

S.1 INTRODUCTION

The Long Island Power Authority (LIPA) is pursuing a diverse portfolio of resources to provide cost-effective, reliable electric power to its customers on Long Island. To this end, LIPA issued a Request for Proposals (RFP) seeking proposals for 250 to 600 megawatts (MW) of baseload supply to help meet Long Island's long-term energy needs. In June 2004, LIPA selected the Caithness Long Island Energy Center (the "project," "facility," or the "Caithness Long Island Energy Center") proposed by Caithness Long Island, LLC (Caithness) as one of the proposed projects to meet baseload needs¹. The proposed facility is a critical component of LIPA's strategy for ensuring sufficient and reliable electric power to Long Island. The project is located in an unincorporated area of the Town of Brookhaven within a large industrial district located halfway between the residential communities of Yaphank and North Bellport. The new name reflects the fact that the project will be serving all of the residents of Long Island and is not actually located within or near any specific residential community. Some of the appendices prepared before this decision may still refer to "Caithness Bellport."

In November 2004, LIPA, the State Environmental Quality Review Act (SEQRA) lead agency, made a determination that the proposed project may have a significant adverse impact on the environment. Therefore, a Draft Environmental Impact Statement (DEIS) was prepared in accordance with SEQRA, pursuant to Article 8 of the Environmental Conservation Law (ECL §§ 8-0101 et seq.) and 6 NYCRR Part 617.

On March 24, 2005, LIPA released the DEIS for public review after finding that the DEIS was adequate in its scope and content for purposes of commencing public review, as required under SEQRA. LIPA distributed the DEIS to all interested persons, including all involved agencies, various civic and environmental organizations, elected officials, and all persons who commented on the Draft Scope of Work. The DEIS was also made available at four public libraries and was posted on the LIPA web site. Notice of the availability of the DEIS was also published in the New York State Environmental Notice Bulletin and several local newspapers. A public hearing on the DEIS was held at 3:00 PM and 7:00 PM on Wednesday April 20, 2005 at the Yaphank Fire Department, 451 Main Street, Yaphank, New York 11980. In addition, LIPA held the public comment period open through May 25, 2005 to receive written comments.

This Final Environmental Impact Statement (FEIS) includes a response to comments on the DEIS, and text and figures have been modified in response to the comments received.

¹ Based on input received at community meetings, the name of the project sponsor is being changed to Caithness Long Island, LLC and the name of the project has recently been changed to "Caithness Long Island Energy Center". The name of the project sponsor was formerly Caithness Bellport, LLC, and the name of the project was formerly "Caithness Bellport Energy Center". Relevant permitting agencies have been notified of this change.

S.2 DESCRIPTION OF THE PROPOSED PROJECT SITE

The Caithness Long Island Energy Center would be located in the Town of Brookhaven, Long Island, New York. The project site would comprise approximately 15 acres within the Town of Brookhaven's Empire Development Zone, and is part of a larger 96-acre parcel controlled by Caithness Long Island. The 15-acre project site is located south of the Sills Road interchange (Exit 66) of the Long Island Expressway (LIE). It is situated east of Old Dock Road, north of Horse Block Road and south of the Long Island Rail Road (LIRR). The Patchogue-Yaphank Road (County Route 101) interchange with the LIE is located approximately 1,600 feet (0.3 miles) north of the property. An additional 28 acres within the 96 acres would be temporarily disturbed during construction for material lay down, equipment storage, and construction parking. The project would interconnect to the LIPA system within the 96-acre parcel via a new 138 kilovolt (kV) switchyard to be constructed on site and adjacent to the existing LIPA Holbrook-to-Brookhaven transmission line right-of-way (ROW). Natural gas would be provided by a new natural gas pipeline, or "lateral," which would be the subject of its own, separate environmental review. A spur from the new natural gas pipeline would run across the 96-acre parcel to the project site.

S.3 DESCRIPTION OF THE PROPOSED FACILITY

The proposed dual-fuel, "combined-cycle" facility would generate approximately 350 MW of electricity. Approximately 215 MW of this power would be produced using a combustion turbine generator set. Exhaust heat from the combustion turbine would then be sent to a heat recovery steam generator (HRSG) to produce steam to drive a steam turbine generator. The steam turbine generator would provide approximately 135 MW, the balance of the plant output. The HRSG would include a 45 MW natural gas-fired duct burner. Selective catalytic reduction technology (SCR) and an oxidation catalyst would be used to control oxides of nitrogen (NO_x) and carbon monoxide (CO) emissions, respectively. Exhaust steam from the steam turbine would be cooled (i.e., condensed) and then returned to the HRSG using an air-cooled condenser. Air-cooled condensing would be employed to minimize water use and eliminate potential cooling tower plume. The facility would be designed for base load electric generation.

Natural gas would be used as the primary fuel with low sulfur distillate oil serving as a back-up fuel. Use of the back-up fuel would be limited to 30 days per year. To accommodate short-term operation on low sulfur distillate, the proposed project would include a 750,000-gallon fuel oil storage tank and associated off-loading facilities. The tank and all associated appurtenances would be consistent with New York State and Suffolk County Department of Health Services requirements.

The "combined-cycle" technology is approximately 30 percent more efficient than conventional electric generator technologies. A combined-cycle plant uses less fuel than either a steam turbine or a gas turbine to generate a kilowatt-hour of electricity.

S.4 PROJECT PURPOSE AND NEED

LIPA's mission is to deliver safe, reliable, and economical electric service to its customers. LIPA is committed to continuously being responsive to its customers' needs, upgrading and enhancing the electric system, and advancing energy efficiency and renewable technology initiatives, thereby fostering economic stability and growth and improving the quality of life within its service territory. In pursuit of this goal, LIPA adopted its Energy Plan 2004 to 2013 in June 2004. The Energy Plan sets forth five objectives:

- Objective 1: Enhance reliability of the bulk power system;
- Objective 2: Enhance reliability of the distribution system;
- Objective 3: Minimize customer rates and increase customer satisfaction;
- Objective 4: Promote a healthy environment; and
- Objective 5: Position LIPA to respond rapidly to change.

The proposed project would meet three of these objectives. It would enhance the reliability of the power system by increasing generation on the eastern end of the island, where load growth is highest. It would minimize customer rates by more efficiently utilizing fuel. Finally, the proposed project would promote a healthy environment by having, on a per megawatt basis, very low air emissions.

