Cogeneration Facility Improvements

Presentation of Additional Information

November 9, 2005
What is Cogeneration?

- Fuel → Boilers → Turbines → Electricity
- Water → Boilers
- Steam → Heating, Cooling, Cooking
- Steam → Sterilization, Hot Water, Dishwashing
Why Improvements are Necessary

1. Insufficient capacity to serve critical facilities with self-generated electricity

2. Reduce risk of major, long duration power outages

3. Obsolescence of current equipment
1. Insufficient capacity to serve critical facilities with self-generated electricity

Electrical Demand Growth

Year

Demand (MW)

1. Insufficient capacity to serve critical facilities with self-generated electricity

New critical campus facilities since 1991:

• NC Neurosciences Hospital
• NC Women’s Hospital
• NC Children’s Hospital
• NC Cancer Hospital (under construction)
• NC Memorial Pavilion (in design)
• Computing Facilities
• Major Research Facilities

Solution:
Increase Electrical Power Generation Capacity
1. Insufficient capacity to serve critical facilities with self-generated electricity

- Increase in electrical generation capacity will capture more of the steam to produce additional electricity

- No additional boilers are required; the steam capacity of the plant is not increased

The efficiency of the plant is increased because steam can be used to generate more electricity
2. Reduce risk of long duration power outages

- Currently unable to restart plant without electricity from Duke Power

Solution: Backup Generators
2. Reduce risk of long duration power outages

- Currently have a single feed to Manning sub-station, which supplies power to most critical load buildings

Solution:
Substation GIS Building
3. Obsolescence of current equipment

- Existing Cooling towers have reached the end of their useful lives
- Turbine Generator Upgrades require additional Cooling Towers

Solutions:
- Replace existing towers
- Relocate storage from cooling tower site
Additional Concerns: Noise

- The new cooling towers will **decrease** noise by 10-15 dB along the west property line

- All new equipment will meet the noise code

- University will continue its commitment to neighbors to minimize noise
**Additional Concerns: Light**

- No net change in light levels at any property line
- 15 additional exterior light fixtures
- 15 additional task lights, normally off
Additional Concerns: Emissions

- Emission rates are limited by the State
- The UNC-Chapel Hill Cogeneration facility emissions are well below permitted levels.
- None of the changes increase the plant’s coal-burning capacity
Additional Concerns: Emissions

UNC’s Cogeneration Facility is one of the nation’s cleanest coal-burning facilities; since this plant went online it has remained at the forefront of technology and continues to be nationally recognized.