



# DSASP Direct Communications Technical Specification

**Demand Response Products**  
*New York Independent System Operator*

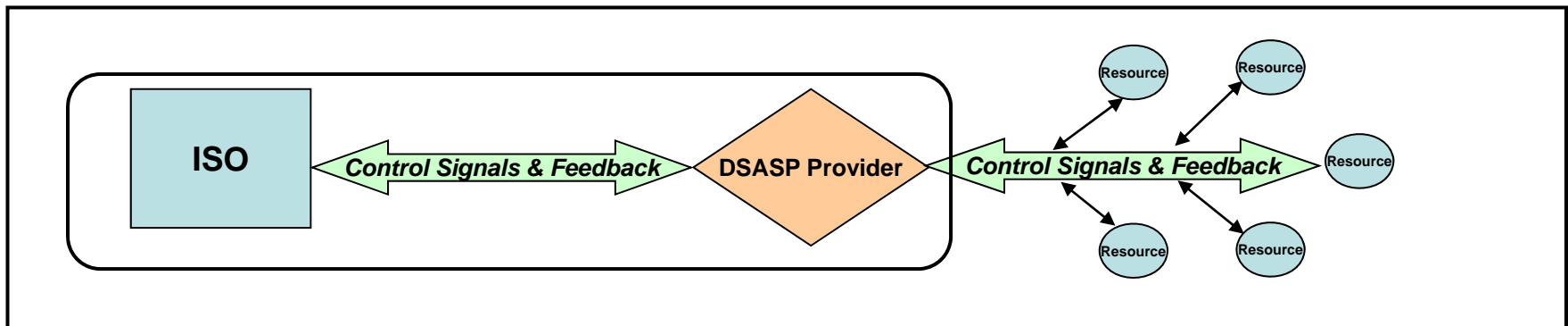
*November, 2011*  
*Rensselaer, New York*

# Agenda

- ◆ **Background**
- ◆ **Scope**
- ◆ **DSASP Provider Requirements**
- ◆ **DSASP Provider Responsibilities**
  - *Operational*
  - *Infrastructure*
  - *Communication Network*
- ◆ **DSASP Registration Packet**
  - *Infrastructure Plan Requirements for DSASP Provider*
- ◆ **Direct Communication Requirements**
  - *Communication Network*
  - *Hardware/Software*
- ◆ **Other Requirements**
- ◆ **Summary**
  - *First Step*
  - *Next Steps*

# Background

- ◆ **Market concept for Direct Communication for DSASP approved in Dec. 2010**
  - *NYISO to establish specifications for direct communication with a DSASP Provider (“aggregator”) for DSASP without a requirement for connection through the Transmission Owner*
  - *This presentation covers requirements for communication between NYISO and the DSASP Provider*
    - Discussion of market rules associated with DSASP aggregations will begin in January 2012



# Scope

- ◆ **This presentation covers requirements for establishing direct communication between NYISO and the DSASP Provider**
  - ***This presentation does not apply when communication is established through the Transmission Owner***
    - A DSASP Resource may choose to receive its dispatch instructions through the Transmission Owner
      - The technical requirements of the Transmission Owner will apply
  - ***Discussion of market rules associated with DSASP aggregations will begin in January 2012***

# DSASP Provider Requirements

## To establish Direct Communications with the NYISO

- ◆ Become a NYISO Market Participant
  - *Complete NYISO Customer Registration Packet*
- ◆ Complete DSASP Provider Registration Packet
- ◆ Contact Customer Relations representative to request direct communication with the NYISO
  - *Complete CEII (Critical Energy Infrastructure Information) and NDA (Nondisclosure Agreement)*
    - Customer Relations will obtain Legal approval and provide the Direct Communications Procedure to the Provider
    - After Legal approval, Customer Relations will send the Direct Communications Procedure to the DSASP Provider and notify NYISO IT department that the Procedure has been sent to a DSASP Provider

# DSASP Provider Requirements Continued

- ◆ A DSASP Provider may also request that Customer Relations set up a conference call between the NYISO IT, Customer Relations and the DSASP Provider
  - *NYISO IT will collect the necessary contact information to begin the discussions regarding any questions the DSASP Provider has about the direct communications process*
- ◆ Discuss Direct Communications Plan with NYISO IT
  - *Identify/Configure Communication Network Services*
  - *Identify/Configure Hardware/Software*
  - *Complete all aspects of the Direct Communications Procedure*

