Introduction to Demand Response

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Demand Response In-Depth

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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

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Demand Response Defined

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FOR TRAINING PURPOSES ONLY

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

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Demand Response

- Demand Side Resource Response Types

Resources can reduce consumption from the grid by:	
Response Type C	• Decreasing power consumption in the facility (Interruptible loads)
Response Type G	• Using a qualified behind-the-meter Local Generator to supply part of the resource's load
Response Type B	• Using both load curtailment and a Local Generator

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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

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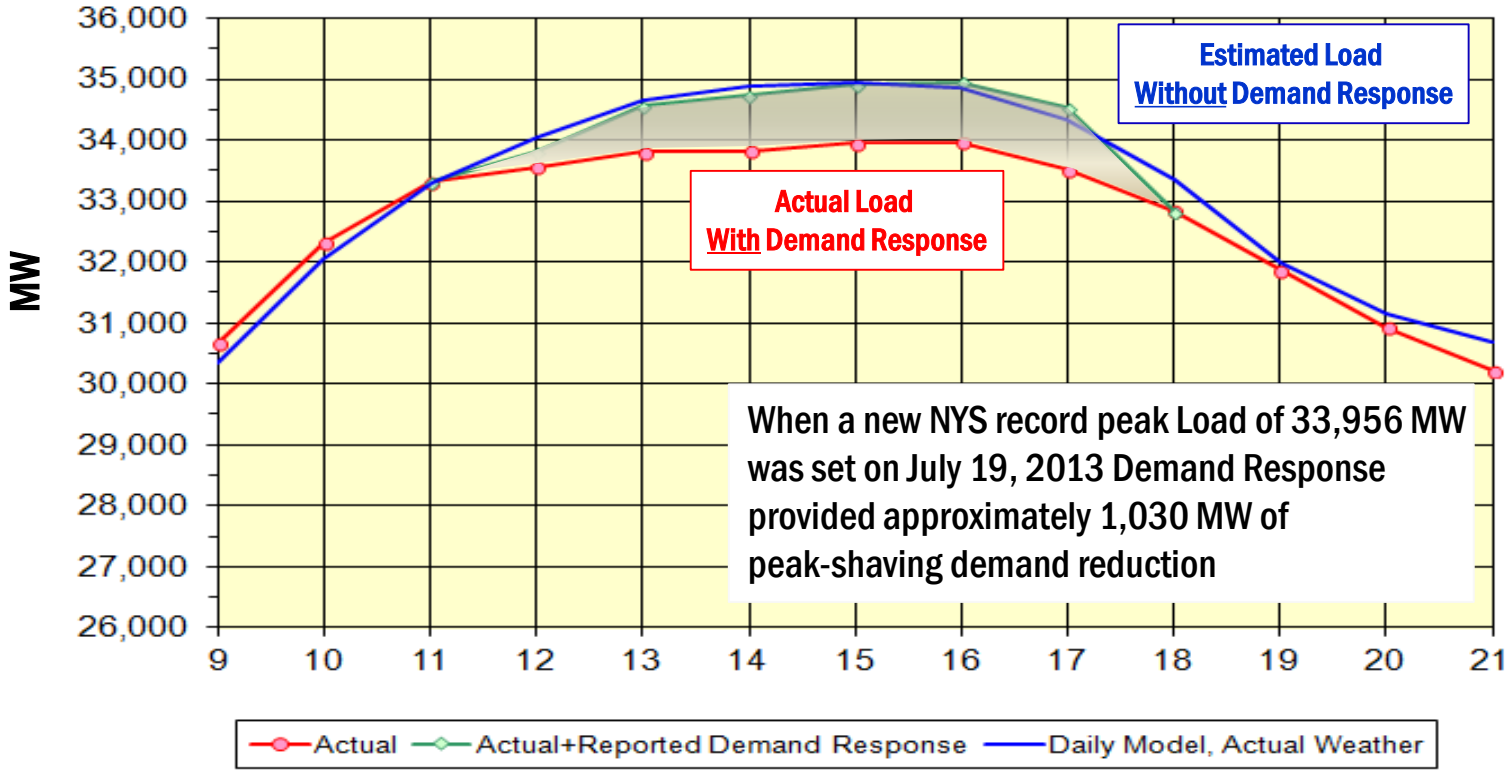
Demand Response & System Reliability



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

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Demand Response Primary Program Categories

Reliability-Based vs. Economic-Based

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Categories of Demand Response Programs

Market Training

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)

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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)

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Summary of Demand Response Programs