The need for additional power generating resources in New York and Long Island in particular is addressed in the report, "Power Trends: New York's Success & Unfinished Business," May 2004, prepared by the New York Independent System Operator (NYISO), the organization that controls the flow of electric power in New York State. The NYISO, while acknowledging some success, still predicts a need for additional energy production capacity in order to meet New York's growing energy needs. For additional energy production capacity, NYISO made the following observations:

- "The NYISO recommends that additional capacity, predominantly in NYC and on Long Island, should be completed in the 2008 and beyond timeframe in order to ensure that the City and Long Island do not fall below minimum reliability requirements. The amount of this capacity should be a minimum of 500 to 1,000 MW each year depending on the pace of demand growth...Long Island is even more critical and may fall below its locational requirements next year. LIPA is installing a number of small generators on an emergency basis for this summer, and has issued RFPs for new resources. However, the urgency of siting additional generation on Long Island as soon as possible cannot be overstated."
- By 2009, Long Island will face a deficit in its Installed Capacity requirements of 276 MW unless new generation is added even with completion of new facilities already under construction.
- "The NYISO recommends now that 2,000 MW of new generation be added by 2009, predominantly in NYC and Long Island, and that 500 to 1,000 MW be approved and constructed annually thereafter depending on the pace of electricity usage."

- Looking beyond reliability requirements, NYISO explains that a newer, more efficient fleet of generating facilities would “produce orders of magnitude improvement in terms of emissions reductions.”
- NYISO has recently issued an updated Power Trends Report (April 2005), which confirms the need for additional capacity on Long Island.

NYISO requires LIPA to either own or have contracts for generating capacity and other resources to meet peak summer demand, plus a reserve of 18 percent. This reserve requirement is necessary in the event of possible outages of power plants, as well as weather conditions that may be warmer than anticipated, as has been the case in several of the past summers. Because of Long Island’s geographic distance and separation from the rest of New York State’s electric generating capacity, NYISO requires LIPA to maintain an installed capacity within its service area. The transmission capacity from the major transmission infrastructure in New York State’s electric grid into Long Island is limited. The on-Island locational requirement is 99 percent of the expected summer peak demand. Although LIPA is currently meeting the NYISO’s locational requirement, LIPA’s current margin in 2005 of 23 MW is being met through the use of temporary generators. LIPA must secure additional on-Island generating capacity to continue to meet the NYISO requirement and to ensure the reliability of the electric system as the load grows.

LIPA currently projects that the underlying peak demand for energy on Long Island will grow each year by approximately 100 MW between now and 2012. This is equivalent to a growth rate of about 1.9 percent per year. LIPA has instituted a multi-pronged energy conservation program to meet this demand. Energy conservation, or Demand Side Management (DSM) tools, such as the Residential Lighting & Appliances Program, Residential Cool Homes (HVAC) Program, LIPAE_{edge}, and the Peak Reduction Program have been implemented. Even with the energy savings from these DSM programs, load is still projected to grow by about 80 MW per year or about 1.6 percent. Therefore, additional on-Island generation is required to meet the peak demand and the requirements of NYISO.

To meet this need, the Energy Plan 2004 to 2013 details specific short- and long-term resource goals. As part of this plan, LIPA determined it is necessary to contract for power from an on-island generation facility as well as an off-island facility, and/or a transmission line connecting to Long Island. LIPA decided to procure capacity for a period of up to 20 years beginning in summer 2007 through its Generation/Transmission Capacity Request for Proposals (RFP). The Caithness Long Island project was selected as one of two projects that best met the objectives of the Energy Plan. LIPA has also decided to contract with the Neptune Regional Transmission System Cable to bring about 660 MW of off-Island power into its service area.

In addition to these two projects, renewable energy generation resources are in the demonstration and planning stages. Wind turbines have been installed on land, and a large offshore wind farm, which would provide about 140 MW of electricity, is in the early permitting phase. A significant fuel cell installation is also in the bidding process.

Overall, the Caithness Long Island Energy Center is one part of LIPA's multi-pronged plan to meet the objectives of its Energy Plan for 2004 to 2013 with conservation, renewable energy and additional state-of-the-art fossil fuel facilities.

The Caithness Long Island Energy Center would also be consistent with the latest New York State Energy Plan (SEP), dated June 2004. The Caithness Long Island Energy Center would increase the diversity of energy supplies on Long Island and enhance and promote electric competition – a public policy goal in New York State. In all key areas – price, reliability, economic development, adequacy, and environmental impact – the SEP finds that competition in the electricity sector has been beneficial, but greater benefits can be achieved. According to the SEP, “[t]he primary barrier to achieving effective wholesale competition in the energy industries is the lack of adequate resources (electric generation capacity, electricity and natural gas delivery infrastructure, and demand reduction techniques) in certain areas where they are needed.” The Caithness Long Island Energy Center would be consistent with these goals. The Caithness Long Island Energy Center would also be consistent with the SEP's goal of siting new, cleaner, state-of-the-art power plants and in ensuring system reliability and improving the State's environment.

The proposed project is necessary for the long term reliability of the LIPA electric generation and distribution system. Without this or a similar project, Long Island would face the possibility of energy shortages, leading to possible rolling black-outs and the loss of reliability in the electric system.

S.5 SUMMARY OF DISCRETIONARY APPROVALS AND INVOLVED AND INTERESTED AGENCIES

Development and operation of the proposed project would require certain discretionary federal, state, and local regulatory agency notifications, actions, permits and approvals from the following agencies:

United States Environmental Protection Agency (EPA)

- Prevention of Significant Deterioration Permit (PSD)

Long Island Power Authority

- Facility Power Purchase Agreement
- Interconnection Agreement

New York State Department of Environmental Conservation (DEC)

- Part 201 State Air Permit (including Part 231 New Source Review requirements)
- Title IV Acid Rain Permit
- State Pollutant Discharge Elimination System (SPDES) Permit for Storm Water Discharges Associated with Industrial Activities and Process Wastewater Discharge
- Major Oil Storage Facility Permit

New York State Public Service Commission (PSC)

- Section 68 Certificate of Public Convenience and Necessity (as well as an Order for Lightened Regulation)
- Section 69 approval to issue any bonds, notes or other forms of indebtedness for periods longer than 12 months

Suffolk County Department of Health Services (SCDHS)

- Article VI Approval for Water Use
- Article VII Approval for Water Pollution Control
- Article XII Approval for Toxic and Hazardous Materials Storage and Handling Controls (delegated by DEC)

Suffolk County Planning Commission

- Advisory Recommendation

Town of Brookhaven Town Board

- Special Permit Approval for Electric Generating Facility
- Variance for Stack Height
- Variance for Building Height

Town of Brookhaven Planning Board

- Site Plan Approval (including tree clearing permit for testing activities)