# DSASP PROVIDER RESPONSIBILITIES

# DSASP Provider Responsibilities

## A DSASP Provider

- ◆ Communicates directly with the NYISO
- ◆ Takes on the responsibility for accepting NYISO Dispatch and providing telemetry back to the NYISO
  - *Sends dispatch signals to DSASP Resources under its control*
  - *Obtains telemetry from DSASP Resources under its control*
- ◆ Schedules ICCP communication outages based on the Direct Communications Procedure
- ◆ Schedules computer control system outages based on Control Center Requirements Manual
- ◆ Schedules DSASP Resource outages like a Generator based on the Outage Scheduling Manual



# DSASP Provider Infrastructure Responsibilities

## A DSASP Provider is responsible for

- ◆ The infrastructure between the NYISO and itself, and the DSASP Provider and its resources
  - ***Computer systems used for:***
    - Communicating with the NYISO
    - Managing its resources
    - Communicating and dispatching its resources
  - ***Resource metering infrastructure***
    - PSC approved instantaneous meters will be used:
      - [http://www3.dps.state.ny.us/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/598975070d80733e85257687006f3ac4/\\$FILE/approved\\_meter\\_%20list.PDF](http://www3.dps.state.ny.us/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/598975070d80733e85257687006f3ac4/$FILE/approved_meter_%20list.PDF)
  - ***Voice communications with NYISO to address communication outage or issues of operational performance***

# DSASP Provider Operational Responsibilities

## A DSASP Provider shall

- ◆ Maintain 24/7 on call Communications contact
- ◆ Maintain 24/7 on call Operations contact
- ◆ Contacts must be able to take actions and provide information requested by NYISO
  - *E.g., Control its resources, notify NYISO of any information required per NYISO Procedures or troubleshoot communication errors*

## In event of a loss of communications with the NYISO

- ◆ The DSASP provider shall follow the last base point instruction it received for its DSASP Resource(s) at the time communication was lost until communications is re-established or as directed by NYISO Operations
  - *DSASP Resources dispatched via a DSASP Provider using Direct Communications with the NYISO cannot be dispatched by a Transmission Owner*
    - Activation of Interim Control Operation (ICO) results in the Transmission Owners taking over the control of the power system on behalf of the NYISO

# Communication Network

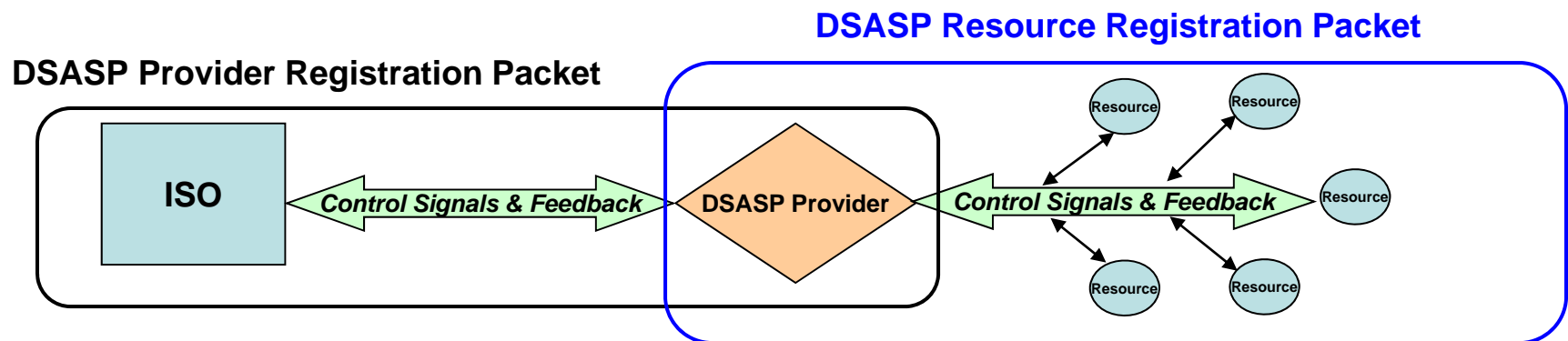
## **A DSASP Provider is responsible for**

