Local Transmission Owner Plan (LTP)

DRAFT - October 7, 2011

Presentation to NYISO Interested Parties

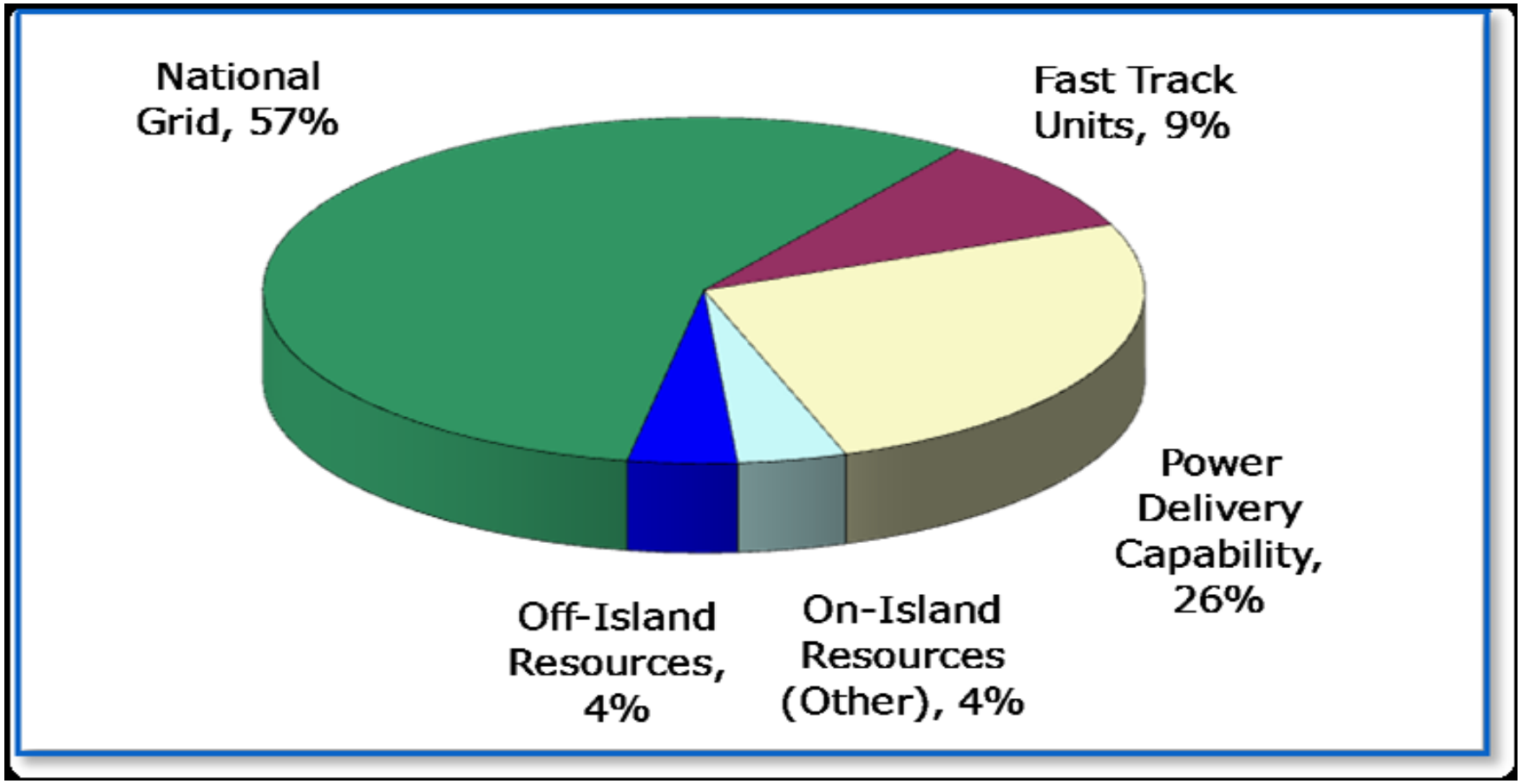
LTP Overview --What's covered in this presentation

- Overview of LIPA
- Planning Horizon of the LTP
- Issues Addressed in LTP
  - LIPA T&D Plan
  - Other Major Key Drivers
  - Planning Criteria
- Data and Models Used
  - Data Sources
  - Models
  - Load Forecast
- Transmission Planning Studies
  - Planning Process
  - Overview of Studies Performed
  - Project Identification

LIPA Overview

- LIPA owns electric Transmission and Distribution (T&D) system on Long Island
- Acquired from LILCO in 1998
- Predominant supplier of power on Long Island
- Contracts for power supply to meet capacity and energy needs
- Management Services Contract with National Grid expires in 2013
  - Selection of successful bidder scheduled for late October 2011.
- National Grid (NG)
  - United Kingdom based corporation, acquired KeySpan in Sept. 2007
  - Manages electric operations for LIPA's system
  - Owns and operates power plants on LI
  - NG also owns and operates gas and electric T&D systems in the Northeast regions

