Chesapeake Central Plant/Data Center Specifications

ITCC Data Center Overall Specifications:

- Certified Uptime Tier 3 Design with 100% Concurrent Maintainability
- F5 rated at 318 mph winds
- 81,714 SF= data center + central plant combined
- 52,925 SF= data center
- 12,000 SF= of raised data center floor
- N+1 Specifications with three (3) independent distribution paths sized to support 50% of the total facility electrically and mechanically
- Each path electrically/mechanically will supply 33% of the total facility
- Initial/current load 500 kW
- Ultimate IT Capacity 2,900 kW
- 320 server cabinets averaging 8 kW per

Central Plant Overall Specifications:

- Initial/current chiller load of 1,500 tons
- Ultimate design chiller capacity of 6,000 tons
- Independent chiller strings to include electrical, emergency, chiller, pumps and cooling towers
    - (2) 1,000 Ton York Centrifugal Chillers/Toshiba Variable Frequency Driven
    - (2) 2,000 Ton York Centrifugal Chillers/Toshiba Variable Frequency Driven
    - (6) 1,000 Ton Reymsa Fiberglass Cooling Towers/Variable Frequency Driven
    - Variable Primary water distribution with secondary pumps
- Two separate city water sources including an emergency water well (220 gpm)
- BMS (Building Management System) fully integrated with alarming and operational graphics

Central Plant CAT Generators:

- (1) CAT 3516 HD engine generators rated at 2000kW/480V
- (2) CAT 3516 HD engine generators rated at 2000kW/4160V
- 40,000 gallons of reserved diesel (filtered at 5 microns)
- 150 gallon day tanks (qty. 3)

Data Center Electrical Specifications:

- Initial/current load of 500 kW
- Ultimate IT Total Design Capacity 2,900 kW
- 320 server cabinets averaging 8 kW
- N+1 Specifications with three (3) independent distribution paths sized to support 50% of the total facility electrically
- Each path will supply 33% of the total facility
- Utility service 480V, 3 phase from 3 - 2500 kVA
- GE Power Monitoring Software

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Data Center PowerWare UPS:

- (12) 550 kVA/500 kW static dual conversion modules 4 per system
- 15 minutes of operation at design load 2900kW
- 2,324 gallons of electrolyte per battery room
- 14 RPP pairs in each computer room
- Each RPP has 2-400A inputs and 4-225amp
- 42-pole branch circuit panels
- Batteries are 2.2volts per cells and 8.8 volts per jar
- Hydrogen detectors in each battery room (typ. 3 rooms total) with alarming capability
- Battery room temperature 77 degrees

Data Center CAT Generators:

- 3 continuous duty CAT C175-16 engine generators rated at 2600kW
- 40,000 gallons of reserved diesel (filtered at 5 microns)
- 200 gallon day tanks (qty. 3)
- 84L V16 4,486hp motors

Data Center On Site Load Bank Testing:

- Avtron K875A 3,000kW operating at 480 volts
- Vertical airflow
- Interior mounted remote control panel

Data Center COOLING Specifications:

- Initial/current cooling load of 230 tons
- Ultimate design cooling load of 1,100 tons
- Computer room temperature 75 degrees
- Two 20,000 gallon backup chilled water storage tanks
- Storage tanks provide 15 minutes of cooling at full load (1,100 tons)
- Tanks are NOT redundant of each other
- 4 hours and 30 minutes to recharge tanks at full load
- 44 degrees from Central Plant and return at 58 degrees
- Three 550 ton heat exchangers providing 50 degree water to CRAC units
- Chilled water pumps on UPS power
- CRAC fan motors on UPS power with redundant utility feeds
- (18) 50 ton Liebert CRAC units
- Battery temperature 77 degrees
- Ultrasonic in-duct humidifiers
- 110,000 gallons in the chilled water loop (including main campus loop)

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Data Center Fire Protection System:

- Double interlocked pre-action sprinkler system

Data Center PUE Design: 1.4

Power usage effectiveness (PUE) is a measure of how efficiently a computer data center uses energy; specifically, how much energy is used by the computing equipment (in contrast to cooling and other overhead).

PUE is the ratio of total amount of energy used by a computer data center facility to the energy delivered to computing equipment.

PUE was developed by a consortium called The Green Grid. PUE is the inverse of data center infrastructure efficiency (DCIE). An ideal PUE is 1.0. Anything that isn't considered a computing device in a data center (i.e. lighting, cooling, etc.) falls into the category of facility energy consumption.

PUE= Total facility energy divided by IT equipment energy.