- ◆ The costs associated with the installation of communication circuit(s) and any monthly charges
- ◆ The immediate repair of its circuits and/or its communications system including but not limited to the communications from its resources to itself
  - *The DSASP Provider shall bear the costs of the repair*
- ◆ If communications problems are detected, the owner of the physical or private virtual circuit has the responsibility to resolve those problems with the appropriate carrier or party

# DSASP REGISTRATION PACKET

# DSASP Provider Registration Requirements

- ◆ **Establish DSASP Provider Contacts**
  - *Program, Operations & Communications Contacts*
- ◆ **Submit an infrastructure and technology plan**
- ◆ **DSASP Resource(s) are registered through the NYISO DSASP Registration Packet**
  - *Registration of aggregations for DSASP will not be available until the market rules for aggregations are complete and approved by FERC*



# DSASP Provider Registration Requirements

- ◆ **DSASP Providers who intend to use a third party for communication services, data processing or any other activities related to scheduling and dispatch of DSASP resources are advised to contact Customer Relations to understand any requirements the third party may have in order to interact with the NYISO on behalf of the DSASP Provider**
  - ***Refer to the Scheduling Service Provider/Agency Agreement form of the NYISO Customer Registration Packet***

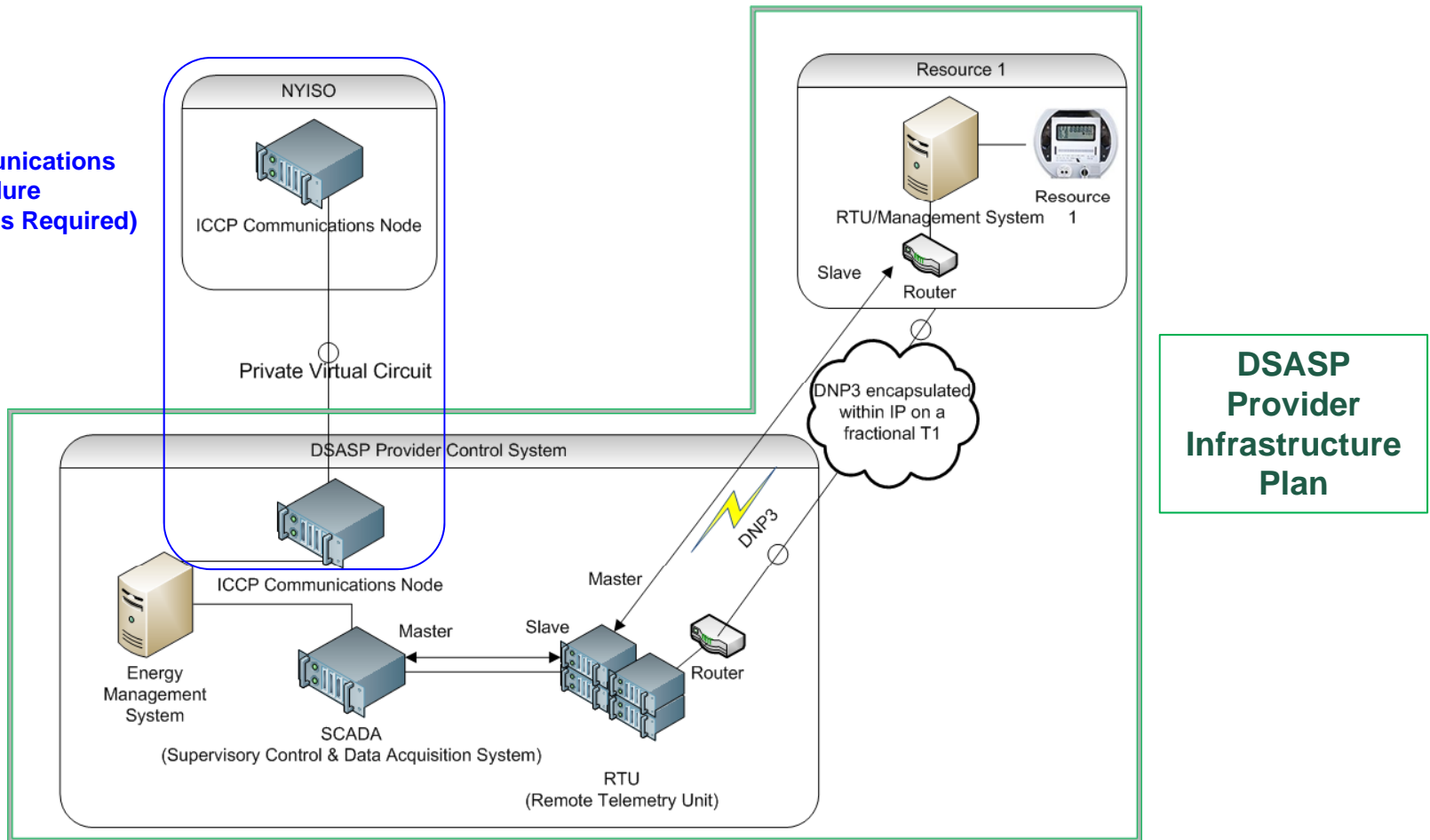
# Infrastructure and Technology Plan

- ◆ Information to be included in the Plan:
  - *System diagrams*
  - *Wiring diagrams*
  - *Schematics*
  - *Block Diagrams*
  - *Text documentation*
- ◆ NYISO will review the information to assess for completeness
  - *The DSASP Provider Registration Packet will specify the minimum requirements*
- ◆ The DSASP provider is responsible for DSASP Resource performance and all market obligations
  - *The Infrastructure and Technology Plan will not be assessed for its technical merit or the feasibility of the system to allow the Provider to meet NYISO Tariff/Procedure obligations*

# Infrastructure and Technology Plan

## Block Diagram Example: DSASP Provider with 1 resource

Direct Communications Procedure  
(CEII/NDA Forms Required)



**DSASP  
Provider  
Infrastructure  
Plan**



# Infrastructure and Technology Plan

- ◆ DSASP Provider Operations/Control Center configuration
  - *Physical/Cyber Security*
  - *System Operations Management*
  - *Power Infrastructure*
  - *Environmental Controls*
  - *Redundancy of Infrastructure*
  - *Scalability*
  - *Backup Process*