Program Name	Program Type	Performance Requirement	Size Requirement	Enrolled By	Metering	Payment Type
EDRP	Reliability-based	Voluntary	• Minimum 100 kW Reduction	Curtailment Service Provider	Hourly Interval Meter	Performance Payment
SCR	Reliability-based	Mandatory if notification timeline is met	• Minimum 100 kW Reduction • Grouping by zone allowed	Responsible Interface Party	Hourly Interval Meter	Performance Payment and Monthly ICAP Payment
DADRP	Economic-based	Mandatory when scheduled	• Minimum 1 MW Reduction • Grouping by zone and LSE allowed	DADRP Provider	Hourly Interval Meter	Performance Payment
DSASP	Economic-based	Mandatory when scheduled	• Minimum 1 MW Reduction • Grouping by zone allowed	DSASP Provider	Six Second Real-Time Metering	Reserve Capacity Payment and/or Regulation Capacity and Movement Payments

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How Program Participants Enroll

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*

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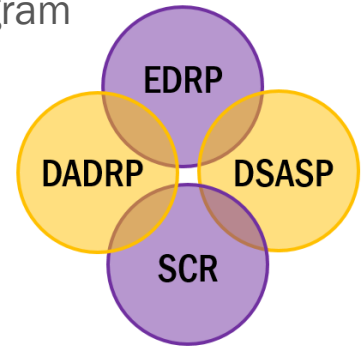
Mutually Exclusive Participation

- **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



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Behind-the-Meter Net Generation Resources Defined

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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

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NYISO Systems

ICAP AMS
MIS
DRIS

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Accessing NYISO Systems

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

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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

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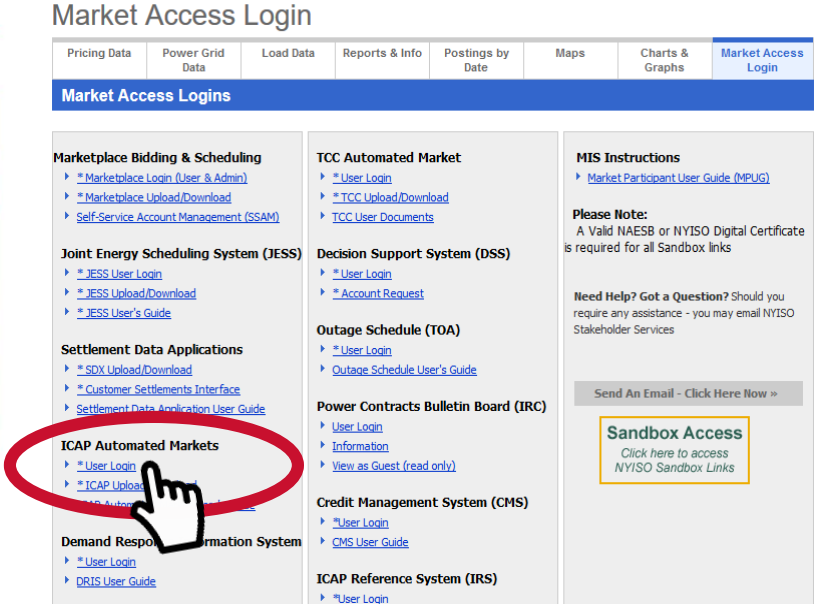
ICAP Automated Market System

- Accessing ICAP AMS from NYISO Home Page



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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

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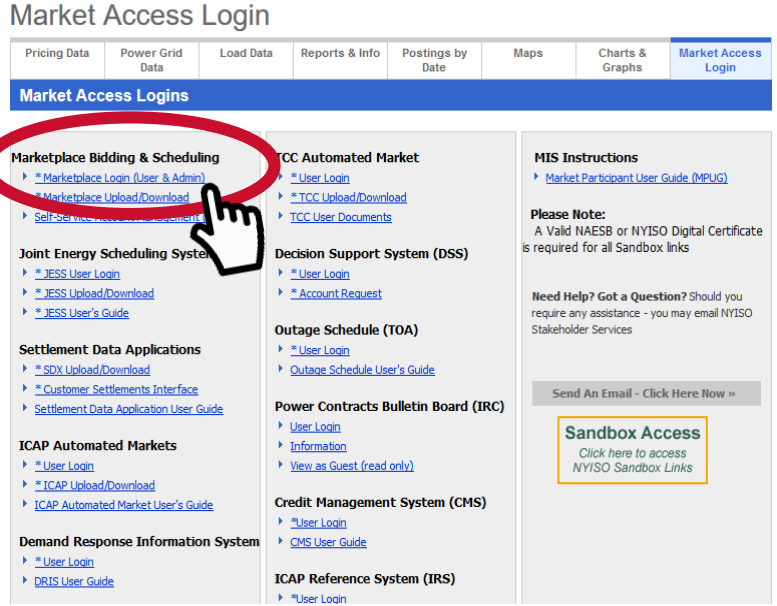
Market Information System