LIPA Overview



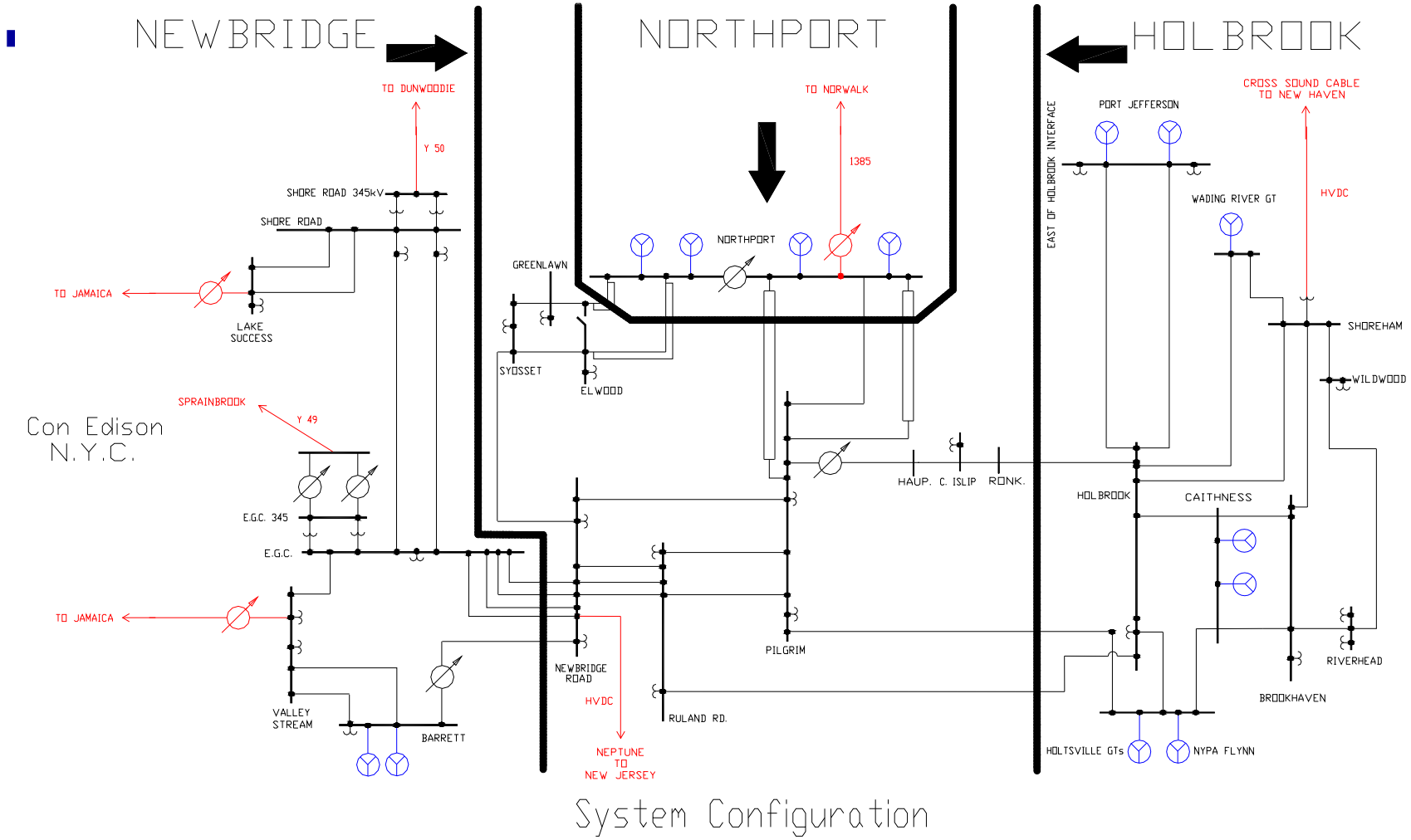
LIPA Generation Sources

LIPA Draft Electric Resource Plan 2010-2020

LIPA Overview

- LIPA's transmission system is designed to provide adequate capacity between generation sources and load centers at reasonable cost with minimum impact on the environment. The Long Island Power Authority (LIPA) owns:
  - 1,366 miles of transmission and sub-transmission lines
  - Delivering power to 181 substations in its electric system
- Interconnections:
  - Two 345 kV
    - Con Ed: Y49 (NYPA) 637 MW, East Garden City to Sprain Brook (NYISO-BPS)
    - Con Ed: Y50 (LIPA/Con Ed) 653 MW, Shore Road to Dunwoodie (NYISO-BPS)
  - Three 138 kV:
    - ISONE: NNC (LIPA/NU) 428 MW, Northport to Norwalk Harbor
    - Con Ed: Valley Stream and Lake Success to Jamaica (LIPA/Con Ed), 286 MW wheel
  - Two HVDC:
    - PJM: Neptune 660 MW, Newbridge Road to Sayreville
    - ISO-NE: CSC 330 MW, Shoreham to New Haven
- Long Island Control Area: Locational Capacity Requirement

LIPA Overview: Interfaces - 2011



System Configuration

Planning Horizon of the LTP

- The Planning Horizon for the LTP Process is 10 years

- Covers:
  - FERC 715 Filing, Facilities greater than 100 kV
  - NYISO
    - Gold Book
    - System Reliability Impact Study Projects (CRIS, ERIS)
    - System Impact Study Projects
  - LIPA Sub-Transmission Projects

Issues Addressed in LTP

- LIPA T&D Plan
- Other Major Key Factors
- T&D Planning Criteria & Guidelines

LIPA T&D Plan

- LIPA Electric Resource Plan 2010-2020, Issued February 2010
  (http://www.lipower.org/pdfs/company/projects/energyplan10/energyplan10.pdf)
  - Appendix A, Action Plan (Under Development)
  - Appendix B, Technical Analysis (Posted 6/22/2011)
  - Appendix C, Energy Primer (Post 2/11/2010)
  - Appendix D, Response to Comments (Post 2/12/2010)
  - Appendix E, Technical Appendices (Post 2/11/2010)

- Identifies four strategic areas of the Transmission and Distribution Plan:
  - Technical Performance
  - Regulatory Requirements and Compliance
  - Customer Satisfaction
  - Financial Performance

The following slides identify examples of the plan elements in each strategic areas.

LIPA T&D Strategies and Plan Element Examples:

- **Technical Performance**
  - Reliability
  - Aging Infrastructure
  - System Efficiency and Losses.
  - Public and Employee Safety

- **Regulatory Compliance**
  - Reliability Standards
  - Planning Compliance
  - Environment Protection
  - Energy Policy Act Issues

- **Customer Satisfaction**
  - Reliability Improvements
  - Power Quality
  - Service Quality
  - Outage Management

- **Financial Performance**
  - Cost Effectiveness
  - Risk and Risk Mitigation
  - Capital Forecasts
  - End of Contract Risk

LIPA T&D Plan Initiatives

- Reliability:
  - Invest in Cost Effective System Infrastructure Enhancements to Address Customer Reliability and Performance Metrics (Committed)
- Customer Satisfaction
  - Adopt the Transmission & Distribution Customer Satisfaction Plan (Committed)
- Regulatory
  - Maintain Compliance with Regulatory Requirements (Committed)
- Financial Performance
  - Continue to Ensure the Transmission & Distribution Plan Meets Financial Performance Metrics (Committed)
- NY State Transmission Assessment and Reliability Study (STARS)
  - Continue to Investigate and Identify New York State Transmission Enhancement Opportunities through LIPA's Participation in the STARS Study (Under Study)

Other Major Key Factors (Examples)

- Load Growth
  - Organic Growth
  - Lump Load
- New Resource Additions (NYISO SRIS Process)
  - LI Cable Off-shore Wind Farm
  - Joint Con Ed/LIPA Off-shore Wind Farm (Removed from NYISO Queue, pending a detailed analysis)
- Dispatch Restrictions
  - Gas Burn Reliability Rules
  - Transient Voltage (DRSS Phase I and II Projects)
  - Load Pockets
- Resources/Repowering Long Island
  - LIPA Generation RFP 2500 MW (Issued: Aug. 2010, Responses: Spring 2011)
  - Glenwood Units 4 & 5, Far Rockaway Unit 4 and Barrett GT 7 Retirement
  - Barrett, Northport, Port Jefferson were repowering candidates
- Regulatory
  - NERC 100 kV Bright Line

FERC ORDER 743 – Bulk Electric System (BES) Discussion

- **Background**
  - NPCC has used a functional performance based test, A-10, to determine Bulk Power System (BPS) and BES Facilities.
  - FERC desires "Bright Line" Criteria of 100 kV and above, with limited exemptions/exceptions.
  - NPCC submitted comments that the functional basis was more appropriate.
  - On November 18, 2010 FERC issued Order 743 (amended by Order 743A) and directed NERC to revise the definition of BES that the definition encompasses all Elements and Facilities necessary for the reliable operation and planning of the interconnected bulk power system. Additional specificity will reduce ambiguity and establish consistency across all Regions in distinguishing between BES and non-BES Elements and Facilities.
  - In addition, NERC was directed to develop a process for identifying any Elements or Facilities that should be excluded from the BES.

FERC ORDER 743 - BES Discussion (Cont'd)

- **NERC Established Two Drafting Teams**
  - BES Definition Team (BES DT) is a drafting team working under the direction of the Standards Committee. A second draft of the Definition of Bulk Electric System (BES) and associated implementation plan has been posted for comment.
  - BES Rule of Procedure Team (BES ROP) is working under the direction of NERC staff. Their mission is to draft a new Appendix 5C to NERC's Rules of Procedure to address the process for requesting BES exceptions. This team will be posting the Rules of Procedure changes for stakeholder comment. Also posted is a draft application form titled *Detailed Information to Support an Exception Request.*
- **NYISO Actions**
  - Impact on NYISO and TO's under discussion regarding roles and responsibilities.
  - Perform a baseline review on how TO's presently study 100 kV facilities.
- **Implementation**
  - Effective in 2012, with a transition period no longer than 18 months.
  - Time frames for the required studies to determine potential deficiencies is being finalized.
  - Time frames to complete corrective actions will be within 7 years of the effective date.

LIPA Planning Criteria

- LIPA follows the planning criteria and standards established by NERC, NPCC and the NYSRC. These reliability criteria and standards are followed by the NYISO in conducting studies and assessments associated with transmission expansion and interconnection. The LIPA sub transmission system is designed to comply with the transmission design criteria when applicable as noted below. The criteria and standards are prescribed in the following documents:
  - NERC *Planning Standards*
  - NPCC *Basic Criteria for Design and Operation of Interconnected Power Systems*
  - NYSRC *Reliability Rules for Planning and Operating the New York Bulk Power System*.