  - *Disaster Recovery Process*

# Infrastructure and Technology Plan

## Outline of the types of information to be included in Operations/Control Center Configuration

- ◆ **Security:**
  - *24/7 physical security management*
  - *Identity and Access Management*
- ◆ **System Operations Management**
  - *Availability Management*
    - Network & Services Management
- ◆ **Power Infrastructure:**
  - *100% generator backup*
  - *UPS backup power*
  - *Grounding in accordance with NFPA 70*
- ◆ **Environmental Controls:**
  - *Cooling and humidity management*
  - *Fire Detection and Suppression Systems*

# Infrastructure and Technology Plan

## Outline of the types of information to be included in Operations/Control Center Configuration

- ◆ **Redundancy:**
  - *All servers have redundant power supplies (UPS, Direct Current power source)*
  - *All servers and storage arrays utilize RAID 0,1*
  - *Server clustering*
  - *Hot Backup Database server is available in the event of a Database server failure*
- ◆ **Scalability:**
  - *Platform database is currently XX TB with room to grow to XX TB.*
- ◆ **Backup:**
  - *Every-night all servers and databases are backed-up.*
  - *Periodically, between complete backups, transactional backups are performed*
  - *All backups are then taken to our backup data center.*
- ◆ **Disaster Recovery:**
  - *Hard Drive failure process*
  - *Non-Mission Critical Server failure process (e.g. backup Domain Controller)*
  - *Database Server or Disk Array Failure*
  - *Primary Data Center Failure*

# Infrastructure and Technology Plan

## DSASP Provider to DSASP resource configuration

- ◆ Describe the overall system architecture of the Energy Management System to be employed for resource management
  - *If the solution is purchased as a product or service, identify the product/service and provide company contact information for the product/service*
  - *If the system is developed internally, provide documentation of system functionality*
- ◆ Describe the communications architecture utilized between the DSASP Provider systems and the DSASP Resource(s) system and/or devices (e.g. RTU, instantaneous meters)
  - *Describe the communications with demand side resources*
    - Circuit type and bandwidth
    - Identify whether it is shared for other purposes or dedicated
    - Identify any redundancies
  - *Identify communication protocol used for communicating with the DSASP Resource*
  - *Describe any meter totalization methodology used for reporting instantaneous data*
    - Process, timing, calculations
  - *Identify NYS PSC approved meter(s) utilized*

