

Overview

LIPA is updating its Electric Resource Plan which will focus on issues directly affecting LIPA and its customers electricity usage. LIPA is using the following process to develop the plan:

1. Publish a draft outline of the Electric Resource Plan contents.
2. Solicit public input on the draft outline.
3. Develop a Draft Electric Resource Plan based on the outline and the public input received.
4. Hold public hearings on the Draft Electric Resource Plan.
5. Revise the plan based on the public hearings and any new information that may become available after the preparation of the Draft. Issue a Final Electric Resource Plan for the consideration of the LIPA Board of Trustees.

LIPA has completed steps 1 and 2. This updated outline incorporates the public input received on the outline. The LIPA Electric Resource Plan is intended to provide a blueprint for Long Island's electric energy future. It will articulate LIPA's strategy for developing a balanced and comprehensive electric energy policy. It will discuss the methodologies employed and the rigorous technical analyses undertaken in support of crafting the plan. It will also incorporate valuable oral and written commentary received from LIPA's concerned customers and other interested parties. Additionally, the LIPA Electric Resource Plan will discuss the critical education activities which are underway to disseminate information regarding how changes in the electric industry impact LIPA and its customers. In order to comprehensively address these issues, LIPA proposes to organize its Electric Resource Plan and supporting documentation into a separately bound *LIPA Electric Resource Plan* and several appendices as follows:

- *LIPA Electric Resource Plan*, will provide an executive summary, LIPA's vision, mission and strategic objectives, a summary of issues, a summary evaluation of alternative ways to address those issues, and a recommended integrated action plan;
- *Appendix A, Technical Report*, will provide detailed information regarding the Electric Resource Plan. It will include discussion of the action and policy plans, description of each plan element and goal, overview of planning process and the planning methodologies employed to create the Electric Resource Plan and a summary of planning analysis results;
- *Appendix B, Energy Primer*, will provide an overview on the current state of the energy industry, background on LIPA, and a review of the initiatives LIPA is undertaking to promote customer understanding of the critical energy issues facing Long Island today;
- *Appendix C, Response to Comments*, will summarize the comments received during the Electric Resource Plan related public hearings, organized according to similarity of contents; and
- *Appendix D, Technical Appendices*, will provide additional and supporting details on studies, methodologies, and criteria used in the planning analysis.

The content of each of these volumes is discussed on the following pages.

LIPA Electric Resource Plan

1 Overview

The Electric Resource Plan, will provide a summary of LIPA's energy efficiency, power supply and fuel supply plan for the period 2008 through 2017. The plan will contain an Executive Summary. The plan will provide brief description of LIPA, LIPA's Vision and Mission Statements and a summary of the LIPA's Strategic Objectives. The report will focus on the Challenges and Policy Considerations that LIPA needs to address by discussing the following for each Challenge or Policy Consideration:

- Describe the challenge or policy consideration;
- Discuss the impacts the issues and its impacts on LIPA;
- Identify the alternatives and options that could address the issue; and
- Recommend a course of action.

The last part of the plan will evaluate the combined impact of the recommendations compared to a reference case, described in Table 2. Detailed discussion of options and analysis will be found in the Appendices.

2 Challenges and Policy Considerations

LIPA's Electric Resource Plan will address challenges facing LIPA in three general areas: Key Environmental Issues; Key Technology and Reliability Issues; and, Cost Considerations and Implications. Within each of these sections, specific issues will be described, options and alternatives discussed, policies stated and recommendations made.

The Key Environmental Issues subsection will address:

- Environmental compliance
- Sustainability including energy efficiency, renewables and climate change

The Key Technology and Reliability Issues subsection will address:

- Repowering
- Smart Grid/Smart Metering
- Fuel diversity
- Economic Development including Green Collar Jobs

The Cost Considerations and Implications subsection will address:

- Rising Power Supply Costs including increasing fuel costs
- Impacts of Challenges and Policy Decisions on Rates

3 Evaluation of Plan

This section will evaluate the combined impact of the plan recommendations compared to a reference case. The recommended plan will be compared to a reference case using economic, efficiency, reliability, and environmental metrics as identified in Table 3.