S.6 PUBLIC OUTREACH AND PARTICIPATION

The project goal is to construct and operate a highly efficient, clean, state-of-the-art power plant that minimizes impacts on surrounding communities. To facilitate this goal, Caithness Long Island and LIPA have engaged in a public outreach program to encourage early and meaningful public participation by stakeholders and others interested in issues associated with construction and operation of the proposed facility. These efforts and resources include:

- Convening public meetings at critical milestones in the planning and development and SEQRA environmental review processes;
- Notifying the community about project developments through mailings and advertisements;
- Establishing project document repositories throughout the local project area and on LIPA's website (<http://www.lipower.org/projects/caithness.html>) to provide the public with the widest possible access to the Draft Scope of Work, Final Scope of Work, the DEIS, this FEIS and all other SEQRA documents created concerning the project;
- Developing a color brochure for general use and distribution that addresses specific project details, plans and benefits;
- Soliciting public input through a Telephone Hotline;

- Creating a project website to provide news about the process and a direct e-mail link to Caithness Long Island;
- Making presentations to community, environmental, and business organizations with the assistance of LIPA representatives;
- Initiating a proactive newspaper campaign which seeks to inform the public about the proposed project; and
- Conducting briefings for Stakeholder groups and entities that have expressed an interest in the project.

S.7 PROJECT SCHEDULE

If all approvals and financing are secured, construction activities for the proposed project are anticipated to commence approximately spring of 2006 and project operations approximately summer of 2008.

As part of the environmental review process, the DEIS was prepared in accordance with SEQRA and the project's Final Scope of Work that was issued by LIPA on January 26, 2005. A public hearing to receive oral and written comments on the DEIS was held on Wednesday April 20, 2005 at 3 PM and at 7 PM at the Yaphank Fire Department, 451 Main Street, Yaphank, New York 11980. Written comments on the DEIS were received by LIPA through Wednesday May 25, 2005.

S.8 PROBABLE IMPACTS OF THE PROPOSED PROJECT

S.8.1. LAND USE AND ZONING

A. LAND USE

The land area within the one-mile radius is entirely within the Town of Brookhaven. Undeveloped land, the main line of the LIRR, a LIPA 69 kV transmission corridor, and the LIE are located north of the project site. Approximately ¼ mile north of the project site, north of the LIRR mainline and east of Sills Road is the proposed location of the Brookhaven Energy Project, a 580-megawatt natural gas fired combined cycle electric generating plant which was approved under Article X of the New York State Public Service Law in August 2002. Northwest of the site, south of the LIE, is Long Island Avenue, a local road with existing residences, forested land, and agricultural land.

Additional forested vacant land is located east and southeast of the project site. The Grucci fireworks manufacturing and storage facility is located approximately ¼ mile southeast of the site. Long Island Cycle Park, a 10-acre motorcross facility, is located approximately 2000 feet southeast of the project site on the east side of Miller Avenue. The Sills Industrial Park is located immediately west and southwest of the project site on Old Dock Road.

The Zorn Industrial Park, presently under development, is located south of the project site. The tenants of the Zorn Industrial Park are likely to be similar to those found within the adjacent Sills Industrial Park. South of the Zorn Industrial Park, on the south side of Horseblock Road, is the Alexan Brookhaven Residential Community. Vacant forested

land comprises the majority of the remaining land use south of Horseblock Road within the primary study area, with the exception of a vacant industrial warehousing facility and the “Sunshine Square” shopping center, both located along the eastern side of Patchogue-Yaphank/Sills Road. A small portion of the site’s one-mile radius overlaps a residential development located east of Patchogue-Yaphank/Sills Road and north of Woodside Road.

Development of the proposed project would result in development of vacant forested land and the siting of an industrial facility at an appropriately industrial-zoned parcel. Further, the project would be compatible with existing and proposed land uses within the one-mile radius study area, as well as the broader region. The project would not impair land use and would not render existing land uses non-viable.

B. PUBLIC POLICIES

The Town of Brookhaven Comprehensive Land Use Plan was adopted in 1996. It places emphasis on appropriate economic development together with preservation and protection of natural and community resources. The project site and all interconnections are south of the LIE, outside the Central Special Groundwater Protection Area (SGPA). The boundary between the Longwood school district and South Country school district runs through the 96-acre parcel. The proposed project is therefore fully consistent with the Town Comprehensive Land Use Plan.

In October 2000, the Suffolk County Planning Department, acting on a resolution of the County Legislature, issued the “Smart Growth Policy Plan for Suffolk County.” This document is not intended to specify a use for each parcel in the County, but rather is intended to measure existing laws, regulations, policies and programs against smart growth principles. While the plan is designed for County government actions, the proposed project was evaluated and found to be consistent with its smart growth principles.

C. ZONING

The 96-acre parcel containing the proposed project site is located within the Town of Brookhaven Zoning Code’s L-1 District. In the L-1 District a variety of office, warehouse, manufacturing, light industrial, commercial, agricultural, and institutional uses are allowed “as-of-right.” The Town of Brookhaven Zoning Code authorizes the construction of electric generating plants within the zoning district by Special Use Permit issued by the Town of Brookhaven Town Board. The proposed project will seek to obtain a Special Use Permit from the Town of Brookhaven Town Board, as well as site plan approval from the Town Planning Board.

The proposed project would comply with the substantive requirements of the Town of Brookhaven Zoning Code, with the exception of exceeding the maximum height requirement, which is required because of engineering and air quality constraints.

In sum, the proposed project would not result in any significant, adverse impacts on land use, public policies or zoning.

S.8.2. COMMUNITY FACILITIES

It is not expected that the project would result in significant adverse impacts to fire and emergency services. The plant's permanent employees would be trained as an on-site fire brigade and would work cooperatively with the local fire department to function as the first line of defense in the event of a fire at the proposed plant. Prior to the commencement of project operation, an Emergency Response Plan and comprehensive security plan would be developed to support operational activity at the site.

Due to the limited number of operational employees, the proposed facility would not result in the placement of a significant number of additional students in local schools or impact the ability of local religious institutions to serve their community. Nor would air emissions or noise from the proposed facility adversely impact community facilities. Accordingly, no significant adverse impacts are expected to occur to any community resource.

S.8.3. CULTURAL RESOURCES

The project would not result in any significant impacts to historic architectural properties, or historic resources listed on or eligible for the State and National Registers of Historic Places, including the nearby Suffolk County Almshouse Barn, St. Andrew's Church, Homan-Gerard Mills site, and Robert Hawkins Homestead.

S.8.4. VISUAL RESOURCES

The most prominent structures usually associated with the proposed project are the exhaust stack, air cooled condenser and the generation building.

