City of Dover
Utility Committee Meeting

Dover 2030 Energy Plan
Committee Status Report

January 14, 2008

PACE

Dover 2030 Energy Plan Committee: Objectives and Progress

Dover 2030 Energy Plan Committee (2030) Objective:

- Identify and pursue options for long-term reliable, cost competitive and environmentally prudent electricity for the citizens of Dover.

Dover 2030 Progress to Date:

1. Reviewed PJM electricity market outlook
2. Reviewed Dover load growth versus existing generation
3. Comparative review of fossil & renewable generation technologies
4. Considered Demand Side Management (i.e. “conservation”) programs
5. Consider value of development partner

Dover Electricity Market Requirements: Capacity and Energy

As a load Serving Entity, Dover is required to provide:

- Energy – electrical energy to satisfy customer usage
- Capacity - electrical generation potential to ensure system reliability.
- Capacity and energy are sold and priced independently.

Dover Generation Deficit: FY 2007-08 Budget			
	Estimated Energy	**Capacity**	**Total Energy & Capacity**
Dover Obligation	787,788 MWh	190.2 MW	--
Cost at Market Price	$66.7 M	$12.3 M	$79.0 M
Supplied by Dover Generation	2.4%	87.0%	--
Value from Dover Generation	($1.9 M)	($11.9 M)	*($7.1 M)
Dover Dependence on PJM Market (effective purchases)	$64.8 M	$0.4 M	$65.2 M

* Value remaining after $6.6M Gen O&M expense is subtracted.

