10.0 UTILITIES ELEMENT

10.1 Introduction

Florida Gulf Coast University will upgrade existing on-campus systems for chilled water, electrical power and telecommunications to reflect the updated Campus Master Plan. The plan for the University does not include provision of steam. Consequently the steam utility is not included in the following goals, policies, and objectives. In addition, the plan provides that the campus needs for chilled water will be met on-campus. Therefore, the plan does not require coordination with off-campus service providers for this utility.

10.2 Goals, Objectives and Policies

STEAM AND CHILLED WATER SUB-ELEMENT

GOAL 1001
Develop an energy-efficient, environmentally safe central chilled-water production system, sufficient to accommodate long-range growth and development of the chilled-water production system while utilizing energy efficient production options (i.e., ice storage) (See Figure 10-1 Future Chilled Water Distribution).

Objective 1001.1
Develop the existing chiller plant and future central plant to meet present capacity requirements with expandability to accommodate long-range growth and development.

Policy 1001.1.1
Organize primary piping arrangement and space allocation within the central energy plant to allow for future expansion without interrupting service.

Policy 1001.1.2
Develop two (2) economic chiller sizes, one to meet low load conditions during initial phases of construction and one to share large loads during later phases. Size larger chillers with reliability constraint to meet critical cooling loads with one chiller out of service to existing facilities.

Policy 1001.1.3
Develop a cooling tower arrangement with cells matched for chiller module sizes to provide reliability to meet critical cooling loads with one cooling tower cell out of service.

Policy 1001.1.4
Develop a chilled and condenser water pumping arrangement with redundant pump available for back-up of each size pump.

Policy 1001.1.5
Design chillers that utilize the most environmentally safe refrigerants available.

Policy 1001.1.6
Design energy plant equipment with high efficiency ratings to minimize electrical consumption and qualify for available Florida Power and Light rebates.

Policy 1001.1.7
Design to consider use of thermal energy storage technology to minimize electricity costs by utilizing lower off-peak rates and qualify for available Florida Power and Light rebates.

Policy 1001.1.8
<u>The Facilities Planning Department shall review all proposed construction and development on campus to ensure that any proposed increase in chilled water shall be implemented only upon a finding that existing facility capacity is already on-line to accommodate the increased need, or that additional capacity will be funded and on-line at the time of need.</u>

~~Establish an internal project development process that reviews short range central energy plant development in the context of long-range infrastructure requirements.~~

Objective 1001.2 - Increased Facility Capacity To Meet Future Needs
Ensure that future chilled water facility service capacity and capital improvements required to correct existing deficiencies and to meet future university needs are provided when required.

~~**GOAL 1002**~~
~~Develop a central chilled-water distribution system sufficient to accommodate long-range growth and development.~~

~~**Objective 1002.1 Development of Chilled Water Distribution System**~~
~~Provide a primary chilled-water distribution system within the central energy plant, a secondary distribution system throughout the campus, and tertiary distribution within each facility.~~

Policy 1001.2.1 ~~1002.1.1~~
Size primary and secondary distribution systems to allow for future expansion without interruption of service to existing facilities.

Policy 1001.2.2 ~~1002.1.2~~
Size tertiary distribution systems to allow for future expansion of each facility without interruption of service to the existing facility.

Policy 1001.2.3 ~~1002.1.3~~
Establish easements for the installation of an underground secondary distribution system coordinated with other utilities.

Policy 1001.2.4 ~~1002.1.4~~
Design routing of the underground secondary distribution system to utilize common utility trenches.

Policy 1001.2.5 ~~1002.1.5~~
Establish an internal project development process that reviews short range primary, secondary, and tertiary distribution systems in the context of long-range infrastructure requirements.

Policy 1001.2.6 ~~1002.1.6~~
Where possible, secondary chilled water piping shall be looped for distribution efficiency and reliability.