  The above documents describe the performance standards and analyses requirements to be used in the planning, design, or operation of the *Bulk Power System* as have been established by NERC, NPCC and NYSRC, respectively.

- LIPA Transmission & Distribution Planning Criteria & Guidelines
  (http://www.lipower.org/pdfs/company/projects/energyplan10/energyplan10-e6.pdf)

Sections in T& D Planning Criteria & Guidelines

- Transmission Planning Criteria and Standards
  - Contingency Criteria, Dynamic Ratings, Line Re-Ratings, HVDC Supply Backup Design
- Thermal Assessment Criteria
  - Pre-Contingency Thermal Criteria, Post-Contingency Thermal Criteria
- Voltage Assessment Criteria
  - Pre-Contingency Voltage Criteria, Post-Contingency Voltage Criteria, Transient Voltage Recovery, NYISO VAR Study
- New and Alternative Technology Criteria
  - High Voltage Direct Current (HVDC), Superconductor Cable
- Dynamic Stability Assessment Criteria
  - System Stability, Generator Unit Stability - Transmission Considerations
- Assessment Criteria- Extreme Contingency Conditions
  - Extreme Case Contingencies - Definition
- Short Circuit Assessment Criteria
  - Circuit Breaker Replacement Criteria
- Reactive Power Reserve Criteria
- Power Factor Criteria
- Generation Deliverability Criteria
- Load Pockets
- Distributed Generation Criteria for T&D and Generation Project Deferral
- External Contracts on LIPA Interfaces
- System Separation Event and Restoration Design
- Integration of NYISO Comprehensive Reliability Planning Process (CRPP)
  - Reliability Needs Assessment (RNA)
- Interconnection Procedures for Large, Small, and Wind Generators
  - Interconnection: Small, Large, Intermittent Generator, Low Voltage Ride Through
- Storm Hardening Policy
- Transient Network Analysis
- Harmonics

Data and Models Used

- Data Sources
- Models
- Load Forecast

Data Sources

- NYISO - The Major Source of Base Cases used in Modeling
  - Load Flow
  - Fault Duty
  - Stability
- Generator Owners
  - MW/MVAR Ratings
  - Modeling Characteristics
- Internal Sources
  - EMS Data – PI Historian
  - Equipment Characteristics (e.g., Engineering, Operations)

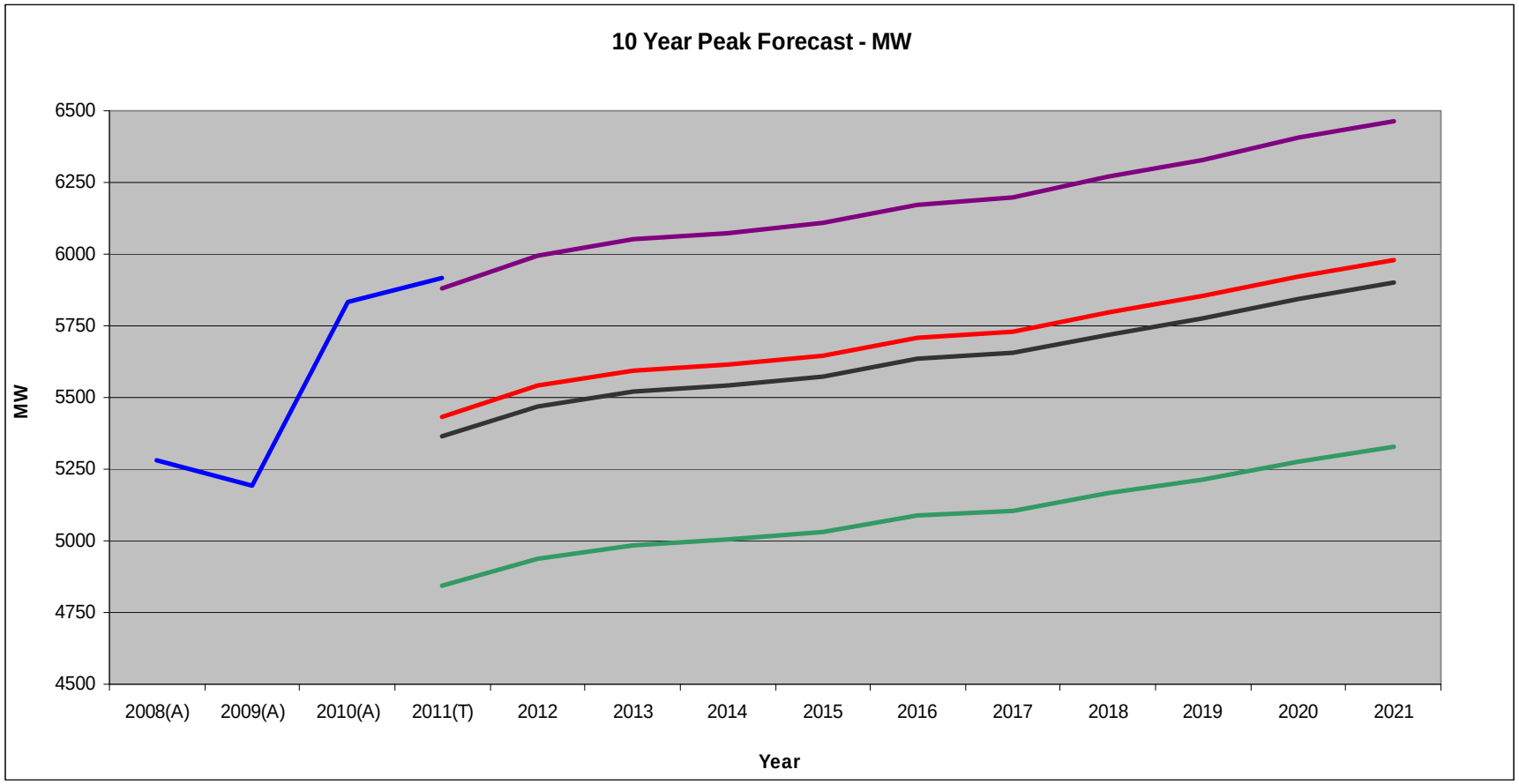
Models - Major Tools Used

- Thermal and Voltage Analysis
  - PSS/E$_{TM}$ & PSS/O$_{TM}$ Siemens Power Technologies International's (PTI) Power System Simulator$_{TM;}$; transmission system load flow; thermal, voltage under normal and contingency conditions
  - MAPS$_{TM}$/PSLF$_{TM}$: General Electric's (GE) Multi-Area Production Simulation$_{TM}$ and transmission load flow model for generation dispatch model energy costs/pricing, evaluating transmission line constraints, load pockets
- Fault Duty
  - ASPEN$_{TM}$: Advanced Systems for Power Engineering, Inc Short circuit analysis program Breaker fault duty analyses
- Stability
  - PSS/E$_{TM}$: PTI System Dynamic Simulation
- Other Programs
  - SUBREL$_{TM}$: General Reliability's computer program for substation reliability evaluation Computes reliability indices for different substation bus configurations
  - EPRI – Probabilistic Risk Assessment (PRA)
  - V&R Energy (Physical and Operating Margin) POM Suite

Load Forecast: Process

- The energy forecast is a fundamental component of energy planning. It is used in:
  - Production Costing: revenue, fuel and purchased power projections
  - Short, mid-range and long term resource planning,
  - Evaluation of specific projects and
  - Alternatives for the resource portfolio, transmission planning, and distribution planning.
- Econometric regression models are developed to establish the relationships between the historic values of monthly or annual electricity consumption and the variables that are considered to drive consumption
  - Energy (sales) forecast: numbers of customers, employment, price of electricity, income, and degree-days
  - Peak normalization model and system peak demand forecasts
  - Probabilistic assessment: weather, forecast, and economic uncertainty
- Major Forecasts developed
  - Peak - With and without energy efficiency (e.g., 15 x 15) targets
  - Peak -Normal & Extreme (1 in 20) weather conditions
  - Off-Peak – Winter, Light Load
  - Load Pocket – Non-coincident peak
- Near Term Economic Downturn and Load Uncertainty