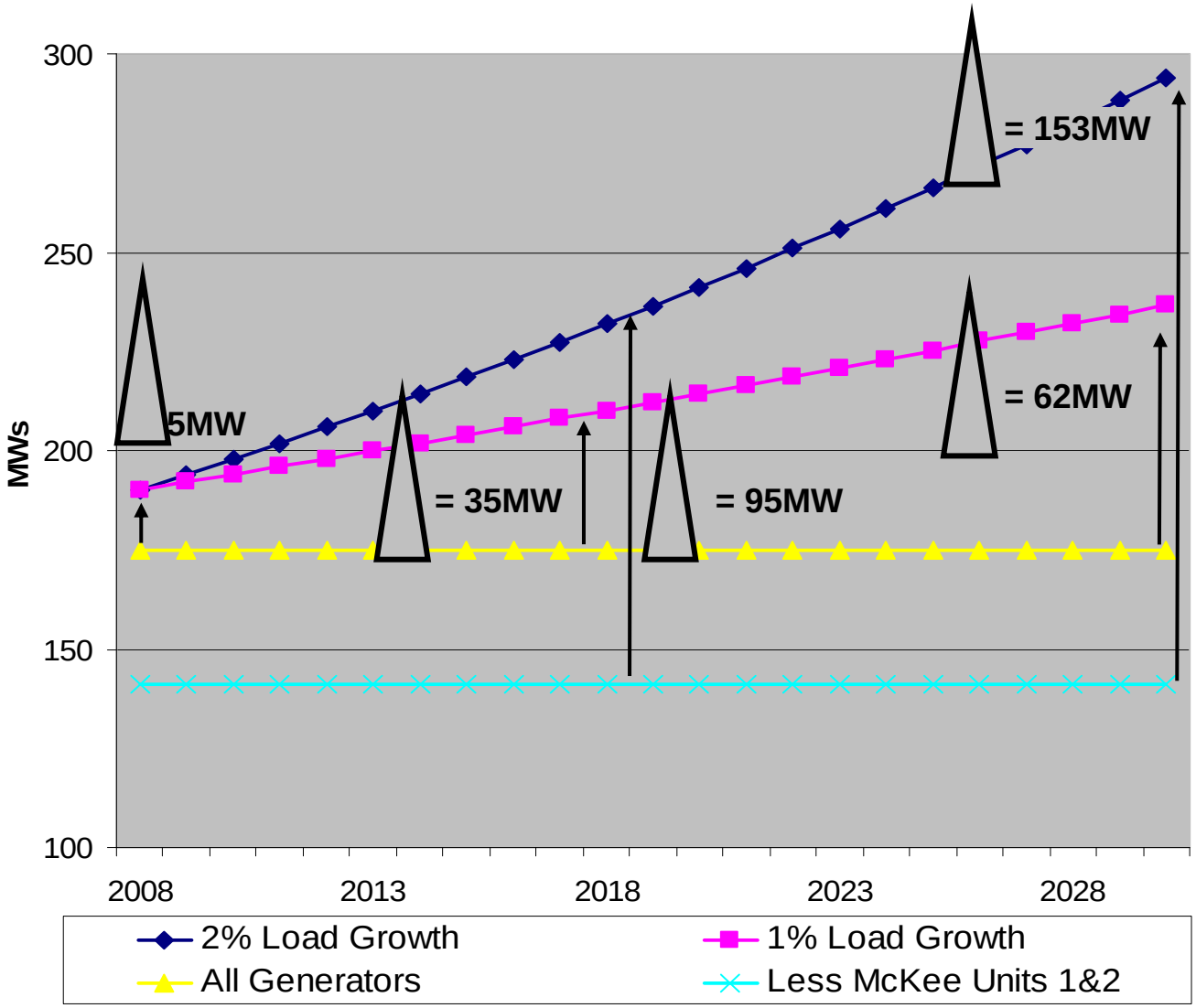
Dover Existing Generation

Dover Generation	Built	Technology/Fuel	Summer Capacity	Function	FY 06-07 Run Hrs
McKee Run Units 1&2	1962	Steam Nat Gas/Residual Oil	34 MW	Capacity Resource	184 hrs & 190 hrs
McKee Run Unit 3	1975	Steam Nat Gas/Residual Oil	102 MW	Med Run Peaker	441 hrs
Van Sant	1991	Combustion Turbine Nat Gas/Heating Oil	40 MW	Quickstart Peaker	115 hrs
			176 MW		**Avg. 232 hrs/unit**

Dover's existing generation units:

- Are all classified as Peaking (i.e. economical to run only during the highest priced hours of the year).
- Have greatest value as Capacity Resources – rewarded by PJM for their ability to provide generation if needed (i.e. whether they are operated or not).
- Are aging. Continued value based on Revenue from PJM capacity market exceeding cost to maintain. McKee Run Units 1&2 have finite life.