Appendix A - Technical Report

Overview

Appendix A, Technical Report, will provide information regarding the key goals, targets, and means to achieve targets as well as an explanation of their inter-relationships and how they drive and impact the formation of the Electric Resource Plan. The Technical Report will also summarize the planning process results which were used to develop the Electric Resource Plan. Appendix A will contain three sections as follows:

1 Action and Policy Plans

LIPA's Electric Resource Plan will consist of the following component plans:

- Energy Efficiency and Demand Reduction Plan
- Renewable and Distributed Generation Plan
- Power Supply Plan
- Transmission and Distribution Plan
- Environmental Plan
- Fuel Supply Plan

The component plans presented here represent the culmination of an extensive and ongoing planning process that addressed both resource adequacy and infrastructure development for a 10-year planning horizon. Based on the current electric resource situation, the anticipated reserve requirements, and the available options to meet those requirements, LIPA will develop a flexible strategy that allows it to respond and adapt to changing conditions in the industry and the market. The component plans will be multi-faceted in approach, designed to address both short and long-term requirements.

2 Description of Plan Elements

This section will provide detailed descriptions of the specific elements of LIPA's Action and Policy Plans presented previously in this report. Each element will be described in detail. Individual projects and/or programs as well as their status, targets and goals will be explained.

3 Technical Analysis

This section will contain the assumptions, analyses, and results obtained from the various planning processes described in Appendix D (e.g. resource, transmission, distribution, environment, risk, etc.) and offer key observations and conclusions regarding Long Island's future energy requirements. Discussions will be organized around the following sub-elements of the energy planning process:

- The forecasts section of the report will provide a summary of the fuel price forecasts and sensitivities used in the analysis and an overview of the energy and peak load forecasts for LIPA and Long Island.

- The Resource Planning (energy efficiency, renewables, power supply) portion will contain an evaluation of the need for new resources based on a probabilistic analysis of risks, a screening of various alternatives on a stand-alone basis, a comparison of alternative resource plans based on an integrated analysis of selected resources with the existing system, a sensitivity analysis of these alternative resource plans, a probabilistic assessment of alternative resource plans and a recommended resource plan. The appendix of this draft outline provides three tables that describe the following: The alternative technologies that will be screened; the alternative resource scenarios that will be evaluated; and the evaluation metrics that will be used to develop the recommended resource plan.
- The Transmission and Distribution Planning Analysis section will discuss the transmission and distribution planning studies that drive the need for infrastructure maintenance and development. Discussion will focus on how these study results are incorporated into LIPA's strategic plan.
- The Environmental Planning Analysis will describe current and potential environmental regulations, alternative compliance strategies and LIPA's strategic approach to compliance.
- Fuel Supply Planning Analysis section will describe LIPA's efforts manage fuel supply as well as options that are being studied.

Appendix B - Energy Primer

Overview

Appendix B, the Energy Primer, will provide a resource for LIPA customers who wish to better understand the current state of the electric energy industry and the initiatives that LIPA is undertaking to provide reliable, cost-effective, efficient, and clean energy solutions to Long Island. Appendix B will be organized as follows:

- Section 1 will be an overview.
- Section 2 will provide background on LIPA, its history and a description of its service territory and electric system.
- Section 3 will provide a discussion of the LIPA planning process including initiatives to acquire needed resources, provide customer education programs to promote customer understanding of the critical energy issues facing Long Island today, and LIPA efforts for sound operation of the electric system.
- Section 4 will discuss changes and the evolution of the energy industry including: federal, regional, and state initiatives; fuel markets; environmental matters; renewable and other sources of energy. It will also provide a description of the relationships LIPA has with various organizations and government agencies.
- Section 5 will provide a description of LIPA's generation, transmission and distribution infrastructure. It will also summarize the Long Island economy, changes in the economic climate and describe LIPA's electric energy requirements. Infrastructure enhancements made since LIPA's inception will also be described in this section.
- Section 6 will describe the communication channels LIPA uses to provide customers with timely information regarding energy issues.
- Section 7 will offer a list of definitions for commonly used energy industry terms that can be used as a reference by the reader when reviewing LIPA's Electric Resource Plan.

Appendix C Response to Comments

Appendix C, Response to Comments, will synthesize comments received by LIPA on both the Electric Resource Plan Outline issued in January, 2008 and the Draft Electric Resource Plan planned to be issued in the late 2008. The Draft Electric Resource Plan will include responses to comments on the Electric Resource Plan Outline. The Final Electric Resource Plan will include responses to comments received on both the Electric Resource Plan Outline and the Draft Electric Resource Plan.

1 Summary of Commentators

In compiling the record of public commentary, LIPA will make every attempt to accurately represent the position of all public hearing participants. All commentators will be listed individually. LIPA will make a diligent effort to address all oral and written comments and recommendations received that pertain to the development of the Electric Resource Plan. Transcripts of the Draft Electric Resource Plan Public Hearings will be posted on LIPA's Web site, www.lipower.org.