Load Forecast: 10 Year Peak Demand



Actual Non-Coincident Peak 2008, 2009, 2010. 2011 Value is Tentative

Gold Book: NYISO 2011 Baseline Coincident Peak, Table I-2a

Gold Book: NYISO 2011 Baseline Non-Coincident Peak, Table I-2b

Gold Book: NYISO 2011 90th Percentile Baseline Coincident Peak, Table I-2d

Gold Book: NYISO 2011 10th Percentile Baseline Coincident Peak , Table I-2e

Transmission Planning Studies

- Planning Process
- Overview of Studies Performed
- Project Identification
  - 2011 FERC 715/ Gold Book
  - NYISO Interconnection Requests
  - Load Areas – Projects

Transmission and Distribution Planning Process

- The planning process for the T&D System begins with the load forecast. The load forecast at the system level is based on econometric models, and is developed on both a weather-normalized and weather probabilistic basis. Load forecasts are also developed for specific load areas using system load data acquired by the Energy Management System (EMS) and other systems in LI T&D Operations

- Transmission System Studies: Identify transmission system limitations and recommend reinforcements for an area of the system. Results in development of major transmission capital projects.

- Load Level Is Critical Factor rather than Year

The following pages and descriptions represent studies and projects that are currently under consideration, and as part of the on-going planning process, they are continually being reviewed, other options considered and hence updated. Therefore, the need, timing of and the actual project recommendation to address any issue may not be as indicated.

Study Overview

- Short Term (6 months to 5 years)
  - System Operating Studies – (summer & winter) Highlight current problems or deficiencies and anticipates conditions during the upcoming peak season. Short term, but indicates future impact.
  - Operating Guidelines – Addresses very short term, temporary issues and provides Operations with solutions (i.e., DRSS, Generating unit outages, etc.)
- Mid- Range (5 to 15 years)
  - Area Studies – Studies of LIPA Load Pockets, other reinforcements
  - Mid-Range Studies – (15 years forecast) a study that identifies requirements and corrective and/or preventive actions associated with reliability problems over the next 15 years.
- Long Term (15 to 40 years)
  - Long Term Study -Look at horizon to predict possible long-term asset requirements due to load forecasts, anticipated asset conditions, and reliability problems.
  - Regional & Regulatory Studies – These address concerns of NERC, the PSC, NPCC, etc., and address continual improvement in the entire electric system.
  - STARs

Other Major Electric System Studies

- **NYISO's System Reliability Impact Studies** Determine impact on the LIPA transmission system of proposed new generation or interconnections and recommend reinforcements to the system as required. Could result in development of major Transmission Capital Projects, Interconnection additions
- **Short Circuit Study Transmission Breakers**: Ensure that there are no overstressed circuit breakers. Also when studying generation additions and/or major modifications to the transmission system.
- **Angular Stability Study**: Ensure that electric system will meet system stability design criteria. Also studied with generation additions and/or major modifications to the transmission system.
- **Voltage Recovery Evaluation**: Impact of load types
- **STARS**: Review of NYISO bulk transmission facilities

2011 FERC 715 Filing (NYISO 2011 Gold Book)

138 kV and Above	Install Year Proposed
– Firm:	
• Shore Road to Lake Success (Cooling)	2012
• Riverhead to Canal 2nd 138 kV	2013
– Non-Firm:	
• Kings Hwy – Pilgrim 138 kV	2013
• Holtsville GT – Kings Hwy 138 kV	2013
• Ruland PS – Holbrook 138kV	2017
• Northport – Pilgrim 138 kV	2017
• Pilgrim – Brentwood upgrade 138 kV operation	2017
• Brentwood – Holtsville GT 138 kV	2017
• Barrett – Bellmore PS 138 kV	2017
• Bellmore PS – Bellmore 138 kV	2017
• Valley Stream – Barrett 138 kV	2017

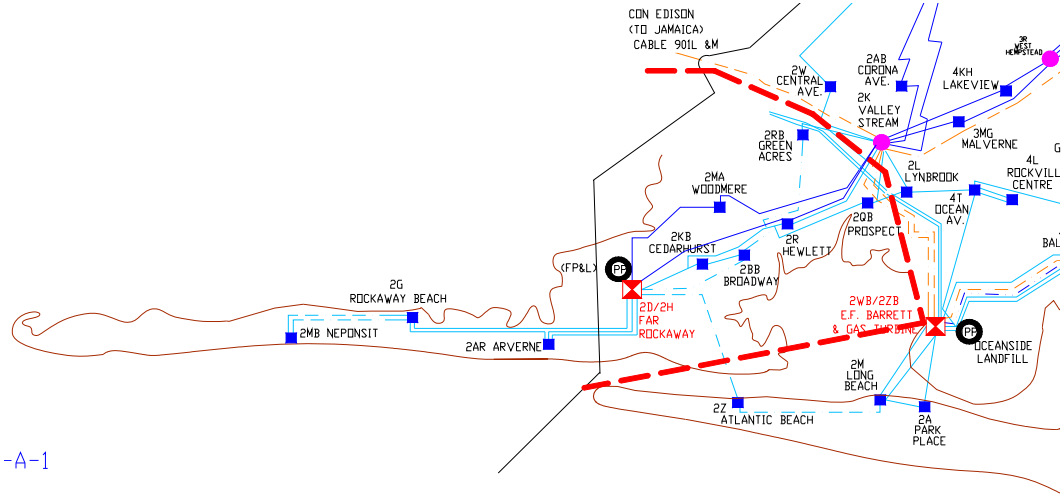
NYISO Interconnection Queue -2011

Queue Pos.	Owner/Developer	Project Name	Date of IR	SP (MW)	WP (MW)	Type/Fuel	Location County/State	Zone	Interconnection Point	Utility	S	Last Update	Availability of Studies
20	KeySpan Energy, Inc.	Spagnoli Road CC Unit	5/17/99	250		CC-NG	Suffolk, NY	K	Spagnoli Road 138kV	LIPA	8	3/31/10	SRIS
154	KeySpan Energy for LIPA	Holtsville-Brentwood-Pilgrim	8/19/04	N/A		AC	Suffolk, NY	K	Holtsville & Pilgrim 138kV	LIPA	5	3/31/11	None
291	Long Island Cable, LLC	LI Cable - Phase 1	4/14/08	440	440	W	Suffolk, NY	K	Ruland Road 138kV	LIPA	5	8/31/10	FES
292	Long Island Cable, LLC	LI Cable - Phase 2a	4/14/08	220	220	W	Suffolk, NY	K	Ruland Road 138kV	LIPA	5	8/31/10	FES
330	Long Island Solar Farm LLC	Upton Solar Farms	4/7/09	31.5	32	S	Suffolk, NY	K	8ER Substation 69kV	LIPA	9, 12	12/31/10	SRIS
337	Long Island Power Authority	Northport Norwalk Harbor	7/14/09	N/A	N/A	AC	Suffolk, NY	K	Northport 138kV	LIPA	6	1/31/11	SIS
363	Poseidon Transmission, LLC	Poseidon Transmisssion	4/27/11	500	500	DC	Suffolk, NY	K	Ruland Rd. Substation	LIPA	2	6/30/11	None

Website for updates to queue:
http://www.nyiso.com/public/webdocs/services/planning/nyiso_interconnection_queue/nyiso_interconnection_queue.xls

Long Island Load Areas

Far Rockaway Load Area



NC 2011 Peak Load: 236 MW

Generation (MW):