- Accessing MIS from NYISO Home Page



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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

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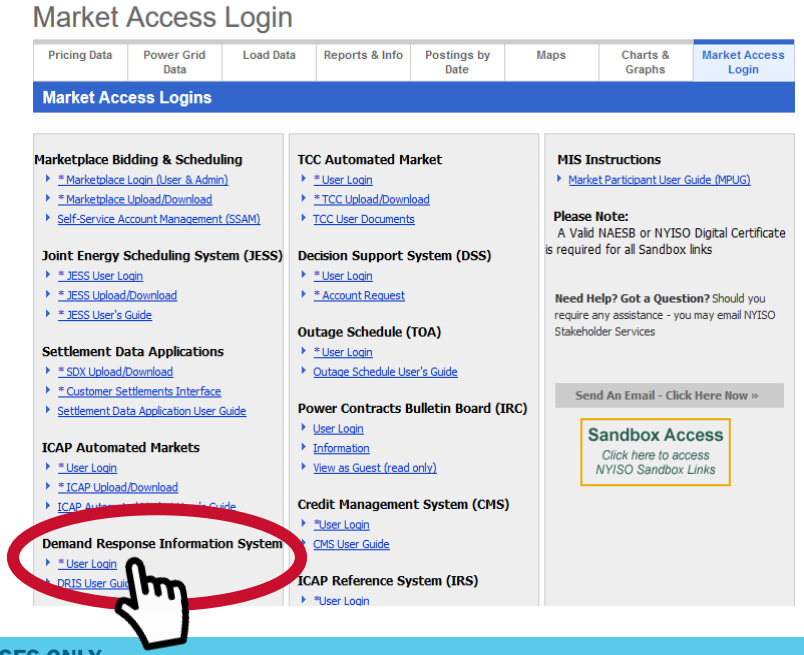
Demand Response Information System

- Accessing DRIS from NYISO Home Page



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Demand Response Information System

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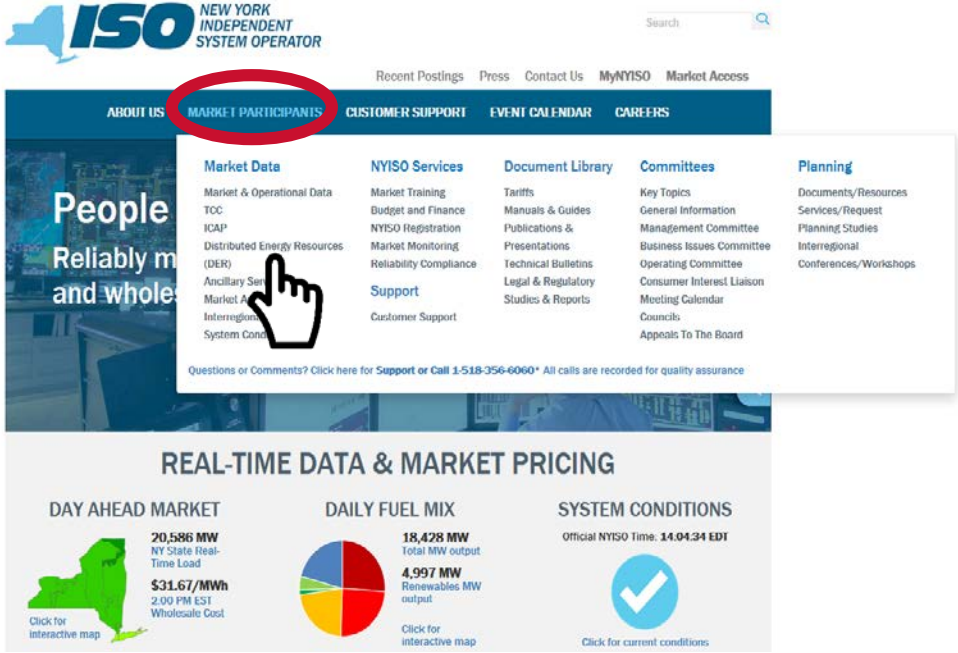