Dover Capacity Obligation Deficit to Grow by 2030

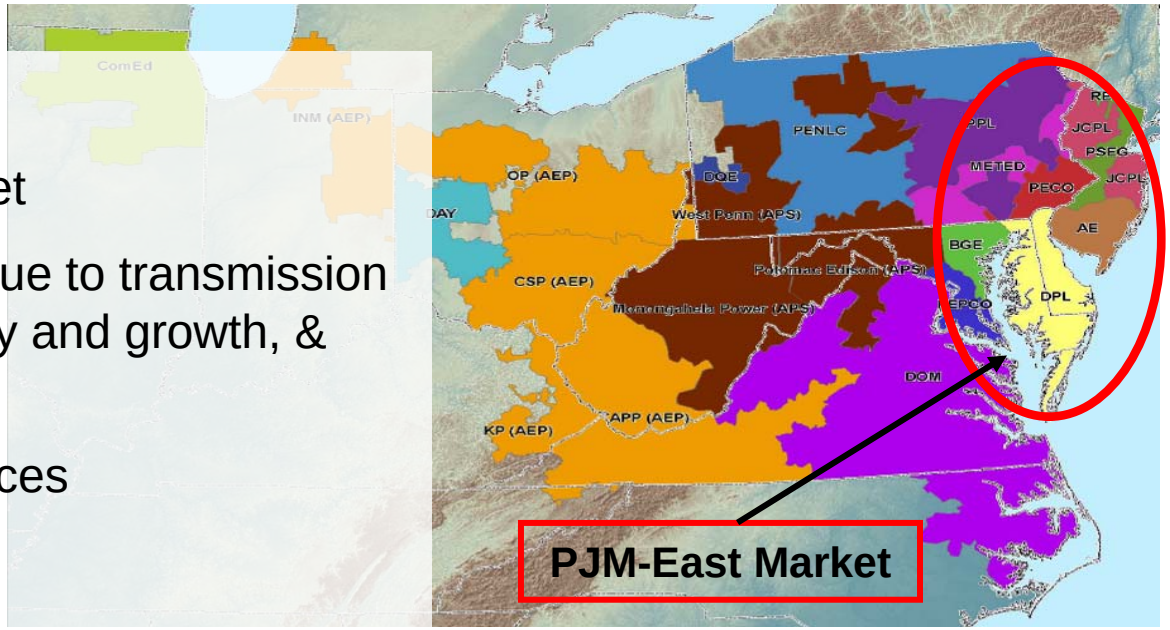


- **Dover load growth expected to be between 1 – 2%/yr.**
- **Dover capacity deficit to grow from 15 MW in 2008 to 62 - 153 MW deficit by 2030.**
- **At $70,000/MW-yr, cost of deficit to rise from <$1M/yr to up to $11M/yr.**

PJM-East Power Market Characteristics

PJM-East Market:

- Competitive electricity market
- High energy market prices due to transmission constraints, high load density and growth, & difficulty siting generation.
- High generation capacity prices



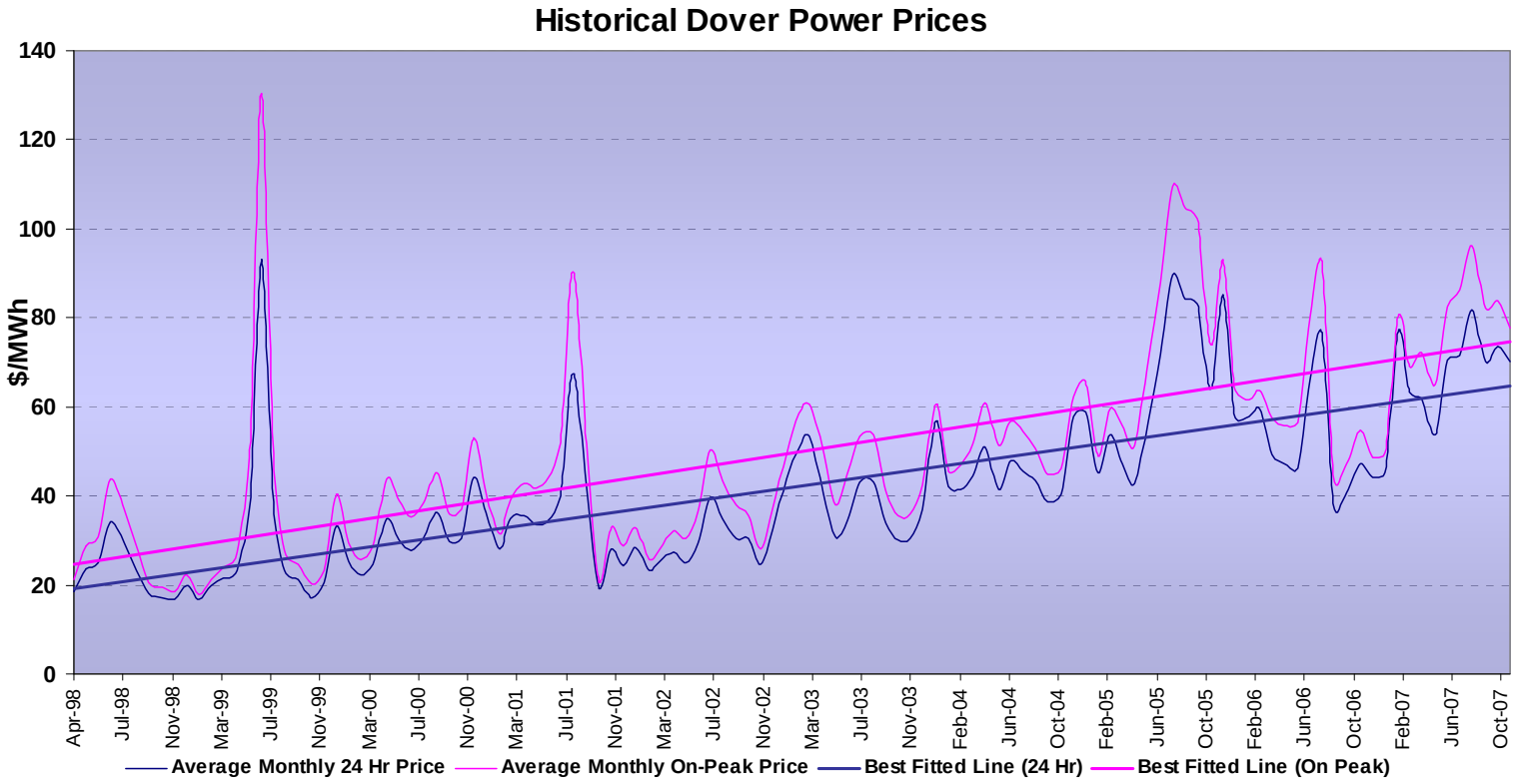
Conditions on the Delmarva Peninsula are further exaggerated by:

- Electric transmission constraints and limited access to firm natural gas.
- An average gen fleet age of 22 years, including 900 MWs in Delaware > 30 yrs.
- A generation capacity margin expected to fall below 10%.

PJM-East and the Delmarva Peninsula are high cost electricity supply regions; challenging, yet attractive, for power plant development.

Dover's Options for Future Electric Capacity & Energy Supplies

1. PJM-East Power Market ("Buy" Option)
   - On-Peak Electricity prices have more than tripled since 1998
   - Capacity market created to incentivize new generation development
   - Volatility remains high due to generation & transmission constraints.



Dover's Options for Future Electric Capacity & Energy Supplies

2. Generation Based Supply ("Build" Option)
   - Offers cost-based capacity and energy
   - Hedge against PJM-East market
   - "Owner's cost" requires level of participation in development project.
3. DSM (Energy Conservation)
   - Analysis and recent utility experience suggests that DSM, while important, has limited potential to meet growth requirements. Options are still being explored.

McKee Run Station

Compact Fluorescent Lighting

“Build” Option offers many types of Solutions

There are many technology options, tradeoffs and considerations:

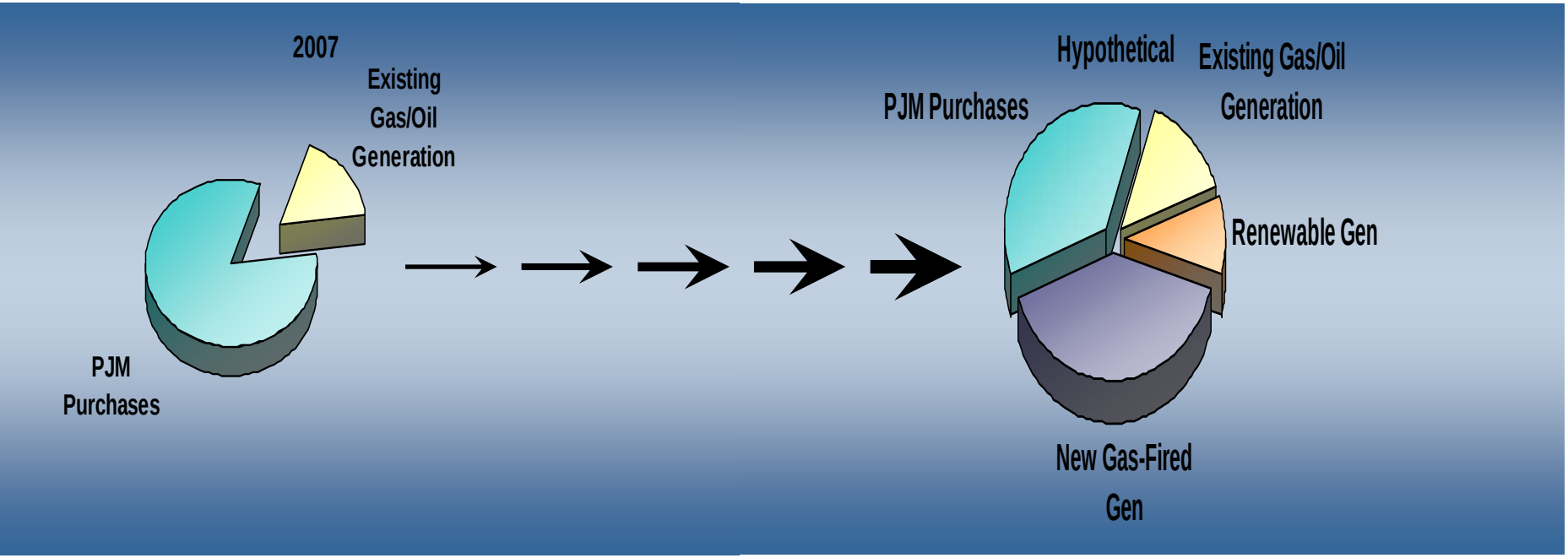
1. Capital intensity vs operating cost
   – Higher cost plants generally offer higher efficiency & utilization.
2. Fossil fuel vs renewable technologies
   – Renewable electricity for Dover remains at a premium to conventional sources.
3. Size requirements for scale
   – Larger scale offers lower unit cost, but may exceed Dover’s requirements.
4. Siting
   – Optimal location varies by technology and owner’s objectives.
5. Level of participation in project
   – Cost (as opposed to market)–based electricity requires owner/host level participation.

