements
- Joint Energy Scheduling System**
  - JESS User Login
  - JESS Upload/Download
  - JESS User's Guide
- Settlement Data Applications**
  - SDX Upload/Download
  - Customer Settlements Interface
  - Settlement Data Application User Guide
- ICAP Automated Markets**
  - User Login
  - ICAP Upload/Download
  - ICAP Automated Market User's Guide
- Demand Response Information System**
  - User Login
  - DRIS User Guide
- TCC Automated Market**
  - User Login
  - TCC Upload/Download
  - TCC User Documents
- Decision Support System (DSS)**
  - User Login
  - Account Request
- Outage Schedule (TOA)**
  - User Login
  - Outage Schedule User's Guide
- Power Contracts Bulletin Board (IRC)**
  - User Login
  - Information
  - View as Guest (read only)
- Credit Management System (CMS)**
  - User Login
  - CMS User Guide
- ICAP Reference System (IRS)**
  - User Login

**MIS Instructions**

- Market Participant User Guide (MPUG)

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**Need Help? Got a Question?** Should you require any assistance - you may email NYISO Stakeholder Services

Send An Email - Click Here Now »

**Sandbox Access**  
Click here to access NYISO Sandbox Links

# Demand Response Information System

## ■ DRIS

- NYISO's automated system for enrollment and management of Demand Response resources
- Accessible by Market Participants to enroll and manage the following data for their Demand Side Resources:
  - Enrollment information
  - Aggregations
  - Performance
  - Event/Test notification & responses
  - Event/Test response reporting
  - Settlement information
  - Event Calendar

# Demand Response Information System

## ■ Accessing DRIS from NYISO Home Page



### Market Access Login

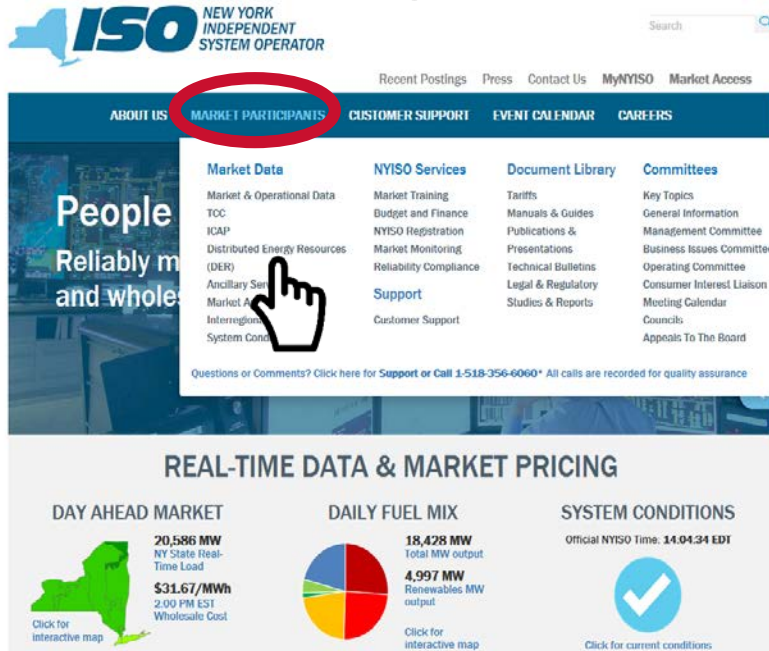
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# Demand Response Information System

## ■ Accessing DRIS from DER Home Page



NEW YORK INDEPENDENT SYSTEM OPERATOR

Recent Postings Press Contact Us MyNYISO Market Access

ABOUT US **MARKET PARTICIPANTS** CUSTOMER SUPPORT EVENT CALENDAR CAREERS

Market Data  
Market & Operational Data  
TCC  
ICAP  
Distributed Energy Resources (DER)  
Ancillary Services  
Market Access  
Interregional  
System Conditions

NYISO Services  
Market Training  
Budget and Finance  
NYISO Registration  
Market Monitoring  
Reliability Compliance  
Support  
Customer Support

Document Library  
Tariffs  
Manuals & Guides  
Publications & Presentations  
Technical Bulletins  
Legal & Regulatory Studies & Reports

Committees  
Key Topics  
General Information  
Management Committee  
Business Issues Committee  
Operating Committee  
Consumer Interest Liaison  
Meeting Calendar  
Councils  
Appeals To The Board