The facility would provide a minimum 115-foot wide visual and landscaping buffer between the facility and the property boundaries in all directions. Potential visibility of the proposed facility is expected to be very limited to non-existent from locations beyond one mile toward the north and west, and two miles to the east. Visibility from the south would be variable but limited primarily to short areas along Horseblock Road where breaks in vegetation would permit partial views of the facility. For those locations from which the plant can be seen, most views would include only a portion of the stack and the upper portion of the air cooled condenser and generation building.

Based upon photosimulation analyses, it can be concluded that the proposed project would not result in any significant adverse impacts to visual resources.

S.8.5. SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

A. SOCIOECONOMIC IMPACTS

It is expected that the project would generate approximately 375 peak construction jobs with an average workforce level of approximately 250 construction employees. Construction is expected to be completed within a 26-month timeframe.

The proposed project would be expected to provide an estimated 25 permanent operations jobs with an estimated on-site payroll of approximately \$1.32 million per year, and would

provide substantial tax benefits because the 15-acre project site is located within a New York State-designated Empire Zone in the Town of Brookhaven.

B. ENVIRONMENTAL JUSTICE (EJ)

Three census blocks within the two-mile study area have minority populations above the DEC EJ threshold and two census blocks have a low income population above the DEC EJ thresholds. Since potential environmental justice areas were identified, an assessment was conducted with regard to air quality, contaminated materials and chemical use, traffic and transportation, noise, and visual impacts to determine if the proposed facility would have a significant adverse and disproportionate effect on these communities. In each of these areas, the proposed facility would not have a significant adverse and disproportionate effect on any EJ communities or communities of concern.

S.8.6. TRAFFIC AND TRANSPORTATION

The traffic from the proposed project would access and leave the site via Zorn Boulevard at Horseblock Road. Zorn Boulevard is located on the north side of Horseblock Road between Old Dock Road and Alexan Boulevard. The Zorn Boulevard access would be restricted to right-turn movements only (i.e., prohibiting all left-turn movements, allowing entering and exiting right-turns only). None of the studied intersections would experience a change in the Level of Service because of the proposed project. At the three intersections that would have a Level of Service F without the project, the additional delays caused by the proposed project would be less than 5 seconds. Delays of this magnitude are not considered to be significant and it can be concluded that the proposed project would not result in any significant adverse traffic impacts.

S.8.7. AIR QUALITY

Combined-cycle power plants with emissions of one or more criteria pollutants in excess of 100 tons per year (tons/yr) are considered major stationary sources subject to the Clean Air Act's Prevention of Significant Deterioration (PSD) permit program. The proposed project is subject to PSD review for the following pollutants: NO_x, CO, particulate matter and particulate matter sized 10 microns or smaller (PM/PM₁₀), sulfur dioxide (SO₂) and sulfuric acid mist (H₂SO₄). The facility is thus subject to Best Available Control Technology requirements for these applicable PSD pollutants. Since the proposed project would be located in a severe ozone non-attainment area, and VOC and NO_x emissions each exceed the 25 ton/yr threshold, the project is subject to the Clean Air Act's non-attainment new source review for both VOC and NO_x. The facility is thus subject to Lowest Achievable Emission Reduction (LAER) requirements and must obtain emissions offsets for both VOC and NO_x. Accordingly, Caithness has filed a PSD application with the EPA and a Part 201 State Air Facility Permit application, that incorporates New York's non-attainment new source review requirements at 6 NYCRR Part 231-2, with DEC.

To determine if the proposed project would result in any significant adverse air quality impacts, four worst-case facility operating scenarios (including the higher emissions rates that would occur during startup) were modeled pursuant to a EPA and DEC-approved

modeling protocol. For all four operating scenarios, the maximum modeled concentrations would be less than the EPA-defined Significant Impact Levels (SILs), and the concentrations from the proposed project when added to existing background concentrations would not result in any National Ambient Air Quality Standard (NAAQS) violations. In addition, air quality modeling was performed for particulate matter sized 2.5 microns or smaller (PM_{2.5}), pursuant to DEC's interim policy for *Assessing and Mitigating Impacts of Fine Particulate Matter Emissions*. Because the project's maximum modeled 24-hour and annual PM_{2.5} concentrations would be less than the DEC's interim thresholds and the total 24-hour and annual PM_{2.5} concentrations when added to existing background concentrations would be less than the EPA's PM_{2.5} NAAQs, the proposed project would not have a significant adverse impact on PM_{2.5} concentrations. The maximum modeled concentrations from the Caithness Long Island Energy Center compared to the NAAQS and the SILs are shown on Table S-1.

Table S-1

Caithness Long Island Energy Center - Maximum Modeled Concentrations^a

Pollutant	Averaging Period	SIL (µg/m ³)	NAAQS (µg/m ³)	Background Concentration ^b (µg/m ³)	Maximum Ground-Level Concentration (µg/m ³)	Total Ground-Level Concentration ^c (µg/m ³)
CO	1-Hour	2,000	40,000	4,255	77.6	4,332.6
	8-Hour	500	10,000	2,530	20.2	2,550.2
SO ₂	3-Hour	25	1,300	115	17.5	132.5
	24-Hour	5	365	79	2.9	81.9
	Annual	1	80	16	2.58x10 ⁻²	16.0
PM ₁₀	24-Hour	5	150	47	4.2	51.2
	Annual	1	50	18	0.1	18.1
PM _{2.5}	24-Hour	5 ^d	65	32.3	4.2	36.5
	Annual	0.3 ^d	15	12.1	0.1	12.2
NO ₂	Annual	1	100	32	0.97	33.0

Notes:

^a Maximum modeled ground-level concentration due to the worst case overall facility operating scenario (i.e., the facility operating scenario that resulted in the maximum modeled air quality concentration) for each pollutant.

^b Background concentrations are the highest second highest short term (1-, 3-, 8-, and 24-hour) and maximum annual concentrations.

^c Total concentration = background concentration + maximum modeled (i.e., ground-level) concentration.

^d DEC developed SILs.

Source: TRC Environmental Corp.

An assessment of non-criteria pollutants was also conducted which demonstrated that the maximum modeled non-criteria pollutants would be well below their corresponding DEC short-term and annual guideline concentrations. Likewise, the analysis of an accidental release of the aqueous ammonia to be stored on site for use with the SCR pollution control system showed that such a worst-case accidental release would not result in an exceedance of ammonia greater than EPA's thresholds beyond the property boundary.

Overall, operation of the proposed facility would not result in any significant adverse impacts to air quality.