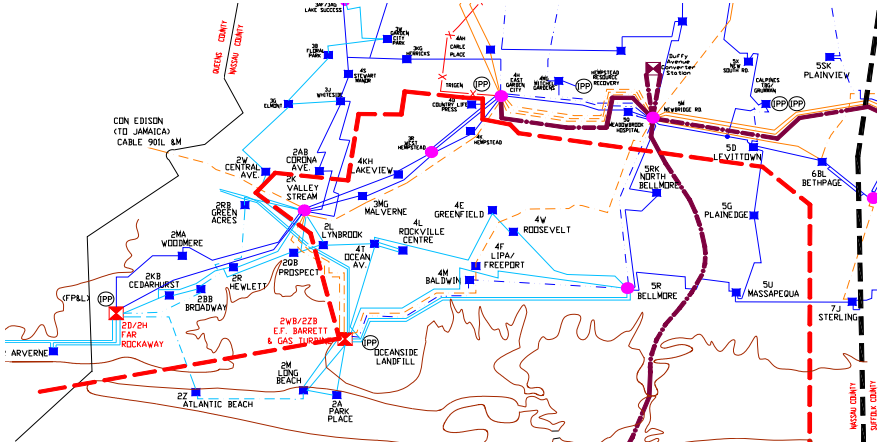
Far Rockaway	**105**
FPL FTUs	**108**
Total:	**213**

Key Issues:

Far Rockaway Steam Retirement (2012)

- **Projects Being Considered in Area**
  - Add 3rd Valley Stream to Far Rockaway 69 kV line (In Progress)
  - Reconductor both of the Far Rockaway to Arverne 33kV overhead circuits
  - Add new Wavecrest substation tapping circuits 33-211 and 33-309
  - Add a fourth 69/33kV step down bank at Far Rockaway

Barrett Load Area



NC 2011 Peak Load:	**726 MW**
Generation (MW):	
Barrett Steam	**391**
Barrett GTs	**280**
Freeport GTs	**93**
Total:	**764**

Key Issues:

Con Ed Wheel -286 MW

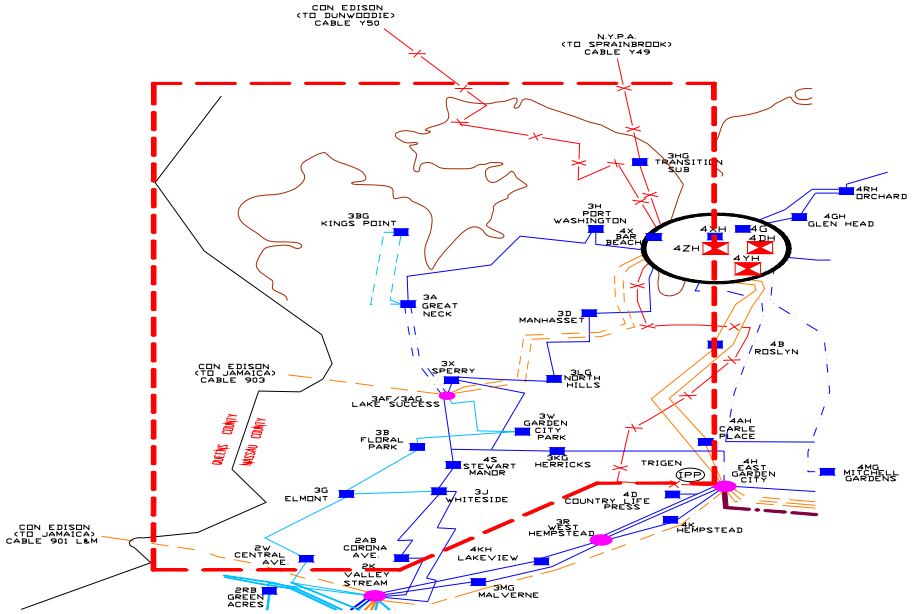
Phase Shifter Operating Region

Barrett Repowering

Barrett GT 7 Retirement (2012)

- **Projects Being Considered in Area**
  - Reconductor both Long Beach – Barrett 33kV circuits
  - New Bellmore 138kV substation with a 138/69kV step down bank
  - Bellmore 138kV Phase Shifter
  - Bellmore – Newbridge 138kV circuit or Barrett – Bellmore 138 kV circuit
  - Add second 138/33kV bank at Barrett
  - Add third Barrett – Valley Stream 138k circuit or East Garden City – Valley Stream 138 kV circuit
  - Barrett and Valley Stream 138kV bus re-configuration (In Progress)
  - Convert Barrett to Greenfield to Bellmore from 33 kV to 69 kV

West Glenwood Load Area



NC 2011 Peak Load: 482 MW

Generation (MW):

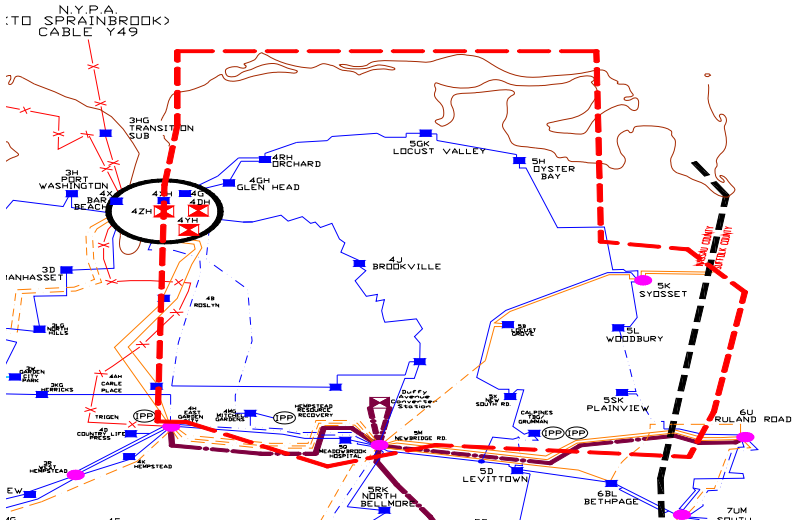
Glenwood Steam	**233**
Glenwood GT's	**89**
Total:	**322**

Key Issues:

- **Con Ed Wheel -286 MW**
- **Glenwood Steam Retirement (2012)**

- **Projects Being Considered in Area**
  - Upgrade the following circuits :
    - Lake Success – Sperry 69kV
    - Great Neck – Port Washington 69kV
    - North Hills – Sperry 69kV
    - East Garden City – Herricks 69kV (In Progress)
  - Add 3rd Great Neck – Lake Success 69 kV circuit (In Progress)
  - Lake Success & Carle Place install 138kV, 54 MVAR capacitor bank

North East Nassau Load Area



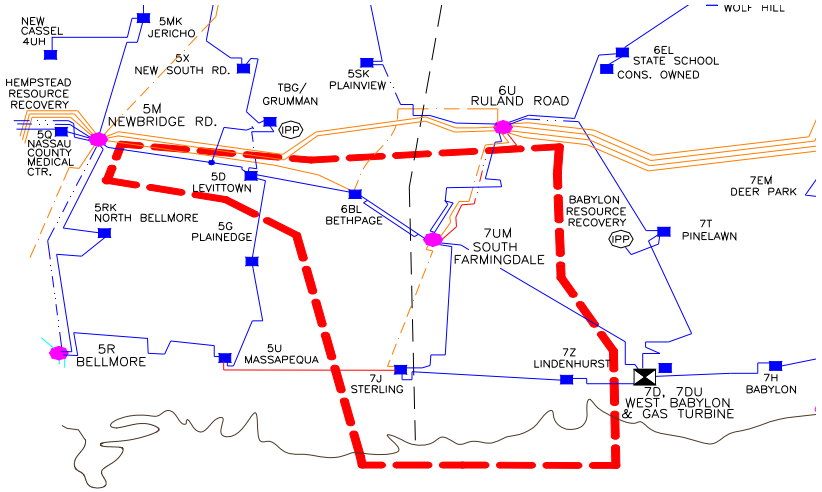
NC 2011 Peak Load:	**529 MW**
Generation (MW):	
Glenwood Steam	**233**
Glenwood GTs	**89**
Grumman	**98**
Hempstead RR	**72**
Total:	**492**