Planning  
Documents/Resources  
Services/Request  
Planning Studies  
Interregional  
Conferences/Workshops

People Reliably and whole

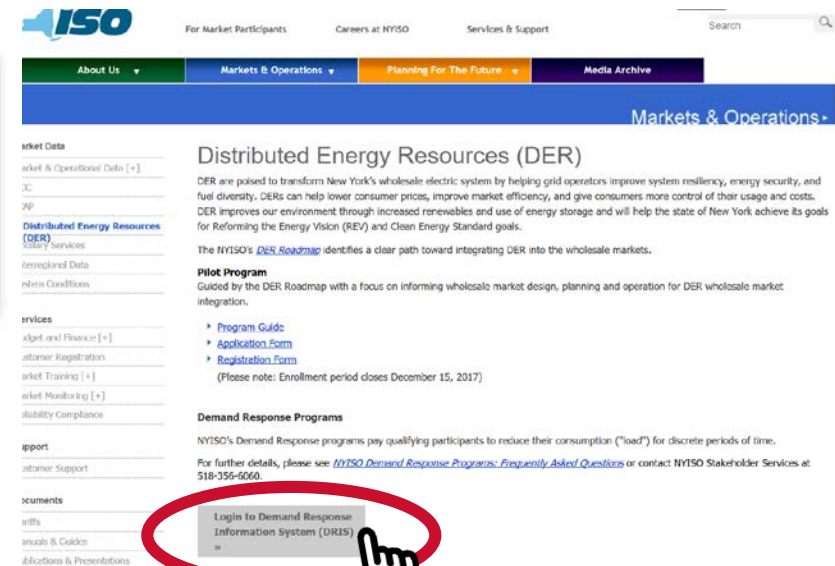
Questions or Comments? Click here for Support or Call 1-518-356-6060\* All calls are recorded for quality assurance

**REAL-TIME DATA & MARKET PRICING**

**DAY AHEAD MARKET**  
20,586 MW  
NY State Real-Time Load  
\$31.67/MWh  
2:00 PM EST  
Wholesale Gas

**DAILY FUEL MIX**  
18,428 MW  
Total MW output  
4,997 MW  
Renewables MW output

**SYSTEM CONDITIONS**  
Official NYISO Time: 14:04:34 EDT



For Market Participants Careers at NYISO Services & Support

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**Markets & Operations**

Market Data  
Market & Operational Data [+]  
TCC  
ICAP  
Distributed Energy Resources (DER) Services  
Interregional Data  
Market Conditions

**Distributed Energy Resources (DER)**  
DER are poised to transform New York's wholesale electric system by helping grid operators improve system resiliency, energy security, and fuel diversity. DERs can help lower consumer prices, improve market efficiency, and give consumers more control of their usage and costs. DER improves our environment through increased renewables and use of energy storage and will help the state of New York achieve its goals for Reforming the Energy Vision (REV) and Clean Energy Standard goals.

The NYISO's [DER Roadmap](#) identifies a clear path toward integrating DER into the wholesale markets.

**Pilot Program**  
Guided by the DER Roadmap with a focus on informing wholesale market design, planning and operation for DER wholesale market integration.

- Program Guide
- Application Form
- Registration Form

(Please note: Enrollment period closes December 15, 2017)

**Demand Response Programs**  
NYISO's Demand Response programs pay qualifying participants to reduce their consumption ("load") for discrete periods of time. For further details, please see [NYISO Demand Response Programs](#), [Frequently Asked Questions](#) or contact NYISO Stakeholder Services at 518-356-6060.

Log in to Demand Response Information System (DRIS)



# Demand Response Information System

- DRIS Login Page

A screenshot of the Demand Response Information System (DRIS) login page. The page has a dark blue header with the ISO logo on the left and the text "Demand Response Information System" on the right. Below the header is a light gray box containing the login form. The form includes the text "Login Required", a message "You are attempting to access a protected resource.", two input fields for "User ID:" and "Password:", and a "Login" button.