S.8.8. NOISE

Predicted increases in noise levels from the proposed facility, including at all nearby sensitive receptor locations, are 3 decibels dB(A) or less, which is considered to be a barely perceptible increase in noise levels. Accordingly, no significant noise impacts are expected due to project operation. The proposed facility's operational noise levels would comply with the Town of Brookhaven noise ordinance limits for both the residential locations and the industrial property lines, for both daytime and nighttime operation.

S.8.9. GEOLOGY, SEISMOLOGY, AND SOILS

None of the soil or geologic conditions encountered along the proposed on-site interconnection routes presents any engineering or construction issues that cannot be addressed through conventional construction methods. Following construction, topography along the proposed on-site interconnection routes would be graded similar to existing conditions. Therefore, there would be no significant adverse impacts as a result of the proposed project.

S.8.10. INFRASTRUCTURE

A. WATER SUPPLY

The proposed facility's water demand would range from 43,200 to 80,640 gallons per day (gpd) depending on the ambient temperature, weather conditions, and mode of operation. Over the course of a year, the average daily demand is expected to be about 50,400 gpd. The proposed fire suppression system would have a demand of 1,810 gallons per minute under emergency conditions.

Water would likely be supplied by the Suffolk County Water Authority (SCWA) from their Patchogue/Yaphank wellfield and pumping station, located on the west side of Sills Road. SCWA issued a Letter of Availability for the proposed project with the only caveat being that the project not withdraw water at a rate of 150 gallons per minute (gpm) between 12 Midnight to 9AM. Withdrawal of more than 100 gpm over a 24-hour period is not expected during normal facility operations. Two of the three wells at the Patchogue/Yaphank wellfield can supply 1,400 gpm, and the third can supply 1,300 gpm. The maximum expected demand from the proposed project is about 56 gallons per minute. Overall, the project's average annual withdrawal would constitute less than a 0.05 percent increase over the present demand on the SCWA system. Therefore, the water supply needs for the proposed project would not result in any significant adverse impacts.

B. WASTEWATER

Sanitary sewage from workers and visitors is expected to be about 1,500 gallons per day. This volume of sanitary sewage would be disposed of in its own on-site subsurface disposal system. The new, on-site disposal systems would be designed and built

according to Suffolk County Department of Health Services and DEC regulations and standards, and therefore are not expected to have a significant adverse impact.

C. GROUNDWATER

The aquifers under the site and from which the water would be withdrawn are designated as Sole Source Aquifers by the United States Environmental Protection Agency, and as such are protected under the Federal Safe Drinking Water Act of 1974. However, the proposed site is outside of any of the deep recharge areas. No significant adverse impact to the Patchogue-Yaphank wellfield or any nearby wells is expected.

Sanitary sewage would be disposed of in one on-site system, and rinse water from the demineralization trailer and some drain water would be sent to another on-site subsurface system. Both systems would be required to obtain a State Pollutant Discharge Elimination System (SPDES) permit and to comply with State and Suffolk County regulations and standards, and therefore would not have a significant adverse impact on the aquifers.

D. SURFACE WATER

The proposed project would not have any surface water discharges, nor would it use any surface water.

E. STORMWATER

The proposed project would place impervious surfaces in areas where currently stormwater can infiltrate into the ground, changing the runoff characteristics of the site. Both structural and non-structural methods would be used to prevent significant adverse stormwater and sedimentation impacts. These structural and non-structural measures would ensure that the proposed facility would not have a significant adverse impact due to stormwater or sedimentation.

F. SOLID WASTE

The solid waste generated at the facility generally would be limited to small quantities of office waste and general plant refuse, which would be handled and recycled or disposed of appropriately. This small volume of solid waste is not expected to have a significant adverse impact on the solid waste handling system.

G. CHEMICAL WASTES

The small volumes of hazardous waste generated at the facility would be collected and transported by licensed private carters using cradle-to-grave manifests. Adhering to the regulations would ensure that the collection, transportation and disposal of chemical wastes would not have a significant adverse impact.

H. ENERGY

The proposed facility would consume approximately 16.3 million million British Thermal Units (mmbtu) per year of natural gas on an annual basis. If low sulfur distillate were burned for 30 days, the proposed facility would consume approximately 11 million

gallons of low sulfur distillate on an annual basis. This usage is minimal and would not have a significant adverse impact on the region's energy supply system.

I. ELECTRIC AND MAGNETIC FIELDS

The facility's expected magnetic and electric fields would be well below applicable standards, and would not have a significant adverse impact on human health.

S.8.11. CONTAMINATED MATERIALS

A Phase I Environmental Site Assessment (ESA) of the approximately 96-acre parcel was conducted in general accordance with the ASTM "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (ASTM E 1527-00).

In addition, a limited Phase II assessment was undertaken by Caithness of a 1998 tetrachloroethene (PCE) plume at the northern portion of the 96-acre parcel. All concentrations were below DEC groundwater standards. PCE was detected at concentrations of 0.97 and 1.3 parts per billion (ppb), well below the DEC groundwater standard of 5 ppb.

S.8.12. TERRESTRIAL ECOLOGY

No significant adverse impacts to wetlands and rare species are anticipated from the proposed facility.

Forest community wildlife would return to the portion of the construction laydown and parking area that is allowed to revegetate in the years following the completion of the project.

S.8.13. CONSTRUCTION IMPACTS

The proposed project would generate approximately 375 peak construction jobs. The average workforce level is expected to be approximately 250 construction employees. Construction is expected to be completed within 26 months. The peak construction period would last approximately three months. Construction would occur on a one ten-hour shift, five-day workweek from 6:30 a.m. to 4:30 p.m., Monday through Friday.

Prior to commencement of construction, a comprehensive security plan would be developed and implemented. The security plan would be provided to the Suffolk County Police Department and the Suffolk County Department of Fire, Rescue, and Emergency Services for coordination and review.

A. CONSTRUCTION TRAFFIC

The peak construction analysis considered a maximum of 500 workers at the project site. Trip generation was assumed to result in approximately 400 vehicle trips entering the site during the morning peak period. For the evening peak period, approximately 400 vehicle trips were assumed to exit the site, with approximately 100 new entering trips for a possible second construction shift.

Temporary construction traffic impacts could arise in 2006 during the peak construction period, but are due to the volumes associated with the construction of two other planned

developments. Intersections experiencing temporary impacts during the construction phase consist of:

- Horseblock Road/County Road (CR) 16 at LIE North Service Road
- Horseblock Road/CR 16 at LIE South Service Road
- Horseblock Road/CR 16 at Sills Road/CR 101
- Horseblock Road/CR 16 at Bellport Avenue/Station Road

These impacts associated with the proposed facility during the peak construction period are not considered significant since they are expected to last approximately three months.

