



LACEY TOWNSHIP

Feasibility Study for New Power Generation Facility

Objectives of Study

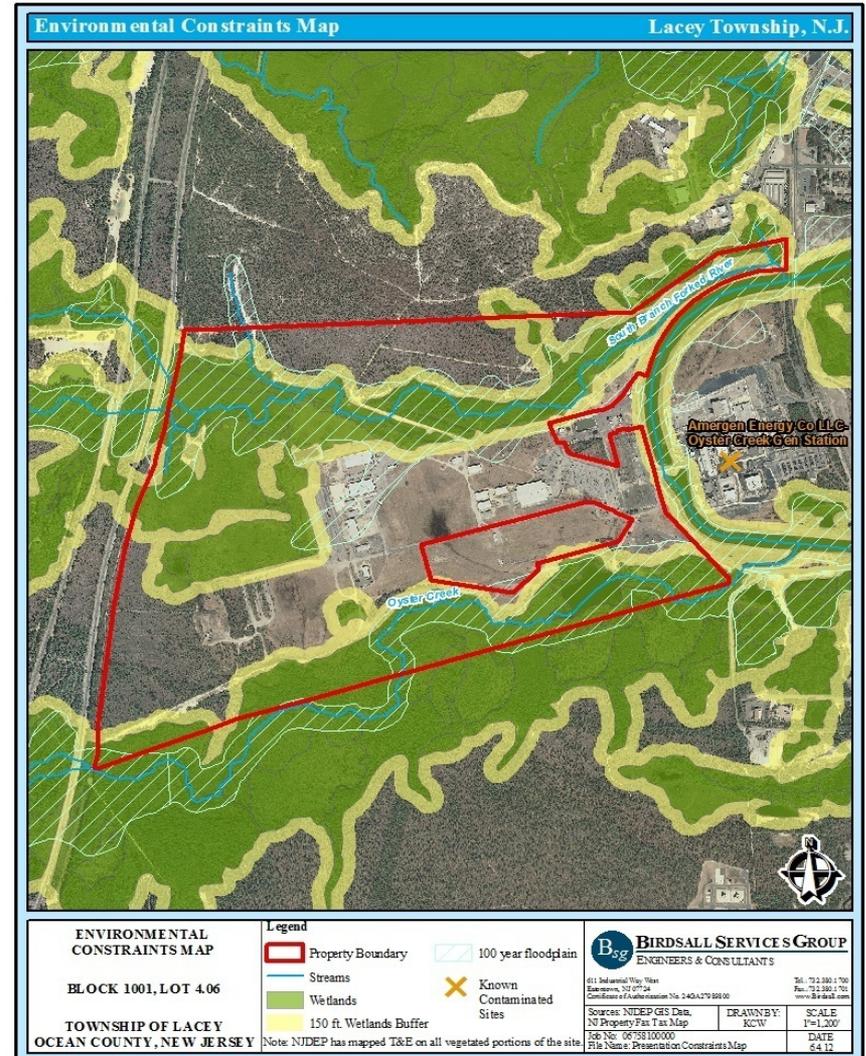
- To assess the feasibility of locating a power generation facility on the Subject Site, known as Block 1001, Lot 4.06, Lacey Township

Site Description

- Total site area is approximately 528.7 acres
- Existing development includes 19 buildings of varying sizes, roadways, parking areas and previously disturbed land areas within the interior of the site
- Bounded by the Garden State Parkway right-of-way to the west, Oyster Creek Nuclear Generating Station to the east, and vacant land to the north and south

Environmental Constraints

- Floodplains (FEMA Zone "A" and "AE")
- Wetlands and wetlands buffer areas
- Threatened and Endangered Species Habitat
- Riparian Zones along stream segments



Development of Constraints & NJDEP Environmental Permits

- Existing Utility Easements
 - JCP&L, Atlantic City Electric, Lacey Municipal Utilities Authority and the Oyster Creek Power Generating Station
- Permits
 - CAFRA Individual Permit
 - Freshwater Wetlands Permit
 - Flood Hazard Area Permit
 - Stormwater Management Approval

CAFRA Industrial Node

- Existing permitted Impervious coverage: Approximately 22 acres
- Potential impervious coverage limitation with Industrial Node: 184 acres
- Requires State Plan Policy Map and NJDEP Map Amendments

CAFRA Industrial Node

- Plan Endorsement
 - Cost: \$200,000-\$350,000
 - Timeframe for Approval: 3-5 years
- Other Potential Option: Work with County and State for Map Amendment without going through Plan Endorsement
 - Salem County did this for PSEG Site on Artificial Island

|| Zoning

- Existing Zoning Designation: M-100 Industrial Zone
 - Electric generating stations are a permitted use
- Alternative Option: Redevelopment
 - May create opportunities for funding and make the site more attractive for development.
 - Area in Need of Redevelopment Study and Plan.