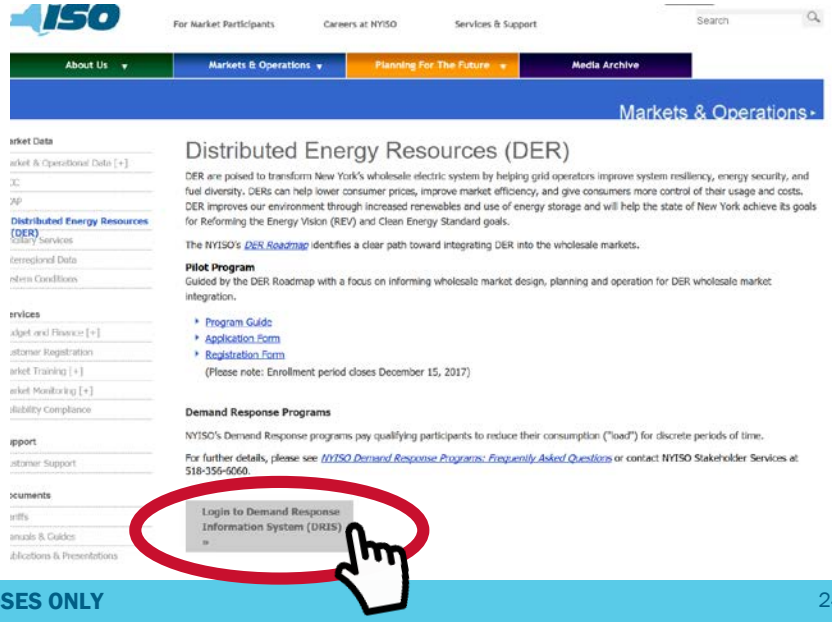

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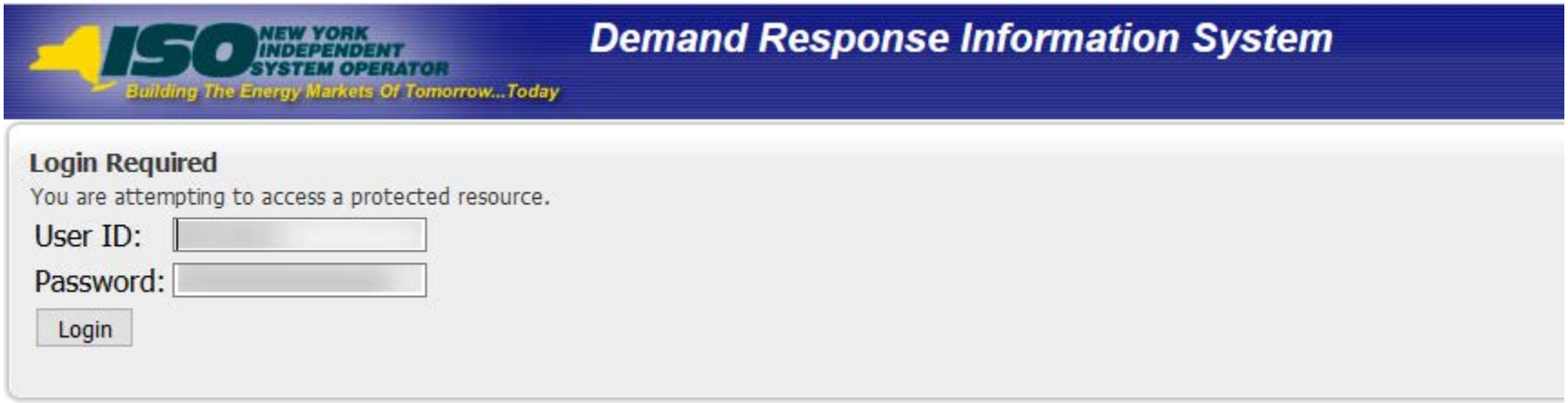
Demand Response Information System