# Infrastructure and Technology Plan

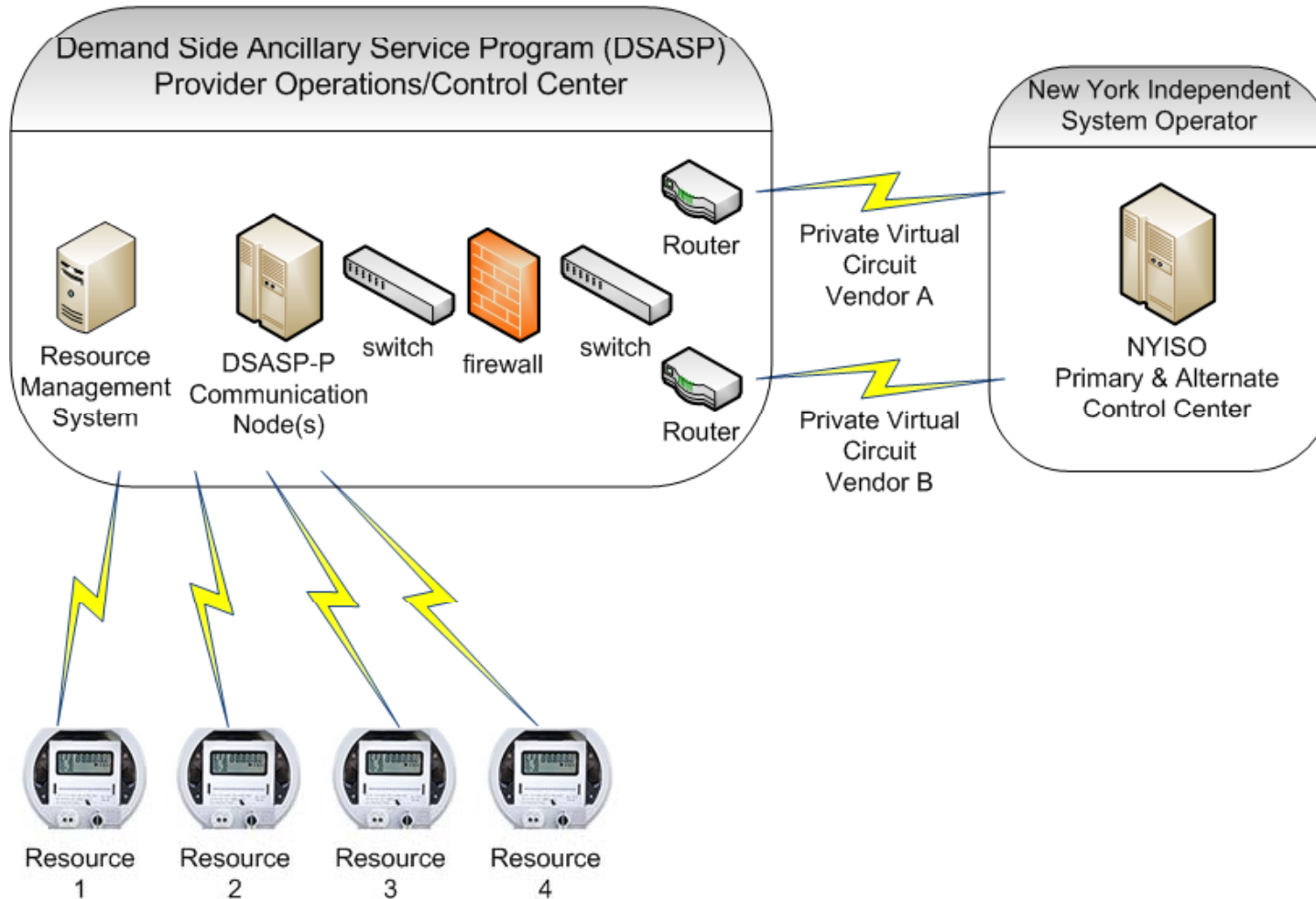
- ◆ DSASP Provider Data Management Practices:
  - *Validation, Estimation, & Editing*
    - **Describe the process and rules to be used for meter data**
      - If using any industry standards, provide a reference of the load research or business practice standard
  - *Data Retention*
    - **Describe data retention practices**
      - **The types of data and retention schedule**