Key Issues:

Glenwood Steam Retirement (2012)

- **Projects Being Considered in Area**
  - Add new 69 kV substation (RXR) between Ruland Rd and Plainview
  - Add new Nassau Hub 69 kV substation with supplies from East Garden City and Mitchell Garden
  - Syosset 138kV bus re-configuration.
  - Reconductor the following circuits :
    - Glen Head – Orchard 69 kV
    - Glenwood – Orchard Tap 69 kV
    - Orchard – Locust Valley 69 kV
    - Newbridge Road – Jericho 69kV
    - Grumman – New South Rd 69kV

South Farmingdale Load Area



NC 2011 Peak Load: 278 MW

Generation (MW):

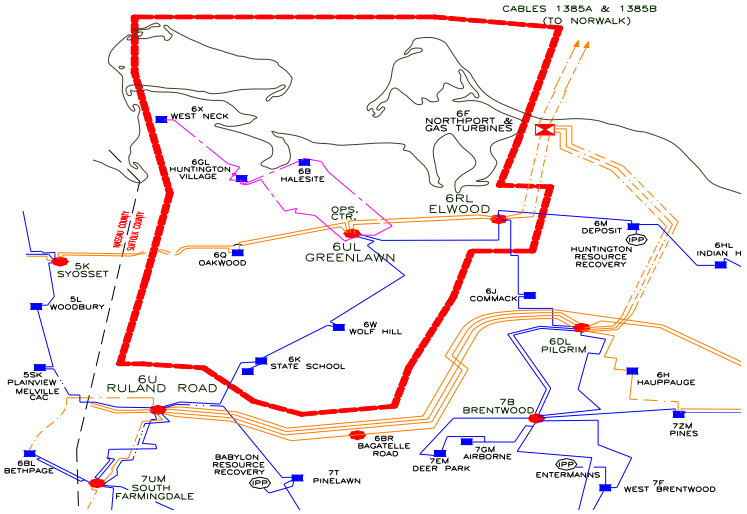
Calpine CC	**75**
Total:	**75**

Key Issues:

- **West Babylon GT**
- **Must Run Generation**

- **Projects Being Considered in Area**
  - Convert Ruland Rd – South Farmingdale 69kV underground cable to 138kV
  - New Ruland – South Farmingdale 138kV
  - New South Farmingdale – West Babylon 138 kV
  - New South Farmingdale 138kV substation with a 138/69kV step down bank
  - New West Babylon 138kV substation with 138/69kV step down banks
  - Reconductor Levittown – Plainedge 69kV
  - Reconductor Sterling – Lindenhurst 69kV
  - New North Lindenhurst substation

Huntington Load Area



NC 2011 Peak Load: **106 MW**

Generation (MW):

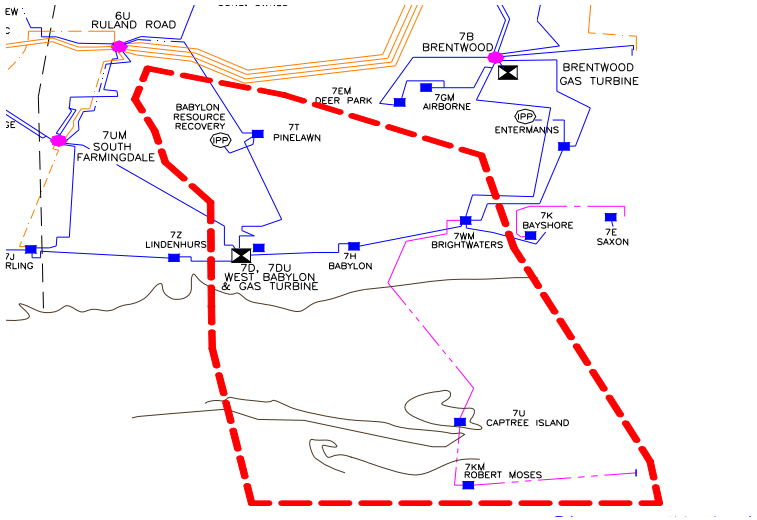
Total: **0**

Key Issues:

23kV load in Village

- **Projects Being Considered in Area**
  - Reconductor Ruland Rd – State School 69kV
  - New Greenlawn – Huntington/West Neck 23 kV (33 kV design)
  - Convert Greenlawn - Huntington Village 23kV to 33kV
  - Convert Greenlawn - Halesite 23kV to 33kV
  - Convert Huntington Village – West Neck 23kV to 33kV
  - Convert Halesite – West Neck 23kV to 33kV

Babylon Load Area



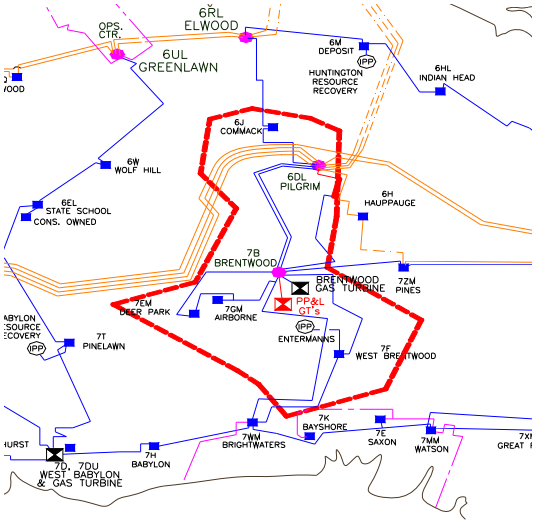
NC 2011 Peak Load:	**222 MW**
Generation (MW):	
West Babylon GT	**49**
Babylon RR	**15**
Pinelawn CC	**77**
Total:	**141**

Key Issues:

- **Pilgrim Phase Shifter**
- **Must Run Generation**

- **Projects Being Considered in Area**
  - Reconductor Brightwaters – Watson 69kV Circuit No. 1
  - Ruland Road – Pinelawn 69kV
  - Install a new cable between Brightwaters – Captree
  - Ruland Road Phase Shifter to Holbrook

Brentwood Load Area



NC 2011 Peak Load: 230 MW

Generation (MW):

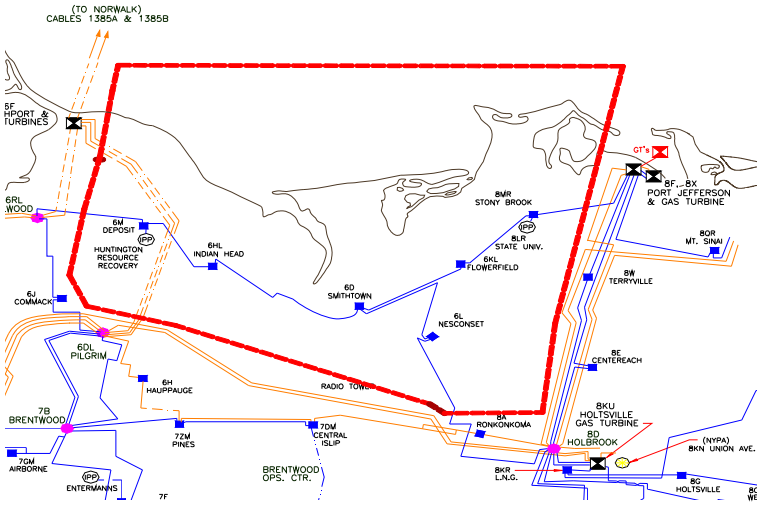
NYPA GT	**46**
PPL FTUs	**87**
Total:	**133**

Key Issues:

- **Pilgrim Phase Shifter**
- **Must Run Generation**

- **Projects Being Considered in Area**
  - Add the sixth Northport – Pilgrim 138kV cable
  - Add New Brentwood (Sagtikos) substation
  - Convert the Pilgrim – Brentwood 69kV circuit No. 3 to 138kV tapping to New Brentwood (Sagtikos)
  - Add new Holtsville GT – New Brentwood 138kV along the LIRR right-of-way
  - Add new 138/69kV bank and 138/13kV load at Brentwood
  - Reconfigure circuits between Brentwood and Pilgrim
  - Convert Pines substation to 138kV with a 138/13 kV step down bank
  - Tap Hauppauge - Central Islip 138kV at Pines
  - Add new Pinelawn – Deer Park 69kV
  - Reconductor Brentwood – Deer Park 69kV
  - New Kings Highway substation

Smithtown Load Area



NC 2011 Peak Load: 239 MW

Generation (MW):

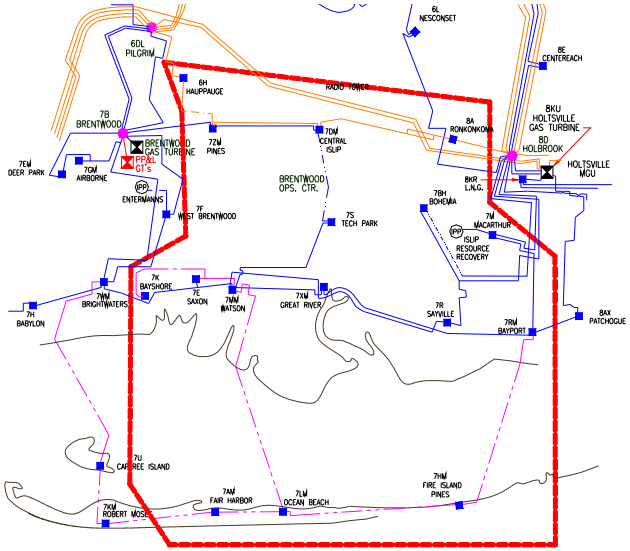
Huntington RR	**24**
State College	**10**
Total:	**34**

Key Issues:

- **Northport Phase Shifter**
- **Holtsville GTs**

- **Projects Being Considered in Area**
  - Replace Elwood 138/69kV transformer with 224MVA
  - New supply to Indian Head 69kV or 138 kV Pilgrim/Northport
  - Reconductor the following circuits :
    - Nesconset – Smithtown 69kV
    - Port Jefferson – Stony Brook 69kV
    - Commack – Pilgrim 69kV
    - Elwood – Pulaski 69kV

South West Suffolk Load Area



NC 2011 Peak Load: 375 MW

Generation (MW):

Islip RR	**8**
Total:	**8**

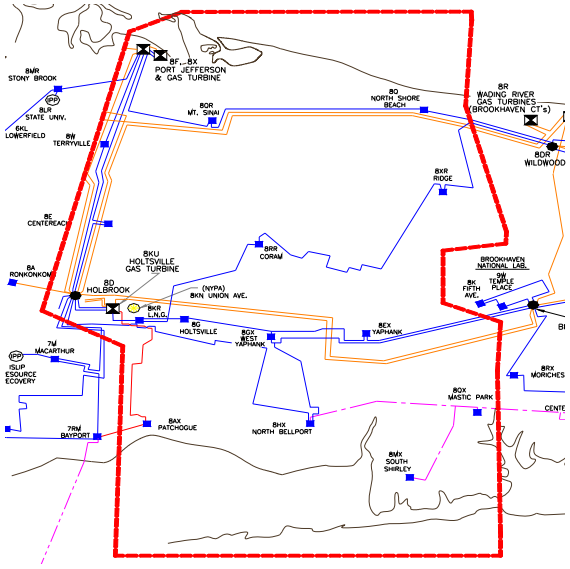
Key Issues:

Must Run Generation

Holtsville GTs

- **Projects Being Considered in Area**
  - Tap Bayport - Great River 69kV at Sayville
  - Tap Sayville - Watson 69kV at Great River
  - Open Great River - Sayville 69kV
  - Convert Bayport substation to 138kV with a 138/69 kV step down bank
  - Reconductor and updated CT ratio on MacArthur - Holbrook 138kV at Holbrook
  - New Holbrook - Bayport 138kV circuit

West Brookhaven Load Area



NC 2011 Peak Load: 399 MW

Generation (MW):

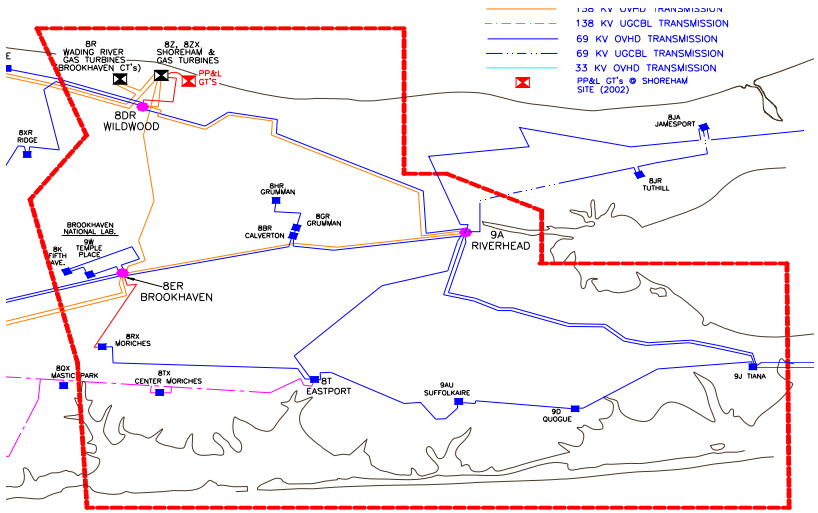
- **Yaphank LF 0**
- **Total: 0**

Key Issues:

- **Pilgrim Phase Shifter**
- **Holtsville GTs**

- **Projects Being Considered in Area**
  - Replace Holbrook Bank 2-2A and Port Jefferson Bank 1with 224 MVA
  - Create a 69kV path from Eastport to Mastic to South Shirley to North Bellport
  - Convert Mastic and South Shirley substation to 69kV
  - Create West Yaphank 138kV substation with a 138/69kV bank
  - Add new 138kV circuit from Sills Rd to West Yaphank 138kV
  - Create a 138kV path from Pt Jeff to Mt Sinai to Coram to Sills Road Substation
  - DRSS Phase II, Holtsville GT
  - New Setauket, North Patchogue and Middle Island substations
  - Reconductor the following circuits :
    - Holtsville GT - LNG - Holtsville 69kV
    - Holbrook- West Yaphank 69kV
    - Port Jefferson – Mount Sinai 69kV

East Brookhaven Load Area



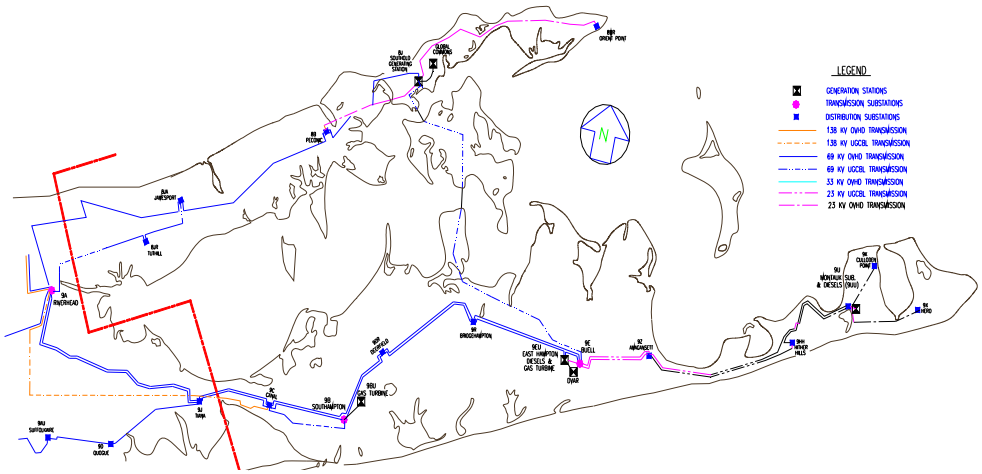
NC 2011 Peak Load:	**224 MW**
Generation (MW):	
Shoreham GTs	**149**
Wading River	**241**
Cross Sound Cable	**330 (DC tie)**
Total:	**720**