Findings and Key Issues

- Site is suitable for a power generation facility
- CAFRA Individual Permit impervious coverage limitation
 - Designation as Industrial Node
- Obtaining industrial water sewer

Questions an Investor would Ask?

- What market(s) do I want to serve?:
 - Geographic
 - Products (Energy, Capacity, Ancillary Service or Emission Allowances or Emission Credits)
- Generator type (base, load following, peaker)
- Is there a potential plant site offering:
 - Access to high voltage transmission?
 - Water for cooling?
- Access to fuel (e.g. high pressure gas)?
- How much capacity do I want/need?
- What should the design be?
- What type of fuel will I burn?
- What will it cost to design, permit, build and operate?
- What can I expect to earn from this investment?



Generator Companies Products and Services

- A generator a/k/a “merchant generator” sells a range of products and services to power marketers, local distribution utilities and aggregators, who re-sell to retail customers. These products and services include:
 - Energy
 - Capacity
 - Ancillary Services
 - Emissions Allowances and Congestion Credits

Types of Generating Plants

Base Load Units

- Operate whenever they are available
- Derive revenue from “Energy” and “Capacity” sales
- Variable operating costs are low due to:
 - Highly efficient operation
 - Low cost fuels
 - In the northeast US, historically have been nuclear and coal
 - Operate above 80% of the time

Load Following (or Mid Merit) Units

- Operate between 20% and 80% of the time
- Derive revenue from “Energy”, “Capacity” and “Ancillary Services”
- Operating cost are higher due to lower efficiency and/or higher cost fuels such as oil, natural gas and in some cases coal

Peaking Units

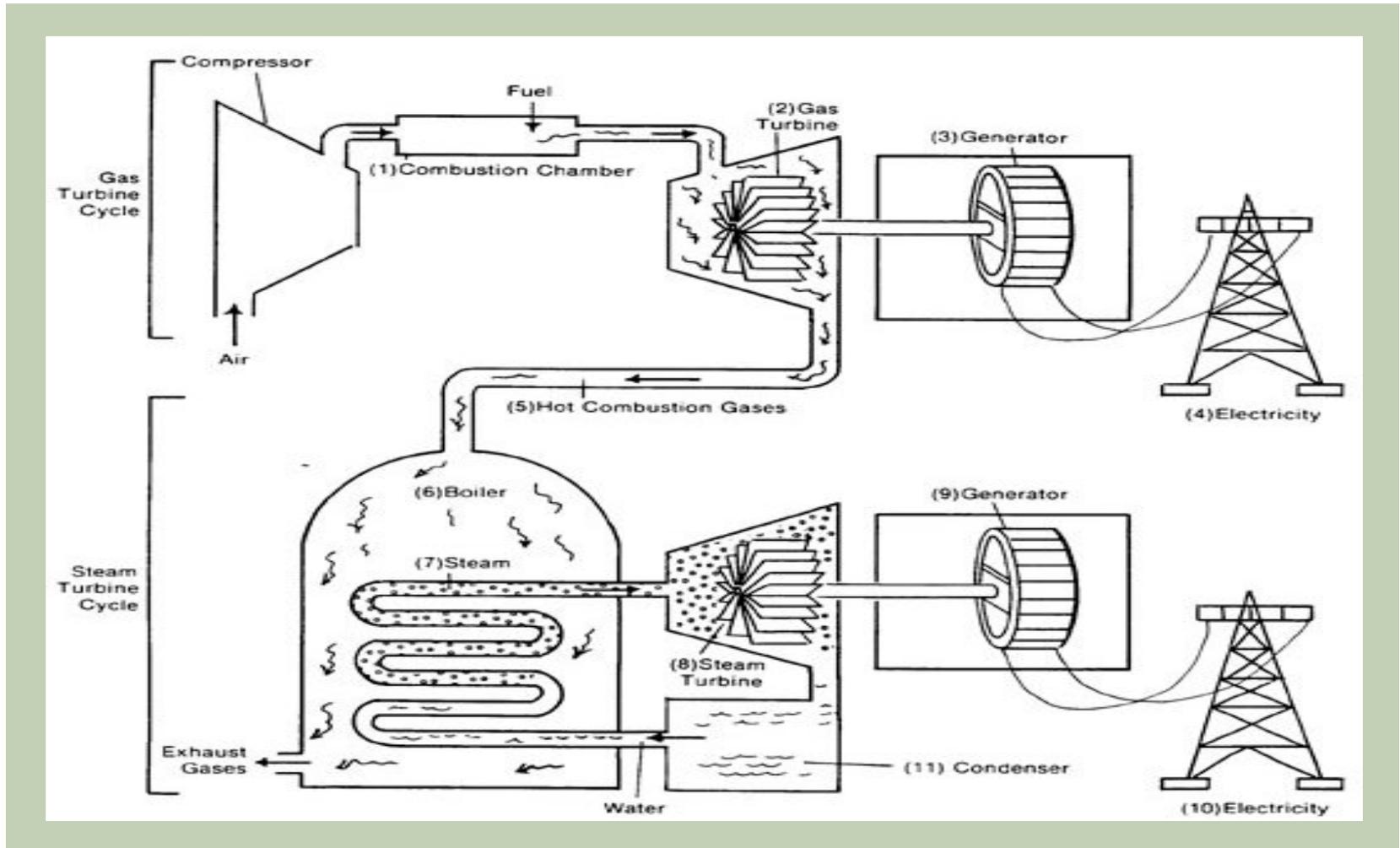
- Run the least amount of the time (<20%)
- Utilize higher priced fuels
- Costs per kwh produced tend to be much higher than base load units
- Majority of revenues are from capacity and ancillary service sales
- Characteristics of these units enable them to capture energy revenue during period of high energy prices

