

Interoperability of Demand Response Resources in New York

Oct 13, 2009
Albuquerque, NM



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Company Overview

Service Territory

- Customers 3,200,000
- Population 9,100,000
- Area 604 mi²
- Peak Demand 13,141 MW
- Load Density 21.8 MW/mi²

Challenges

- Stakeholder pressure to maintain and improve on already high levels of reliability.
- Majority of load served by underground networks which are expensive to build and maintain.
- Limited real estate for expansion.



New York City & Westchester County



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Project Objective/Description

- Existing demand response tools lack the required level of visibility and verifiability of resources necessary to be more tightly incorporated into an operations environment that demands world leading reliability performance.
- Develop tools to enhance the Interoperability of demand response.
 - Curtailable loads
 - Distributed standby generation
- Participants
 - Con Edison
 - Verizon (Retail Customer providing demand resources for the project)
 - Infotility (Developing communications protocols and implementation software)
 - Innovative Power (Project Management)



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Project Timeline

- Year 1 - Feasibility study
- Year 2 - Design and Construction
- Year 3 - Operation and Evaluation
- Year 1, Task 3: Develop clear, unambiguous, protocols for information exchange.
 - Extend the ability to communicate and control DR resources down to the level of load pockets within a distribution network.
 - Each RC facility will be connected to the DSCC via a DRCC; the address of each facility in each DRCC will include:



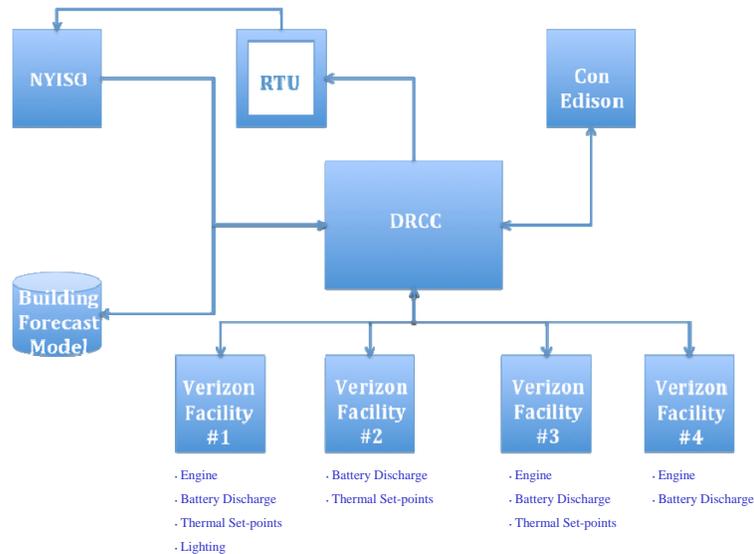
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Use DR help for localized problems



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Demand Response System Architecture



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DRCC Architecture Components

- Demand Response Command Center (DRCC) application is the gateway between a group of resource facilities and the utility operator.
 - Allows the utility operator to initiate program calls.
 - Determines optimal program participation and attainable curtailment.
 - Communicates to the Distribution System Control Center.
 - Transmits instructions to each resource and receives feedback to verify curtailment.
- Utility (low-voltage) Network Operator Dashboard
 - Interfaces with multiple DRCC's operated by individual response providers
 - Allows the system operator to determine in real time what resources are available in a specific geographic region of the grid.

DRCC – Utility Interaction

- Utility Operator indicates locality of concern and queries the DRCC for available resources.
- DRCC determines available curtailment based on building models and forecasting tools developed in the project.
 - Curtailment models consider weather profiles, production schedules and equipment availability.
- System Operator initiates curtailment in locality of concern.
- The DRCC monitors the total curtailment and reports back to the Utility.

DRCC - Progress to Date

- Data Protocols have been defined.
- User Interfaces have been defined.
- Building Forecast Models have been developed.
- Equipment specifications for the DRCC have been developed and a prototype has been developed.



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DRCC Dashboard

DRCC Network Operator Dashboard

2:33:47 PM

Search by: Network | Manhattan

The DRCC Dashboard

Network	Feeder	Building	Availability	Generation/CR	Include (?)
Manhattan	Feeder-06m22	Verizon1	tue	1	<input type="checkbox"/>
Manhattan	Feeder-06m29	Verizon2	tue	2	<input type="checkbox"/>
Manhattan	Feeder-06m31	Verizon3	tue	3	<input type="checkbox"/>
Manhattan	Feeder-06m33	Verizon4	tue	4	<input type="checkbox"/>
Manhattan	Feeder-06m34	Verizon5	tue	5	<input type="checkbox"/>
Manhattan	Feeder-06m36	Verizon6	tue	6	<input type="checkbox"/>

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Test Site

- Batteries
- Microrurbine
- Remote monitoring and control hardware



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Overall Project - Ongoing

- Retrofit NOx control installations to enable operation consistent with State emissions standards which will be applicable to new on-site DG engines
- Installation of closed transition switches at 2 locations.
- Researching techniques to allow export to the primary grid.



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Summary

- Developed protocols and architecture to determine real time availability and verify performance of demand response.
- Conducted successful DRCC test on Oct 8th.
- Ongoing development of tools to allow locational selection of resources within local distribution load pocket.