LACEYTOWNSHIP

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

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>Nuclear</td>
<td>Low Operating Cost&lt;br&gt;More Job Creation&lt;br&gt;Suitable for Base Load Operation</td>
<td>High Capital Cost&lt;br&gt;Extensive and Lengthy Permitting Process&lt;br&gt;Lengthy Engineering &amp; Construction Period&lt;br&gt;Extensive Water Requirements for Cooling&lt;br&gt;Spent Fuel Disposal Challenges&lt;br&gt;Safety Concerns in Densely Populated Areas&lt;br&gt;Public Sentiment is overwhelmingly Negative</td>
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<tr>
<td>Coal</td>
<td>Historically Low Operating Cost&lt;br&gt;Suitable for Base Load Operation</td>
<td>High Capital Cost&lt;br&gt;Air Emissions need expensive mitigation&lt;br&gt;Lengthy Permitting Process&lt;br&gt;Messy Logistics of Coal Transport in, and Ash Transport out of site&lt;br&gt;Public Sentiment is overwhelmingly Negative</td>
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<tr>
<td>Natural Gas</td>
<td>Relatively Lower Capital Cost&lt;br&gt;Environmental Issues Favorable versus Nuke and Coal&lt;br&gt;Mid Level Operating Costs&lt;br&gt;Land Requirements&lt;br&gt;Base Load/Load Following Operation</td>
<td>Low Job Creation</td>
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<tr>
<td>Oil</td>
<td>Non-domestic fuel, volatile pricing&lt;br&gt;No means of getting it to site in bulk&lt;br&gt;Dirtier than natural gas&lt;br&gt;Load Following or Peaking Operation</td>
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<tr>
<td>Biomass/Trash</td>
<td>Renewable</td>
<td>High Capital Cost&lt;br&gt;Truck traffic into and out of plant&lt;br&gt;Material Handling and Storage&lt;br&gt;Ash disposal&lt;br&gt;Emissions</td>
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<tr>
<td>Solar</td>
<td>Renewable&lt;br&gt;No air emissions</td>
<td>High Capital Cost&lt;br&gt;Limited Operating Hours&lt;br&gt;Extensive Land Requirements&lt;br&gt;Peaking Operation Only</td>
</tr>
<tr>
<td>Wind</td>
<td>Renewable&lt;br&gt;No air emissions</td>
<td>High Capital Cost&lt;br&gt;Unreliable Wind Resource&lt;br&gt;Public Sentiment is Generally Negative</td>
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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

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