B. AIR QUALITY

Criteria pollutant vehicle emissions can occur as a result of traffic and/or added trip length from private vehicles that encounter roadway diversions or detours associated with the project, as well as emissions from the actual construction vehicles. However, no road closures or diversions during the construction of the facility are anticipated. A minimal number of contractor vehicles are expected to be on-site, and the project site is located more than 2,500 feet from the nearest residence. At this distance, any off-road construction equipment emissions would result in minimal and insignificant impacts.

C. NOISE

Only daytime construction is currently anticipated for the project. The calculated construction noise levels are well below existing daytime L_{eq} noise levels at all locations. In the event that nighttime construction is required due to schedule constraints, and is permitted by the Town of Brookhaven, construction noise levels might exceed existing nighttime levels at three locations, but by no greater than 5 dB(A), the Town standard. As such, no significant adverse or long-term noise impacts from construction noise are anticipated.

D. STORMWATER

Erosion and sediment control measures would be installed prior to beginning other land disturbances and would not be removed until the disturbed land areas are stabilized.

All erosion and sediment control measures and best management practices (including specifications for temporary and permanent seeding) used during construction would comply with the specifications contained in the New York State Stormwater Management Design Manual dated October 2001.

S.8.14. CUMULATIVE IMPACTS

A cumulative impact analysis was performed to examine whether the proposed project, cumulative with other relevant facilities would have the potential for causing significant adverse environmental impacts. Cumulative impact studies performed included: (i) an air quality cumulative impact analysis addressing the combined operation of the proposed facility and all LIPA-sponsored power generation projects recently constructed, under construction, or proposed; (ii) a local air quality cumulative impact analysis, addressing

the combined operation of the proposed facility and any approved or pending large combustion sources located within 10 miles of the proposed site; (iii) a water supply cumulative impact analysis addressing the combined operation of the proposed facility and other power generation facilities proposed or permitted under NYS Article X jurisdiction and all LIPA-sponsored power generation projects recently constructed, under construction, or proposed; (iv) operational cumulative impact analyses addressing other technical areas (e.g., traffic, noise, and land use); and (v) where the construction of another project could overlap with construction of the proposed Caithness Long Island Energy Center, a cumulative impact analysis addressing construction impacts.

With regard to the two air quality cumulative impact analyses, air quality modeling results indicate that the total concentrations would neither exceed any NAAQS nor any SILs. With regard to the cumulative water supply analysis, the overall consumption of groundwater for the relevant energy facilities considered is minimal compared to the existing demand, which can be safely met by Long Island's groundwater resources. Moreover, the effect of water withdrawals from all of the projects would not have a significant adverse cumulative impact on groundwater. With regard to cumulative effects on land use, community facilities, cultural resources, visual resources, socioeconomics and environmental justice, traffic and transportation, noise, geology/seismology/soils, contaminated materials, and terrestrial ecology, the proposed project would result in no significant adverse cumulative impacts.

With regard to cumulative construction impacts, detailed analyses were performed to examine potential cumulative fugitive dust, noise, and traffic impacts associated with construction of the Caithness Long Island Energy Center and Brookhaven Energy Project. Those analyses concluded that there would be no significant adverse cumulative impacts. However, it did denote that for short periods of time, congested traffic conditions may occur if peak construction of both projects occurs at the same time. However, given the short duration of such congested traffic conditions, cumulative construction traffic impacts are also not considered significant.

S.8.15. OTHER ENVIRONMENTAL IMPACTS

The proposed facility would have no significant adverse impacts with respect to other short or long-term impacts, irreversible and irretrievable commitments of resources, or growth-inducing aspects, and would not result in any significant adverse impacts that cannot be avoided.

S.8.16. ALTERNATIVES

A. "NO-ACTION" ALTERNATIVE

The no-action alternative assumes that the proposed Caithness Long Island Energy Center would not be constructed at the project site and that the site would remain undeveloped. While leaving the project site undeveloped would not be incompatible with other currently undeveloped property in the area, it would be inconsistent with the specific land use development patterns earmarked for this location. Similar to the proposed action, no significant adverse impacts to cultural resources would occur under

the no-action alternative. Under the no-action alternative, the local landscape would remain unchanged, and there would be no short-term increase in traffic during construction of the proposed project. However, with the no-action alternative, the direct and secondary economic benefits associated with the proposed project, including construction-related employment and local expenditures for goods and services, would not be realized, and the various tax jurisdictions would not receive the sizable tax payments projected for the proposed facility. Under the no action alternative, there would be no air emissions, noise, stormwater runoff, annual water consumption, or permanent clearing of approximately 17.2 acres of forested pitch pine-oak stands. However, the proposed project does not result in any significant adverse impacts in these areas, and because the proposed project would displace output from older, higher emitting electric generating units, the no action alternative would not reduce region-wide air emissions as compared to the proposed project. Finally, under the no-action alternative, there would be no additional electric capacity to assist in addressing the need for additional electricity on Long Island.

B. ENERGY EFFICIENCY AND DEMAND SIDE MANAGEMENT ALTERNATIVE

The Energy Efficiency and Demand Side Management Alternative assumes that all of LIPA's existing energy conservation measures remain in force and are augmented to the highest degree practicable. As part of LIPA's energy efficiency and demand side management program, LIPA has implemented the Clean Energy Initiative (CEI), *LIPAEdge* and the Peak Reduction Program (PRP).

LIPA has also approved a project to engage six contractors to help achieve approximately 75 MW of energy efficiency over a ten-year period. The six approved contractors will implement a wide range of energy efficient programs that will target both small and large commercial and industrial customers, publicly owned buildings and multi-family dwellings. These programs will employ the use of energy efficient heating and air conditioning technologies, lighting systems, pumps and motor drives.

While LIPA has been and is committed to continue funding this extraordinary effort in promoting energy efficiency and demand side management, the Energy Efficiency and Demand Side Management Only alternative would not allow LIPA to meet the growing energy needs on Long Island, would not permit LIPA to ensure lower costs and reliable and efficient electricity to LIPA customers, and would not allow LIPA to meet NYISO regulatory requirements.

C. ALTERNATIVE ENERGY INITIATIVES BEING PURSUED BY LIPA

LIPA has been and is continuing to pursue a diverse assortment of projects and initiatives to meet Long Island's growing demand for energy. Besides traditional power generation, transmission line, and energy efficiency and demand side management projects, these alternative energy initiatives include fuel cell projects, wind energy projects, solar/photovoltaic projects, renewable energy projects and other general distributed generation projects.