Generation Technology Options Reviewed

	Capacity	Energy	Capital Costs	Operating Costs	Other Issues:
Solar	Limited	Partial	Very High	Very Low	Location dependent; High Capital; Limited capacity value; Irregular energy; Renewable incentives.
Wind	Limited	Partial	High	Very Low	
Bio Mass	Yes	Yes	High	Low/Med	Large, secure fuel supplies required; Renewable incentives.
Nuclear	Yes	Yes	High	Low	High Capital; Required large scale; Huge Development Risk; Siting
Coal	Yes	Yes	High	Low/Med	High Capital; Siting Difficulty; Carbon regulatory risk
Nat Gas CCGT	Yes	Yes	Med	Med	High Efficiency; Exposure to Nat gas prices, dual fuel required in Dover
Nat Gas Turbine (CT)	Yes	No	Low	High	Low Efficiency; Exposure to Nat gas prices, dual fuel required in Dover

Electricity Portfolio Approach

Dover's supply costs may increase from $79M (FY07-08 budget) to $140M by 2020, based on expected load growth and inflationary electricity market price increases.



- Whereas, the PJM market is the primary supply source today, a more diverse portfolio of supplies holds promise for tomorrow.
- The RFP Process is geared toward identifying potential supply portfolio options.

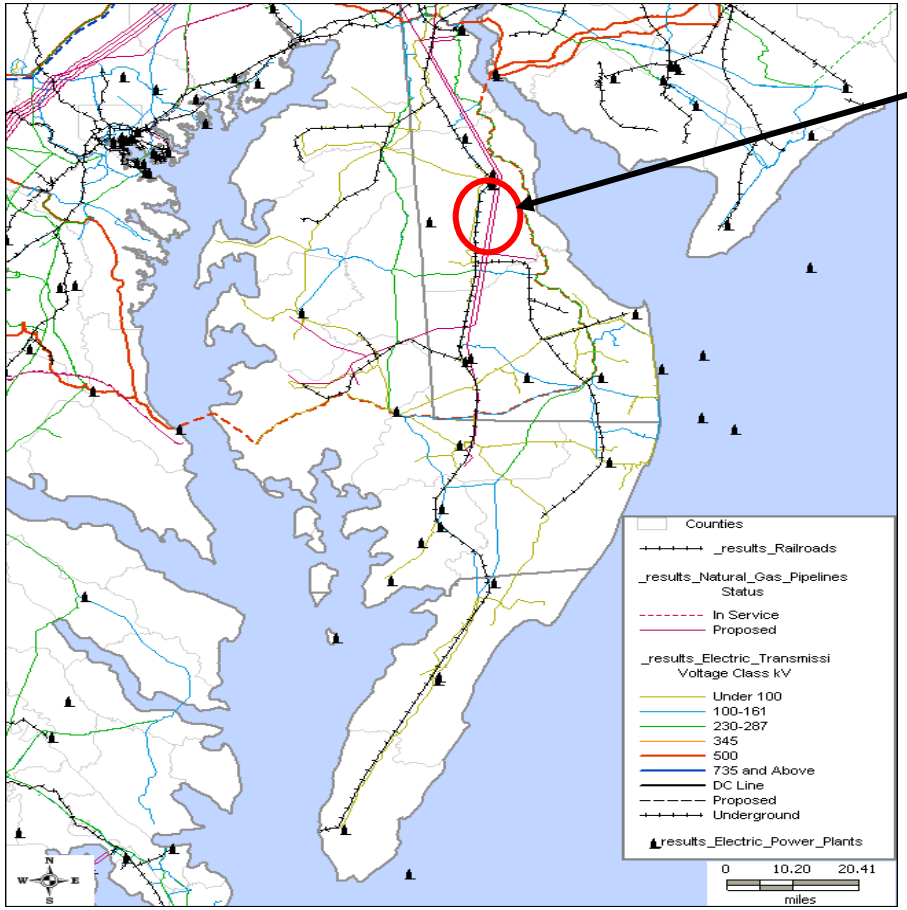
Preliminary Favorable Technology Portfolio Options