2 Responses to Comments on Electric Resource Plan Outline

The comments received on the Electric Resource Plan Outline will be organized on a topical basis to facilitate the reader's efficient review of public commentary and LIPA's responses. Comments will be grouped according to similarity of contents and LIPA's energy planning objectives as presented in the Electric Resource Plan. A response may address more than one comment. In that instance, the response will be placed at the end of the series of comments.

3 Responses to Comments on Draft Electric Resource Plan

The comments received on the Draft Electric Resource Plan will be treated in the same way in the Final Electric Resource Plan.

Appendix D Technical Appendices

Appendix D-1 Energy Plan 2004-2013 Status Report

This section will present a status report on each program identified in the 2004 Energy Plan.

Appendix D-2 Energy Plan 2004-2013 Follow-up Studies & Reports

This section provides follow-up information relative studies and reports LIPA committed to providing as part of the 2004-2013 Energy Planning process.

Appendix D-3 LIPA & Other Energy Related Web Links

Appendix D-4 Long-Range Forecast of Energy Requirements

This section will provide LIPA's long term forecast of peak load, energy requirements and sales.

Appendix D-5 Emerging T&D Technologies

This section will provide a summary of emerging transmission and distribution technologies that may be available to LIPA during the planning period.

Appendix D-6 Energy Planning Process

This section will describe the processes and sub-processes used to develop the energy plan, the tools used to support the process, and the criteria that frame the process.

Appendix D-7 Transmission & Distribution Planning Criteria & Guidelines

This section will provide a copy of the Transmission & Distribution Planning Criteria & Guidelines used to develop the system.

Appendix D-8 Design and Application Standards

This section will provide Design and Application standards that are used to design the system.

Alternative Technologies Considered

The alternative technologies shown in Table 1 will be screened during the development of the LIPA Electric Resource Plan. Options considered will include peak load reduction programs, energy efficiency programs, generation options, the option to retire or continue operations, renewable resource options, re-power options at existing facilities, and transmission options both on and off Long Island.

Table 1 – Alternative Technologies Considered	
Supply Options	Transmission Options
Generic On-Island Combined–Cycle	Loss Reduction
Generic On-Island CT LMS 100 CC	NUSCO Upgrade 1
Caithness Combined-Cycle	NUSCO Upgrade 2
Generic Off-Island Combined–Cycle	Neptune Cable (RB)
Combined-Cycle CT LM6000	Neptune Cable (UDR)
Simple-Cycle CT LM6000	PJM Cable II (RB)
Generic Off-Island Coal	PJM Cable II (UDR)
Mobile Generating Units	Upstate NY Inter-tie Reinforcements
Fuel Cell Stack	Hydro Quebec Inter-tie Reinforcements
Pratt & Whitney (Twin Pac)	Neptune Cable w/Marcus Hook
Generic Off-Island Nuclear	Cross-Sound Cable
Efficiency Options	Renewable Options
Clean Energy Initiative	Landfill Waste-to-Energy
ELI Base Program	Barrett 1,2, Convert to Bio-Fuel
ELI Advanced & Accelerated Program	East Hampton, Convert to B20 Diesel
Intelligent Metering	Shoreham PPL Convert to Bio Fuel
Time-based Pricing	Wading River Convert to Bio Fuel
	Resource Recovery
Repowering Options	On-Island CT Bio-Diesel
Barrett Repowering	Photovoltaic Roof
Northport Repowering	On-Shore Wind
Port Jefferson Repowering	Off-Shore Wind
Shoreham Repowering	Off-Island Renewables
Wading River Repowering	Solar Pioneer
Retirement Options	
Base load Plants	
Combustion Turbine Plants	
Diesel Plants	

Alternative Scenario Analysis

A short-list of alternatives of the most economic alternatives from the screening analysis will be used to develop alternative scenarios or resource plans for LIPA. A detailed computer simulation will be used to capture the costs and benefits of each scenario. The advantage of this approach is that it rigorously models the interaction of the proposed resources with existing and potential new resources. A list of alternative resource plans that LIPA will examine in the Alternative Plan Analysis report are listed in Table 2. Depending upon the final result of the Alternative Technology Assessment and the results of this group of Alternative Plans, new Alternative Plans may be added. In all the alternative scenarios that follow, resource requirements above and beyond that provided by the primary expansion alternatives would be met with the gas-fired combined cycle technology used in the Reference Case Scenario.