However, even if all of LIPA's alternative energy initiative and demonstration projects were fully viable and operational at the same time, as a whole they would not be able to

generate sufficient electricity to meet the growing energy needs on Long Island, would not permit LIPA to ensure lower costs and reliable and efficient electricity to LIPA customers, and would not allow LIPA to meet NYISO regulatory requirements.

D. ALTERNATIVE SITES

Sites Under the Control of the Project Sponsor

The project site location is the only property in New York currently controlled by Caithness Long Island. Caithness Energy, LLC, the corporate parent of Caithness Long Island, does not have any other properties on Long Island under its control through lease, option, or outright ownership. There are two other facilities in New York State that are owned, operated by or affiliated with Caithness Energy. These facilities are the Onondaga Cogeneration Facility located in Syracuse, Onondaga County and the Selkirk Cogeneration Facility located in Selkirk, Albany County. These already developed properties were not considered appropriate for the development of the proposed project as they are located in upstate New York and would not satisfy LIPA's desire for additional "on-island" capacity as stated in its RFP.

Alternate Sites Considered by LIPA as Part of the RFP Selection Process

LIPA issued a Request for Proposals To Provide Capacity, Energy and Ancillary Services to Long Island (the "RFP") in May 2003. LIPA provided the following evaluation criteria in the RFP: cost, contractual terms, risk, capabilities of responding firms, transmission considerations, competition and diversity, in-service date, and the impact on the environment. LIPA also stated a preference for projects which provided fuel options.

In response to the RFP, fourteen proposals were received, including six for on-island generating facilities (one of the six proposed on-island proposals included a submission by a joint venture team for facilities at two separate sites). All of the proposals were for combined-cycle facilities and all of the proposals had comparable, state-of-the-art pollution controls (i.e., SCR, CO catalyst, etc.). The evaluation process proceeded through a number of phases, with LIPA sending the respondents numerous clarifying questions including several levels of questioning on permitting, potential environmental impacts, existing site conditions, and surrounding land uses, among other environmental topics.

Midway in the evaluation process, three of the on-island project proposals were given less analysis due to a combination of cost and environmental considerations. All three of the less favored proposals were located in close proximity to dense residential populations. All three could have resulted in significant construction traffic impacts as well. One proposal may have resulted in impacts to wetlands and another may have resulted in impacts on Long Island Sound due to installation of a gas pipeline.

That left three on-island proposals for more detailed consideration. The following is a brief description of these three proposals and of the environmental concerns identified by the LIPA Selection Committee.

- Caithness Long Island Energy Center. This proposal submitted by Caithness Long Island, LLC was for an approximately 350 MW dual fuel facility located in

Brookhaven, Suffolk County, and is the subject of this EIS. As discussed in this EIS, construction and operation of this facility would result in no significant adverse environmental impacts. The LIPA Selection Committee, in recommending the selection of this proposal, concluded that the Caithness Long Island Energy Center proposal reflected a strong blend between solid economics and a site that was expected to experience minimal environmental impacts.

- Site 4. This proposal submitted was for an approximately 270 MW gas-fired facility with no dual fuel capability located in center eastern Suffolk County. This project was carried in to the final phases of the evaluation due to its favorable economics. This site was situated within the deep recharge zone. The site was located adjacent to residences, and the LIPA Selection Committee felt that there was the potential for significant adverse air quality, traffic, noise, and visual impacts that might affect both the timing and success in obtaining federal, state, and/or local approvals. Thus, the LIPA Selection Committee had concerns about the in-service date for this proposal. Ultimately, after considerable discussion with the project sponsors, because of these uncertainties and concerns, this proposal was not subject to further detailed analysis by the LIPA Selection committee.
- KeySpan/ANP Joint Venture. KeySpan/ANP Joint Venture submitted a proposal to build two 250 MW gas-fired plants—one at a location in Melville (Spagnoli Road) and the second at a location in Yaphank (Brookhaven), in Suffolk County. Both sites had received Article X Certificates of Environmental Compatibility and Public Need, and had received virtually all of their permits and approvals.

Based strictly upon environmental considerations, the proposed KeySpan/ANP Joint Venture proposal, like the proposed Caithness Long Island Energy Center, would not have any significant adverse environmental impacts. While both the Spagnoli Road and Brookhaven Energy facilities already have all of their needed approvals (although the Brookhaven Energy facility site approvals would have to be modified), the LIPA Selection Committee viewed the KeySpan/ANP Joint Venture proposal less favorably than the Caithness Long Island Energy Center proposal for a number of reasons. First, the KeySpan/ANP Joint Venture proposal was not as economically viable to the LIPA rate payers as the Caithness Long Island Energy Center proposal. Second, KeySpan already owns considerable generation on-island and thus its selection would not encourage a fully competitive generation market as compared to the proposed Caithness Long Island Energy Center. Third, the KeySpan/ANP Joint Venture proposal would not be for dual-fueled facilities, which would permit a more diversified fuel supply for on-island generation.

E. ALTERNATIVE PROJECT TECHNOLOGIES

Combined Cycle vs. Simple Cycle Design

A combined-cycle facility was chosen over a simple-cycle facility because of two key advantages: increased efficiency and displaced emissions. By using the waste heat from the combustion turbine to produce steam that in turn generates additional electricity, the proposed facility would operate with a higher thermal efficiency than other types of

electric generating facilities. The “combined cycle” technology is approximately 30 percent more efficient than conventional simple cycle electric generator technologies. Since a combined cycle plant uses less fuel than either a steam turbine or a gas turbine to generate a kilowatt-hour of electricity, the savings in fuel is significant, which results in lower operating costs. As a result, the proposed facility would likely be dispatched on a near continuous basis, enabling it to displace older, less efficient electric generating facilities, which would result in a net environmental benefit for Long Island.

Alternate Combustion Turbines

Consideration was given to various turbine technologies that would have resulted in a project of a larger or smaller generating capacity. Several turbine performance specifications were obtained, and evaluated for NO_x, CO, VOC and PM/PM-10, initial equipment delivery schedules, costs, operations, maintenance programs, and warranties.

Alternative turbines would have resulted in similar, but not identical, turbine performance and emissions. None of the alternative turbines would have led to a significant adverse impact. As a consequence, the Siemens Westinghouse Power Corporation Frame 501F combustion turbine generator was selected based upon the schedule for procurement and installation. The 501F is a proven turbine with 163 units operating across the world and a total accumulated operating time exceeding 1.5 million hours since the first 501F was installed in 1991.

F. ALTERNATIVE COOLING TECHNOLOGY

Two alternative cooling technologies were considered for the project: wet cooling and hybrid wet/dry cooling. The following provides a brief description of these alternative cooling technologies.