- DRIS Login Page



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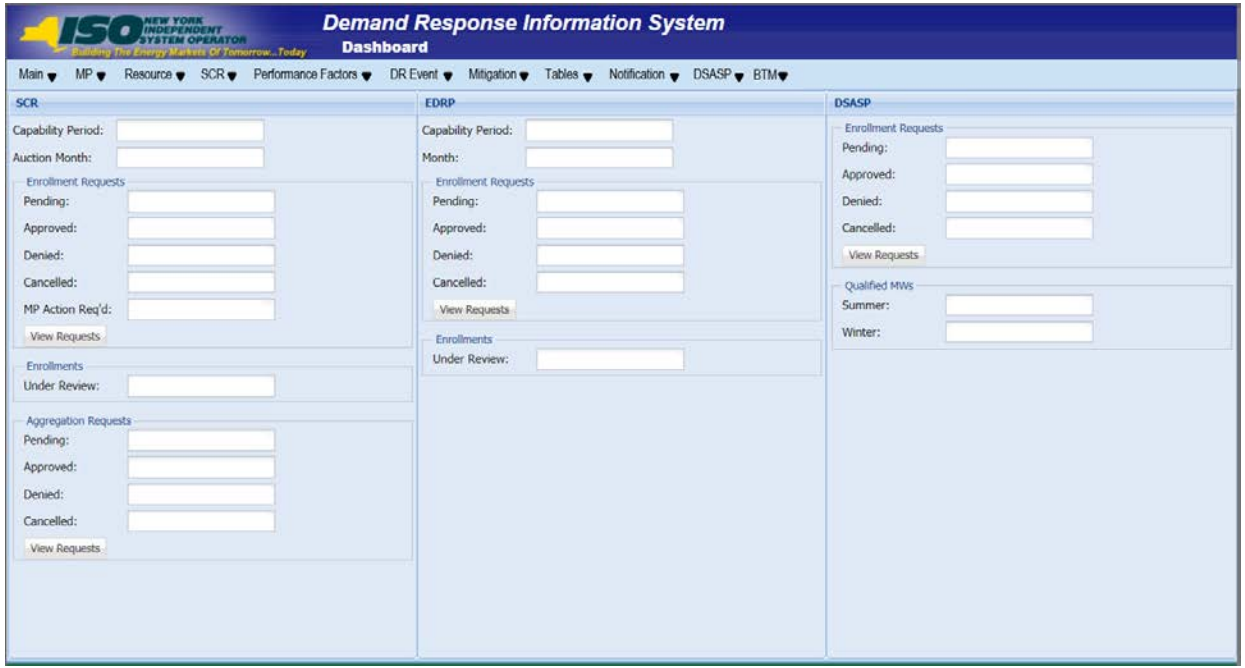
Demand Response Information System

- DRIS Dashboard



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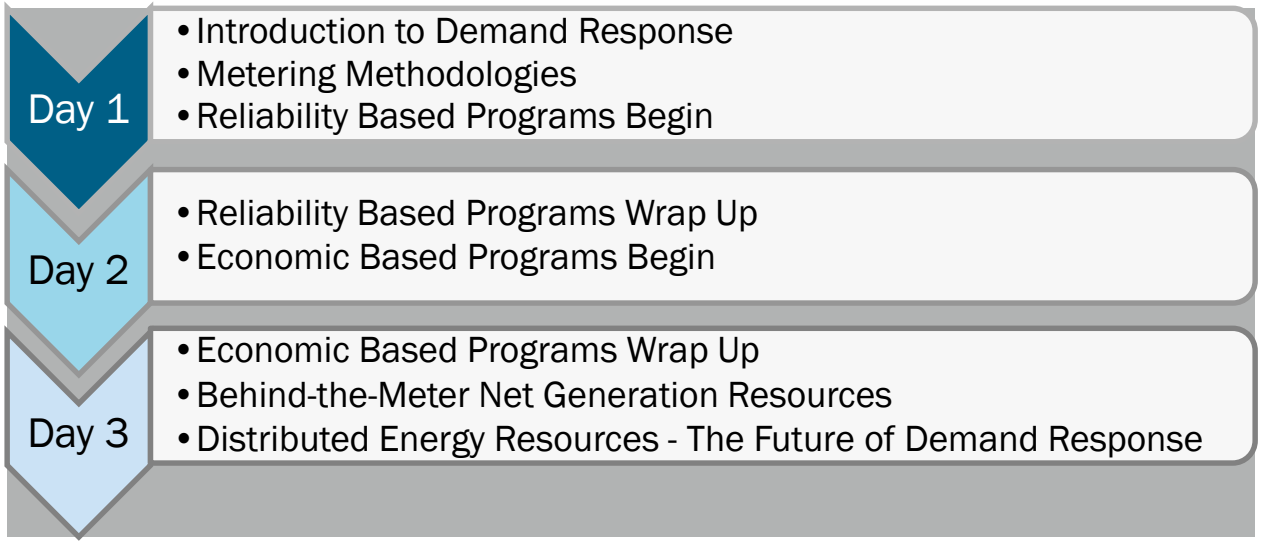
Demand Response In-Depth

Course Agenda



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