Table 2 - Alternative Scenarios for Consideration	
1	<i>Reference Case Scenario</i> - The reference case provides a benchmark to which all alternative plans can be compared on a differential basis to determine the relative attractiveness of each scenario. It does not in any way represent LIPA's preferred energy plan. It assumes the existing Clean Energy Initiative is extended, LIPA's RPS Program, and a reliance on gas-fired combustion turbine technology in a combined cycle configuration.
2	<i>Alternate Reference Case Scenario</i> - The alternative reference case provides a sensitivity benchmark to which all alternative plans can be compared on a differential basis to determine the relative attractiveness of each scenario. It does not in any way represent LIPA's preferred energy plan. It assumes funding for the existing Clean Energy Initiative is terminated, LIPA's RPS Program, and a reliance on gas-fired combustion turbine technology in a combined cycle configuration.
3	<i>Efficiency Only Scenario with RPS</i> - A resource plan focused on ELI, LIPA's RPS Program, and meeting the requirements of the Governor's 15 x 15 Program.
4	<i>Repowering Only Scenario with RPS</i> - A resource plan focused on repowering of sites available to LIPA under the power plant purchase options (Barrett, Northport and Port Jefferson) and LIPA's RPS Program.
5	<i>ELI & Barrett Repowering Scenario</i> - A resource plan using a combination of ELI, the repowering of Barrett 1 and LIPA's RPS Program.
6	<i>15 x 15 Repowering Scenario</i> - A resource plan using a combination of meeting the targets of the Governor's 15X15 Program, the repowering of Barrett 1 and LIPA's RPS Program.
7	<i>Environmental Focus Scenario</i> - A resource plan using a combination of meeting the targets of the Governor's 15 x 15 Program, the repowering of Barrett 1 and Northport, retirement of Far Rockaway and Glenwood stations, added wind power and fuel cells, as well as LIPA's RPS Program.
8	<i>Environmental Focus Sensitivity Scenario</i> - A resource plan using a combination of meeting the targets of the Governor's 15 x 15 Program, the repowering of Barrett 1 and Northport, retirement of Far Rockaway and Glenwood stations, added wind power and fuel cells, as well as LIPA's RPS Program. This scenario incorporates repowering BTU off-set credits in the analysis.
9	<i>Market Access Scenario</i> - A resource plan using a combination of meeting the targets of an Automated Metering Infrastructure (AMI) initiative, LIPA's RPS Program, upgrading the existing NUSCO transmission interconnection, adding a second transmission interconnection to PJM.
10	<i>Low Operating Cost Scenario</i> - A resource plan using a combination of extending the existing

	Clean Energy Initiative (CEI), adoption of an Automated Metering Infrastructure (AMI) initiative, LIPA's RPS Program, upgrading the existing NUSCO transmission interconnection, adding a second transmission interconnection to PJM, and adding off-island nuclear and coal resources.
11	<i>Efficiency Long Island (ELI) Scenario with Renewable Portfolio Standard (RPS)</i> - A resource plan focused on ELI, LIPA's RPS Program.
12	<i>ELI & Northport Repowering Scenario</i> - A resource plan using a combination of ELI, the repowering of Northport, and LIPA's RPS Program.
13	<i>ELI, Northport & Port Jefferson Repowering Scenario</i> - A resource plan using a combination of ELI, LIPA's RPS Program and the repowering of both Northport and Port Jefferson.
14	<i>ELI & Port Jefferson Repowering Scenario</i> - A resource plan using a combination of ELI, LIPA's RPS Program and the repowering of Port Jefferson.
15	<i>Efficiency Long Island (ELI) Scenario with Renewable Portfolio Standard (RPS)</i> - A resource plan focused on ELI funding curtailed after 10 year program, LIPA's RPS Program.

Evaluation Metrics

The alternative scenarios would be compared on the basis of several economic and environmental metrics shown in Table 3.

Table 3 – Evaluation Metrics	
Economic	
1	Annual revenue requirements
2	Annual average rates
3	Net Present Value (NPV) total revenue requirements in 2009 dollars
Production Efficiency	
4	Average heat rate of LIPA contracted/owned resources
Reliability Metrics	
5	Surplus or deficit compared to projected NYISO locational requirement
6	Surplus or deficit compared to projected LIPA OP-CAP C requirement
7	Surplus or deficit compared to probability weighted versions of NYISO and LIPA requirements
Environmental Metrics	
8	Projected SO ₂ allowances compared to SO ₂ emissions from LIPA contracted units
9	Projected NO _x allowances compared to NO _x emissions from LIPA contracted units
10	Energy weighted share of statewide CO ₂ RGGI emissions allowance compared to CO ₂ emissions from LIPA contracted units
11	Total LIPA footprint of CO ₂ emissions from LIPA contracted units plus market purchases of energy at ISO/RTO incremental emissions per MWh
12	Assess alternative plans on \$/ton of Carbon reduced or increased from the Reference Case