# Infrastructure and Technology Plan

- ◆ All other technical information required will be addressed by the Direct Communication Procedure
  - *To obtain the Direct Communication Procedure:*
    - Contact Customer Relations (518-356-6060) to request the CEI (Critical Energy Infrastructure Information) and NDA (Non-disclosure Agreement) forms

# DSASP DIRECT COMMUNICATIONS REQUIREMENTS

## Example of a Direct Communications setup for DSASP





# Communication Network Requirements

- ◆ **Communication network redundancy requirements to the NYISO are based on total MW enrolled in DSASP**
- ◆ **If total enrollment by DSASP Provider is >25 MW, a completely redundant communication configuration is required (this configuration is recommended for all)**
  - *2 different communication vendors*
  - *2 sets of network components*
  - *Minimum of 2 of ICCP Nodes*
- ◆ **Requirement for total enrollment of 25 MW or less**
  - *1 communications vendor*
  - *1 set of network components*
  - *1 ICCP node*
- ◆ **MP and NYISO will jointly complete their respective vendor agreements to establish the direct communication**
  - *This agreement is required by the vendor to connect the DSASP Provider to the NYISO over the network it manages*

# Hardware & Software Requirements

- ◆ **Contact communication vendor to establish a link to the NYSIO**
  - *Establish a contract with the communication vendors:*
    - Select a circuit type and bandwidth
    - Obtain Virtual Private LAN Service
      - MPLS (Multi-Protocol Label Switching)
- ◆ **Identify Communication Network Hardware**
  - *Router(s) capable of router to router encryption*
  - *Firewall(s) (highly recommended)*
- ◆ **Select Software solution to handle ICCP communication**
  - *Supports Blocks 1 and 2 as both client and server*
- ◆ **Configure Hardware and Software for ICCP Node**
  - *Collaborate with NYISO personnel as necessary to comply with NYISO Direct Communications Procedure (CEII & NDA required)*
  - *Scalable to incorporate additional resources (if applicable)*
  - *For redundant configuration*
    - Be able to switch communications circuit and/or ICCP Node (failover capability)
    - Designed to achieve 99.99% availability
- ◆ **Identify servers and other hardware based on requirements from software solutions vendor**

# OTHER REQUIREMENTS

# Metering Requirements

- ◆ The metering accuracy shall be in accordance with requirements of the
  - ***NYISO Control Center Requirements Manual***
  - ***NYISO Revenue Metering Requirements Manual and***
    - New York State Electric Meter Engineers' Committee – Guide for Uniform Practices in Revenue Quality Metering
  - ***NEW YORK STATE DEPARTMENT OF PUBLIC SERVICE APPROVED METER LIST REV. 9/8/2011***
- ◆ New York State Public Service Commission Procedures
  - ***16 NYCRR Part 92 Operating Manual March 14, 2003***
    - The procedures contained in this operating manual have been established in order to provide guidance to utility and non-utility meter service providers (MSPs) in instituting practices for testing and maintaining electricity meters in order to promote a high degree of metering performance.

# Audit/Site Visit

- ◆ Prequalification Performance Test
  - ***Ancillary Services Manual***
    - Regulation market - Section 4.13.3 Supplier Regulation Service Performance Audit
    - Reserve market - Section 6.12.2 Pre-Qualification and Re-Qualification Performance Test
- ◆ As with other suppliers, there will be ongoing performance audits of DSASP resources based on NYISO Procedures (Manuals, Technical Bulletins)
- ◆ Documentation/Data/Site audits
  - ***At the NYISO's discretion, NYISO personnel or its agent may request data, documentation or conduct an onsite visit to audit the DSASP Provider of its compliance with DSASP requirements***
  - ***Audit may include, but is not limited to:***
    - **Infrastructure plan provided by the DSASP Provider**
    - **Procedural/system documents**
      - Business practices for Validation, Editing and Estimation
      - Verification of calculations from automated systems
    - **Data used for settlement in the DSASP program**
  - ***Access must be provided to ensure compliance with the Demand Side Ancillary Services Program***