Key Issues:

- **CSC Online, East End NC load**
- **Must Run Generation**

- **Projects Being Considered in Area**
  - Wildwood – Riverhead Upgrade from 69 kV to 138 kV
  - Brookhaven – Riverhead Upgrade from 69 kV to 138 kV
  - Reconductor Eastport – Riverhead 69kV
  - DRSS Phase II, Wildwood
  - Upgrade existing Edwards Ave – Riverhead 138 kV
  - New South Manor substation

East End Load Area



NC 2011 Peak Load: 347/384 MW (Normal/extreme weather)

Generation (MW):

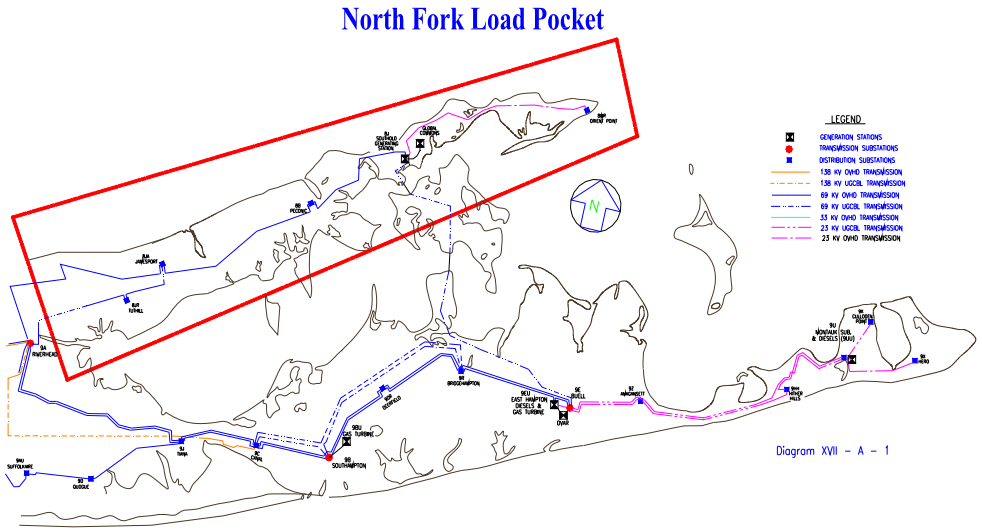
East Hampton	**24**
Greenport	**51**
Southampton	**9**
Southold	**12**
Montauk	**6**
Total:	**102**

Key Issues:

- **East End Generation**
- **D-VAR, DRSS Phase I Transient Voltage Recovery**

- **Projects Being Considered in Area**
  - Riverhead to Canal 2nd 138 kV Cable and 138/69 kV Stepdown
  - Redesign Bridgehampton 69 kV Substation and energize Bridgehampton – Deerfield 69kV
  - New second Canal to Bridgehampton/Wainscott 69kV/138kV underground cable
  - New Canal to Southampton cable 69 kV
  - Tap Southold to Buell 69kV circuit at Bridgehampton
  - Upgrade CT ratio on both sides of the Orient - Southold 23kV
  - New Wainscott substation

North Fork Load Area



NC 2011 Peak Load: 87/96 MW (Normal/extreme weather)

Generation (MW):

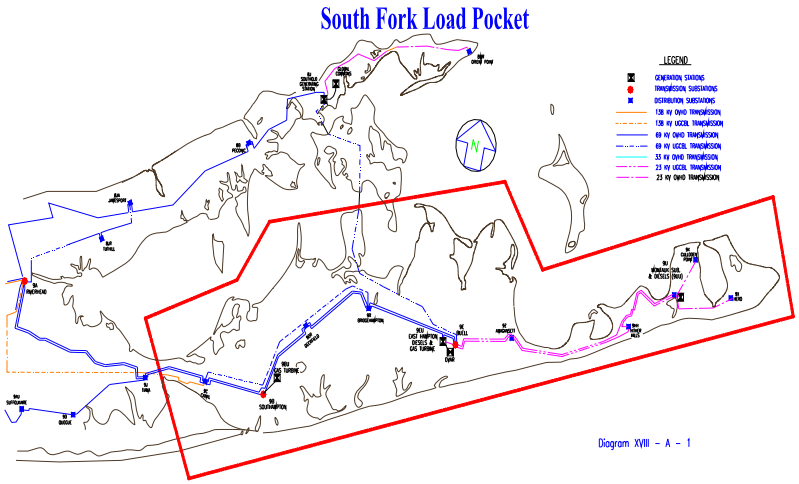
Greenport	**51**
Southold	**12**
Total:	**63**

Key Issues:

- **East End Generation**
- **D-VAR DRSS Phase I, Transient Voltage Recovery**

- **Projects Being Considered in Area**
  - None for voltage constraints
  - Upgrade CT ratio on both sides of the Orient - Southold 23kV
  - New Cutchogue substation

South Fork Load Area



NC 2011 Peak Load: 260/288 MW (Normal/extreme weather)

Generation (MW):

East Hampton	**24**
Montauk	**6**
Southampton	**9**
Total:	**39**

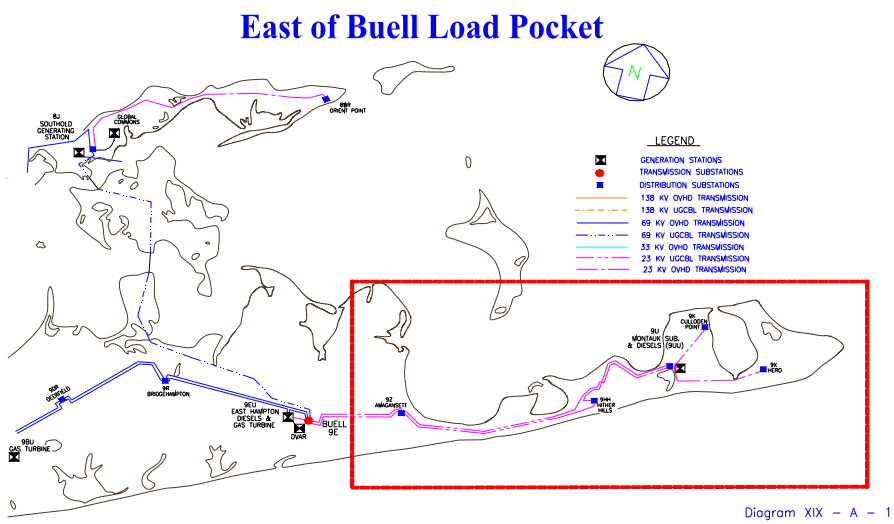
Key Issues:

East End Generation

D-VAR DRSS Phase I, Transient Voltage Recovery

- **Projects Being Considered in Area**
  - Transfer 2.6 MVA from East Hampton to Buell to relieve post contingency overload
  - None for voltage constraints
  - Montauk Substation Improvements

East of Buell Load Area



NC 2011 Peak Load: 34/36 MW (Normal/extreme weather)

Generation (MW):

Montauk Diesel	**6**
Total:	**6**

Key Issues:

- **Montauk Generation**
- **Buell – Amagansett Double Circuit**

- **Projects Being Considered in Area**
  - Montauk diesel units
    - Online for voltage/thermal support,
    - Reduce exposure to loss of double circuit
  - Reconductor Buell to East Hampton 69kV circuit
  - East Hampton – Amagansett 23 kV (33 kV design)
  - Conversion to 33 kV

Document Posted on LIPA Web site

http://www.lipower.org/company/papers/ltpp.html

Questions?

Please send any comments you may have to

LTPComments@lipower.org.