Mechanical Draft (Wet) Cooling Tower System

A mechanical draft cooling tower uses evaporation to cool the circulating water. Several million gallons per day of makeup water are required to account for evaporation losses. In addition to water lost by evaporation, water is also lost due to drift and blowdown. In addition, water vapor in the saturated air that is discharged from the cooling tower can condense upon contact with cooler ambient air, creating a plume.

For all these reasons, the mechanical draft wet cooling alternative was not selected.

Hybrid (Wet/Dry) Cooling Tower System

A hybrid or wet/dry cooling system, is similar to a wet cooling system, except that the cooling tower includes both dry tube heat exchanger sections and wet evaporative cooling sections. A wet/dry cooling tower works in combination to cool the circulating water. The hybrid cooling system requires several million gallons per day of make-up water and generates blowdown in the same way as a wet cooling system. For this reason, a hybrid cooling tower was not selected.

G. ALTERNATIVE CONTROL TECHNOLOGY

Three alternative technologies to control NO_x emissions from the facility's combustion turbine and duct burner were evaluated. These included: Selective Non-Catalytic Reduction, XONON™ and SCONO_x™. The following provides a brief description of these alternative emission control technologies.

Selective Non-Catalytic Reduction (SNCR)

SNCR is a method of post-combustion control of NO_x emissions. The exhaust temperature at the exit of the proposed combined cycle combustion turbine unit is between 200–300° Fahrenheit, which is significantly less than the optimum temperature range for using SNCR. This alternative emission control system therefore is not technically feasible for the proposed Caithness Long Island project.

XONON™

A newer NO_x control technology has been developed by Catalytica Energy Systems, with the trade name of XONON™. This combustion technology includes a pre-burner, a fuel injection and mixing system, a flameless catalyst module and a flameless burnout zone. One proposed project of 750 MW is currently 50 percent built and expected to be operational in 2005 after many delays. No other comparable installations of this alternative emissions control technology are in operation. Based on the fact that the XONON™ technology is not currently commercially available and has not been proven on combustion turbines of the size proposed by the project, it was not selected.

H. SCONO_x™

SCONO_x™ or Em_x™ is a proprietary catalytic oxidation and adsorption technology that uses a single catalyst for the control of NO_x, CO and VOC emissions. The performance of SCR and SCONO_x™, as NO_x emission levels are concerned, is essentially equivalent. Both technologies have demonstrated the ability to reduce NO_x emissions by at least 90 percent. SCR has a proven record of consistently achieving low NO_x emission levels while SCONO_x™ does not. SCONO_x™ has not been demonstrated in practice on a unit larger than 45 MW. Therefore, this alternative control technology was not selected.

I. ALTERNATIVE PROJECT DESIGN OPTIONS

The evaluation of alternative project design options included an assessment of alternative site layouts and stack heights.

Alternate Site Layouts

As part of the development of the facility site plan, Caithness considered a number of potential site layouts on the 96-acre parcel. Locating the facility at the southern portion of the 96-acre parcel was preferred because: (1) it placed the proposed facility proximate to nearby existing and developing industrial properties thereby providing for a continuation of the orderly development of the project area; (2) it placed the project closer to existing infrastructure located along Zorn Boulevard, thereby minimizing the costs and environmental impacts associated with interconnecting to municipal services; and (3) it

allowed for development of the project within the Brookhaven Empire Zone, which provides a variety of tax benefits to qualifying projects.

Subsequent to the determination that the proposed facility would be located at the southern end of the 96-acre parcel, Caithness considered alternate site plans to further optimize the facility layout. The final siting of the facility general arrangement used a plan that minimized the overall facility footprint; complied with the Town of Brookhaven setback requirements; ensured future access to Miller Avenue, an access easement located east of the project site within the 96-acre parcel; and guaranteed the provision of adequate buffers, to the extent practicable, for nearby developments.

Alternate Stack Heights

Concerted efforts were expended by Caithness to minimize the visibility of the proposed facility including changes to the facility profile and size. A stack height of 170 feet was determined to be the minimum stack height required to ensure insignificant air quality impacts.

J. NATURAL GAS FIRED ONLY OPERATION

The use of natural gas only for operation was also analyzed. Natural gas is the cleanest burning fossil fuel and combustion turbines are easier to maintain when fired exclusively with natural gas. However, natural gas supply can be curtailed during severe cold weather. Using a backup fuel can relieve the stress on the natural gas system during such conditions. Backup fuel use also ensures that while residences, schools, hospitals and firm sales customers are given first-order priority for gas supply, the project's ability to operate and provide power for LIPA and its customers is preserved. For this reason, the use of a backup fuel is an important reliability issue for the project.

K. ALTERNATE SCALE OF MAGNITUDE OF PROJECT

A number of alternatives to the project were evaluated that would have resulted in a project of a smaller or larger generating capacity. The alternatives investigated included different turbine technologies, including "G" class turbines and a Siemens Westinghouse V84.3 turbine, and a project configuration without duct firing.

Alternative Gas Turbine Generating Capacities

"G" Class Turbines

A Siemens Westinghouse "G" frame turbine would result in a project of a larger generating capacity. The currently proposed 501F turbine would produce approximately 200 MW of electric power. A "G" frame turbine would be capable of producing approximately 235 MW of electric power. The Siemens Westinghouse "G" technology, although derived from their "F" technology base, is a relatively new gas turbine configuration. Only a limited number of units are in operation and cumulative operational hours are correspondingly low. Although the "G" turbines have a better heat rate than the proposed "F" technology and would result in a plant of a larger generating capacity, this advantage was more than offset by the risks associated with the relatively new "G" technology as compared to the proven reliability and performance of the "F" machines.

The "F" technology would be better supported by the original equipment manufacturer and there would be a better established secondary market for parts, service, and performance upgrades over its lifetime as a result of its larger fleet size. Further, Caithness believed that use of an "F" class turbine, as compared to the "G" turbine, better fit within the envelope of parameters articulated by LIPA within its RFP.

Siemens-Westinghouse V84.3

The Siemens Westinghouse V84.3, slightly smaller in rating than the 501 F, is capable of producing approximately 170 MW of electric power. Siemens Westinghouse has discontinued this unit. Approximately 40 units are either in operation or construction worldwide. Due to the limited fleet size, Caithness determined that there may be long-term support issues and few performance upgrades developed.

Facility Duct Firing Options

Duct burner firing is currently proposed to increase the electric output of the facility's steam turbine generator by about 46 MW. Without the proposed gas-fired duct burner, the proposed project would be capable of generating slightly more than 300 MW. Caithness incorporated the use of a gas fired duct burner to provide the facility with a "merchant component," consistent with the development of competitive electric markets in New York State. *