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East Carolina University Comprehensive Master Plan

Future Utilities Summary

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ECU UTILITY PLANNING – FUTURE UTILITY SUMMARY

Main Campus & Athletic Facilities

CHILLED WATER

Continued development of a centralized chilled water system is a key goal for ECU. Benefits of central cooling include energy savings, reliability, aesthetics, and noise reduction. Future growth on main campus will require an additional 9,250 tons of cooling capacity and distribution infrastructure to support both new buildings and existing buildings planned for connection to the chilled water loop. Two new regional plants, one located in the parking deck of the Academic A building, the other located south of Belk Residence Hall will be required to provide space for the additional chillers. Additionally, existing CCP-1 will require a full build out bringing the total cooling requirements of main campus to 13,750 tons.

Based on their remote proximity, the buildings earmarked for the Millennial Campus and HHP site would not be connected to the central chilled water system. Those facilities will be supported with unitary cooling equipment or small regional chilled water distribution systems.

STEAM

ECU operates an established central steam plant and distribution network. Future growth on main campus will require an additional 51,000 PPH of steam generation capacity. The current steam firm generating capacity exceeds the future demand and will not require additional boiler expansion. However, steam distribution system upgrades are required and include replacement of aged piping along with steam and condensate feeds to each new building.

Based on their remote proximity, the buildings earmarked for the Millennial Campus and HHP site would not be connected to the central steam system. These facilities will be supported by unitary equipment.

NATURAL GAS

Future growth has very little impact on the natural gas system on main campus. The majority of the natural gas consumed is for the boiler plant. The new lab building will require a feed from the main.

DOMESTIC WATER

The domestic water system will not require any significant improvements to support the future growth on campus. The network of piping through campus is extensive enough to provide ample water for both domestic use and fire protection. Each building will require two separate feeds from the nearest main. The minimum water pressure provided by GUC will require the use of a dedicated fire pump in each new building to meet code requirements.

ELECTRICAL

Utilizing the Main Campus power distribution system to provide electrical power to university buildings is desirable from an energy cost standpoint. Therefore the goal is to utilize the campus distribution where practical. Where the distance to proposed smaller buildings is excessive or when the building is labeled as private, it is likely they will have direct utility service. For the purposes of this report those facilities are included in the new loads associated with Immediate and Future as a worst case scenario.

The additional buildings identified as Immediate Need would add approximately 15MVA to the main campus electrical demand. Additions identified as Future would increase the demand another 4MVA, for a total add to the Main Campus system of 19MVA. The two Greenville Utilities Commission (GUCO) Point of Delivery (POD) locations for main campus, Ficklen Dr. (Circuits 1 & 2) and 9th St. (circuits 3 & 4) have rated capacities of 10MVA per circuit. The existing loading, reported by GUCO as of 6/22/11, for these circuits is 28%, 18%, 15% and 24% respectively. Therefore there is sufficient capacity to add both Immediate and Future buildings to the Utility Service. The campus 15kV loop circuits would require extension and redistribution of loads to accommodate the growth.

TELECOM/DATA

For new facilities located relatively close to the existing campus fiber loops, extending this service to the building would be recommended. Where it is not practical, new utility connections would be established. Based on the distance and expected usage the decision to extend existing fiber would be made on a case by case basis.

STORM WATER

ECU is actively initiating a campus wide strategy to reduce storm water run-off and improve storm water quality management. Proposed buildings in the central portion of Main Campus, Warehouse District, and the new residence buildings will have minimal storm water quantity impact based on the impervious composition of the proposed site location. However it is recommended that new Best Management Practices be implemented. New drainage lines as well as some utility relocation will be required for new building sites. Foundation Building and the proposed buildings southwest of the athletic fields will require additional storm water improvements to prevent increasing the storm water runoff quantity in this area.

SANITARY SEWER

Proposed buildings in the central Main Campus vicinity and residence area are located in close proximity to the existing GUC sanitary sewer main. Existing sanitary sewer lines in the proposed areas may have

to be relocated for new building connections. All buildings can be connected to the surrounding nearby GUC system.

Health Sciences Campus

CHILLED WATER

Health science campus buildings are cooled with a central chilled water plant. Future building growth will require an additional 2,350 tons of cooling capacity to the plant. Along with replacement and upsizing of several existing chillers, a 3,000SF chiller plant expansion to the west will be required. Distribution to the new buildings will be fed rationally from the utility tunnel. Based on its remote proximity, the proposed Cancer Center would not be connected to the central chilled water system.

STEAM

Health science campus buildings are heated with a central steam plant. Future growth on health science campus will require an additional 35,000 PPH of steam capacity. The existing plant has adequate physical space to accommodate the new boiler and auxiliary equipment pending removal of hazardous waste storage space and equipment. Distribution to the new buildings will be fed rationally from the utility tunnel.

NATURAL GAS

Future growth has very little impact on the natural gas system on the health science campus. The majority of the natural gas consumed is for the boiler plant. None of the proposed new buildings require a new natural gas feed.

DOMESTIC WATER

The domestic water system will not require any significant improvements to support the future growth. The central plant's domestic water booster system is sufficiently sized to provide water to each new building. The central plant also operates a dedicated fire pump to provide fire water to each new building. Individual fire pumps will not be required in the new buildings. Domestic water to each new building will be fed from the utility tunnel.

ELECTRICAL

The capacity of the existing GUCO service to the Medical campus will not support any sizable new loads. To accommodate the Immediate and or Future electrical demand additional service capacity will need to be provided, either by increasing the existing circuits or by the addition of new. The Cancer Center and

the Future Clinical buildings would likely receive independent utility services due to their remote location from the existing campus.

TELECOM/DATA

With the exception of the Cancer Center and two Clinical Buildings, the campus fiber could be extended to the proposed Immediate and or Future buildings.

STORM WATER

ECU is actively initiating a campus wide strategy to reduce storm water run-off and improve storm water quality management. Expansion on the Health Science Campus will require additional storm water measures to account for additional runoff that will be produced by the new impervious area. Construction projects that are currently in progress may affect this estimate detention number.

SANITARY SEWER

The existing primary sanitary sewer main for this campus is over the recommended capacity. As such any new buildings will have to be either routed to the sanitary sewer main west of the campus or to a new sanitary sewer main that could run parallel to the existing main.