Replacement Generating Plant – Fuel Types Considered

Fuel Type	Advantages	Disadvantages
Nuclear	<ul style="list-style-type: none"> Low Operating Cost More Job Creation Suitable for Base Load Operation 	<ul style="list-style-type: none"> High Capital Cost Extensive and Lengthy Permitting Process Lengthy Engineering & Construction Period Extensive Water Requirements for Cooling Spent Fuel Disposal Challenges Safety Concerns in Densely Populated Areas Public Sentiment is overwhelmingly Negative
Coal	<ul style="list-style-type: none"> Historically Low Operating Cost Suitable for Base Load Operation 	<ul style="list-style-type: none"> High Capital Cost Air Emissions need expensive mitigation Lengthy Permitting Process Messy Logistics of Coal Transport in, and Ash Transport out of site Public Sentiment is overwhelmingly Negative
Natural Gas	<ul style="list-style-type: none"> Relatively Lower Capital Cost Environmental Issues Favorable versus Nuke and Coal Mid Level Operating Costs Land Requirements Base Load/Load Following Operation 	<ul style="list-style-type: none"> Low Job Creation
Oil		<ul style="list-style-type: none"> Non-domestic fuel, volatile pricing No means of getting it to site in bulk Dirtier than natural gas Load Following or Peaking Operation
Biomass/Trash	<ul style="list-style-type: none"> Renewable 	<ul style="list-style-type: none"> High Capital Cost Truck traffic into and out of plant Material Handling and Storage Ash disposal Emissions
Solar	<ul style="list-style-type: none"> Renewable No air emissions 	<ul style="list-style-type: none"> High Capital Cost Limited Operating Hours Extensive Land Requirements Peaking Operation Only
Wind	<ul style="list-style-type: none"> Renewable No air emissions 	<ul style="list-style-type: none"> High Capital Cost Unreliable Wind Resource Public Sentiment is Generally Negative

Simple Schematic for a Natural Gas Combined Cycle Generating Station

Two Generators – One a Combustion Turbine that is fueled by Gas,
One a Steam Turbine that is driven by High Pressure Steam



Generating Plant Comparisons

	Oyster Creek	New Plant
Size in MW	625	650 – 850
Fuel	Nuclear	Natural Gas
Cycle	Boiling Water Reactor	Combined Cycle (combustion and steam turbines)
Type	Base Load	Base Load / Load Following
Revenue Sources	Capacity and Energy	Capacity, Energy and Ancillary Services
Load Factor	90 – 95%	80%
Permanent Jobs	700	25 - 30
Local Tax or PILOT	\$2.2 million	\$2.0 - \$3.0 million
Gross Receipts and Franchise Tax / Energy Tax & TEFA	\$11 million	\$11 million



QUESTIONS?

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