**ISO** NEW YORK  
INDEPENDENT  
SYSTEM OPERATOR  
*Building The Energy Markets Of Tomorrow...Today*

*Demand Response Information System*

**Login Required**  
You are attempting to access a protected resource.

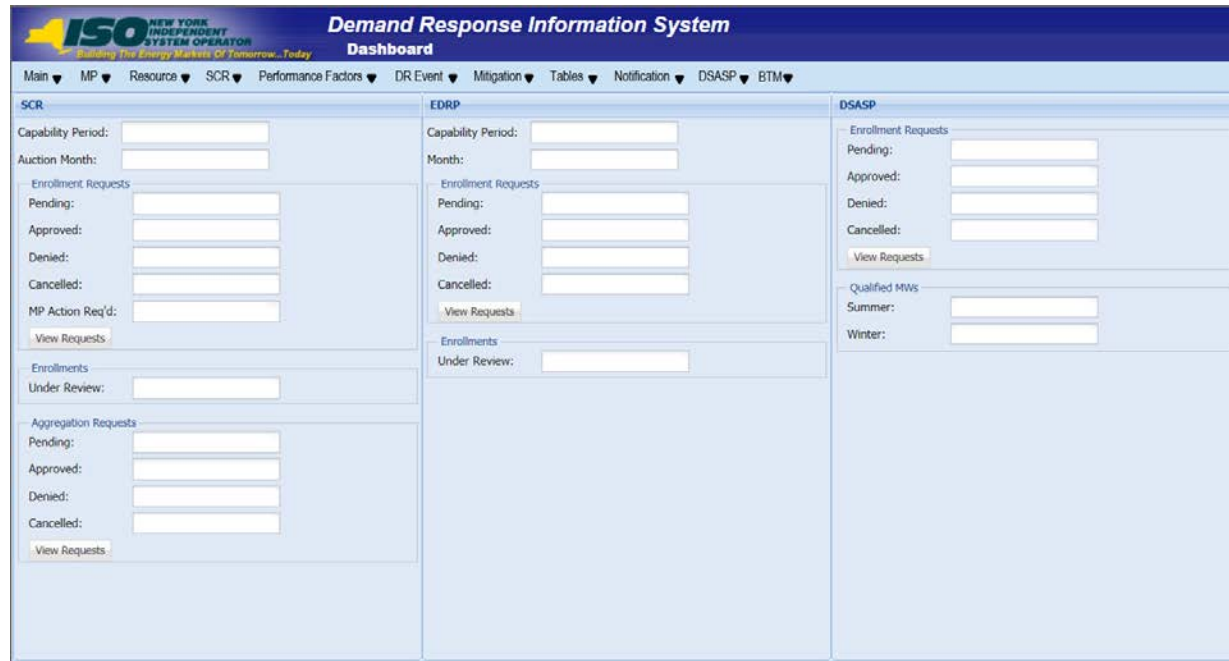
User ID:

Password:

Login

# Demand Response Information System

- DRIS Dashboard



**ISO NEW YORK INDEPENDENT SYSTEM OPERATOR**  
*Building the Energy Market of Tomorrow... Today*

**Demand Response Information System Dashboard**

Main ▾ MP ▾ Resource ▾ SCR ▾ Performance Factors ▾ DR Event ▾ Mitigation ▾ Tables ▾ Notification ▾ DSASP ▾ BTM ▾

SCR	EDRP	DSASP
Capability Period: <input type="text"/> Auction Month: <input type="text"/> Enrollment Requests Pending: <input type="text"/> Approved: <input type="text"/> Denied: <input type="text"/> Cancelled: <input type="text"/> MP Action Req'd: <input type="text"/> <input type="button" value="View Requests"/> Enrollments Under Review: <input type="text"/> Aggregation Requests Pending: <input type="text"/> Approved: <input type="text"/> Denied: <input type="text"/> Cancelled: <input type="text"/> <input type="button" value="View Requests"/>	Capability Period: <input type="text"/> Month: <input type="text"/> Enrollment Requests Pending: <input type="text"/> Approved: <input type="text"/> Denied: <input type="text"/> Cancelled: <input type="text"/> <input type="button" value="View Requests"/> Enrollments Under Review: <input type="text"/>	Enrollment Requests Pending: <input type="text"/> Approved: <input type="text"/> Denied: <input type="text"/> Cancelled: <input type="text"/> <input type="button" value="View Requests"/> Qualified MWS Summer: <input type="text"/> Winter: <input type="text"/>

# Demand Response In-Depth

## ■ Course Agenda