- **Offshore Wind Generation**
  - Environmentally friendly energy
  - Bluewater Wind has proposed a project 11 miles offshore Delaware
  - Through DEMEC, Dover has agreed to purchase approx. 8 MW of Bluewater capacity
  - Bluewater project is currently dependent on a large purchase contract from Delmarva
- **Gas-Turbine Combined Cycle (GTCC):**
  - Clean, efficient & competitive energy
  - Modest capital cost & 2 year development process
  - Limited space (~20 acres) and infrastructure requirements
  - Numerous sizing and phasing options
  - Relative ease of permitting

246MW CCGT 7001FA

Solicitation of proposals from generation developers is needed to better understand the options and commercial terms available to Dover.

Generation Siting Considerations



- **Locating generation in Dover area provides additional electric supply security for City load.**
  - Assurance of reliable electricity has been deemed important to the City and it's attraction to future industrial growth.
- **Siting at existing McKee Run or Van Sant sites have limitations:**
  - Residential neighborhoods have grown up around the plants
  - Transmission and distribution system limitations
  - Existing sites have limited space for new equipment

- **However, supply from regional non-Dover generation project locations (e.g. Bluewater offshore wind project) may offer options unique to those contemplated from within the Dover area.**

Dover Area Generation Siting Possibility

- Dover's Garrison Tract has been planned for industrial development and could be a suitable site for Dover-area generation development.
- Greenfield development at Dover's Garrison Tract has several advantages:
  - City controls ~300+ acre site.
  - Power plant would utilize a small fraction of the space, probably less than 40 acres.
  - Located in close proximity to electric transmission, natural gas, water, sewer and highway.
  - Limited disturbance to residential neighbors.
  - City has excess water capacity to sell to power plant.
  - Power plant has potential to provide anchor to facilitate the planned industrial park development at site by offering hot water, cooling and electricity supply reliability to tenants.

Dover 2030 Committee intends to explore power developers' interest in building at Garrison Tract via RFP.

Development Partner

Power project development requires expertise, capital, resources and risk.

The 2030 Committee has determined that a development partner has value:

Dover Brings:	Developer Brings:
• Land and Siting Support • Water • Access to Transmission, Natural Gas • Financeable Power Purchase contract • Potential capital (as option)	• Expertise • Resources • Development funds • Risk appetite necessary to scale project • Capital

Dover 2030 Committee is requesting approval to:

1. Manage a Solicitation Process to select a development partner(s).
2. Support partner's development efforts until prospective power project is defined and commercial terms for energy, capacity and equity participation are defined.
3. Dover will then compare this "Build" option(s) to Market "Buy" options, or combinations thereof, before any further commitments are made.

Next Steps

- Present RFP Process to Utility Committee at January 28 meeting.
  - No binding commitment on behalf of the City to proceed with any party or proposal.
  - Objective is to solicit creative ideas and commercial options from those in the power development business that may suit the City's long-term electricity needs and objectives.