# Operational Limits for DSASP using Direct Communications

- ◆ **Initial limit of 150 MW NYCA-wide for DSASP using Direct Communications**
  - *For reliability, NYISO needs to limit exposure of the amount of reserves that are not under Transmission Owner control during Interim Control Operations*
  - *NYISO will build experience with Demand Side Resources providing reserves and regulation via direct communication*
  - *DSASP resources using Direct Communication will be modeled as zonal resources*
    - No other physical suppliers providing reserves and regulation are modeled as zonal resources
    - Modeling as a zonal resource will accommodate the distribution of end-use locations that eventually enroll as an aggregation for DSASP
    - NYISO may also require sub-zonal modeling for certain areas if needed for reliability
- ◆ **How the limit will be monitored**
  - *The Upper Operating Limit (UOL) of each qualified DSASP resource using Direct Communication will count towards the limit*
    - UOL is the maximum capability that a resource can provide for reserves and regulation

# Summary

## First Step: Establish Direct Communication with the NYISO

### ◆ **Become a DSASP Provider**

- *Complete Customer Registration Packet*
- *Complete DSASP Provider Registration Packet*
  - Will be available on NYISO's website beginning 12/19/11

### ◆ **Contact Customer Relations representative to request direct communication with the NYISO**

- *Complete CEII (Critical Energy Infrastructure Information) and NDA (Nondisclosure Agreement) to obtain the Direct Communications Procedure*
  - Begin discussion with NYISO IT to coordinate Direct Communication implementation
- *Establishing direct communications with the NYISO requires the involvement of communications vendor(s)*
  - Establishing circuits and connections will depend greatly on vendor schedule
  - Availability of network connection to NYISO for DSASP Providers
    - Late January / Early February 2012

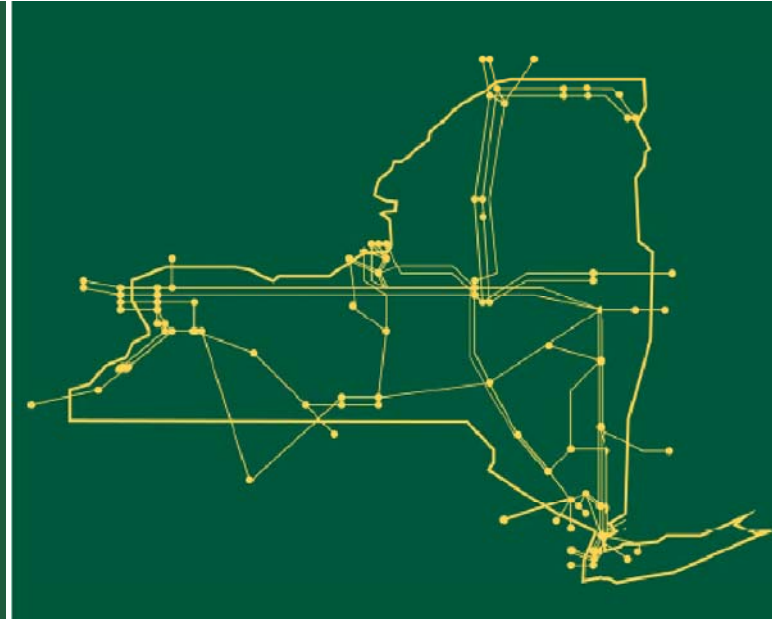
# Summary

## Next Step: Enrolling a DSASP Resource

- ◆ **Individual Demand Side Resources with 1MW or more of load reduction may begin the enrollment process using the existing DSASP Registration Packet**
- ◆ **Aggregations will not be able to enroll until market rule and software changes are complete in 2012**
- ◆ **Modeling of a DSASP Resource is not complete until the NYISO's network model is updated**
  - *Update deployments to NYISO's network model occur six or seven times per year*
- ◆ **Qualification information is provided in the Ancillary Services Manual**
  - *Section 4 for Regulation Service*
  - *Section 6 for Operating Reserves*
- ◆ **Market rule development begins in January 2012 with anticipated deployment in June 2012**
  - *Tariff and software changes are expected*
  - *Anticipated deployment is June 2012*



The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.



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