Policy 1001.2.7
Annually review future construction programs and priorities identified for deficiency remediation as part of the capital improvements requirements and procedures to ensure that chilled water improvements required to meet future University needs are in place and operational, at the adopted levels of service, prior to occupancy of any new University building.

~~**Objective 1002.2 Priorities and Phasing**~~
~~Develop the University's on-campus chilled-water distribution system in a priority/phasing sequence that will meet the needs of the incremental construction of the University.~~

Policy 1001.2.8 ~~1002.2.1~~
Develop the University's chilled-water distribution system as part of the priority/phasing sequence shown in the Capital Improvements Element (See Capital Improvements Element). Modifications to this sequence should be documented in the University's annual C.I.P. submission and included in Master Plan amendments as required by Sec. 1013.30, F.S.

ELECTRICAL POWER AND OTHER FUELS SUB-ELEMENT

GOAL 1002 ~~1003~~
Provide electrical power source to meet the demand for lighting, heating, and air conditioning, and equipment power to adequately service the buildings and structures utilizing solar power or other energy sources where feasible (See Figure 10-2 Future Electrical Power Distribution).

Objective 1002.1 ~~1003.1~~ Provision of Electrical Power
Coordinate with Florida Power and Light (FPL) to ensure expansion of the power grid to provide service to the campus and maintain a highly dependable source of power.

Policy 1002.1.1 ~~1003.1.1~~
Coordinate final design of on-site power distribution with FPL to ensure that they can meet projected service demand consistent with the University's projected population and growth.

Policy 1002.1.2 ~~1003.1.2~~
Establish easements for installation of FPL underground cables coordinated with other utilities.

Policy 1002.1.3 ~~1003.1.3~~
Coordinate construction phasing with FPL to provide uninterrupted power consistent with the University's plans for growth and development.

Policy 1002.1.4 ~~1003.1.4~~
Provide second independent power feeders to switch cabinets located throughout the University's campus prior to the campus demand exceeding the available capacity of the current FPL feeder.

Policy 1002.1.5 ~~1003.1.5~~
Develop the power distribution in continuous loops to achieve higher degree of reliability.

Policy 1002.1.6 ~~1003.1.6~~
Establish an internal project development process that reviews short-range development in the context of long-range development to assure future expansions will qualify for more favorable large demand power rates.

Policy 1002.1.7 ~~1003.1.7~~
Coordinate final design with FPL to ensure that primary metering can be incorporated in future phases, when the demand becomes sufficient to qualify for larger user rates.

Policy 1002.1.8 ~~1003.1.8~~
Coordinate with FPL to provide throw-over capability and dual feeders as projects expand toward build out.

Policy 1002.1.9
The Facilities Planning Department shall review all proposed construction and development on campus to ensure that any proposed increase in electrical power shall be implemented only upon a finding that existing facility capacity is already on-line to accommodate the increased need, or that additional capacity will be funded and on-line at the time of need.

Objective 1002.2 - Increased Facility Capacity To Meet Future Needs
Ensure that future electrical power service capacity and capital improvements required to correct existing deficiencies and to meet future university needs are provided when required.

~~**GOAL 1004**~~
~~Provide an electrical distribution system sufficient to accommodate long-range growth and development.~~

~~**Objective 1004.1 Electrical Distribution System**~~
~~Provide a high-voltage primary service from Florida Power and Light to all buildings on campus, with a secondary distribution feeder from an FPL transformer, sized to accommodate long-range growth.~~

Policy 1002.2.1 ~~1004.1.1~~
Size primary and secondary distribution system to meet long-range projected levels of demand.

Policy 1002.2.2 ~~1004.1.2~~
Provide primary conduit arrangement, secondary feeders, and space allocation within the central energy plant to allow for future expansion without interruption of service. Coordinate with FPL for future provision of dual service to the chiller plant, to accommodate continued expansion.

Policy 1002.2.3 ~~1004.1.3~~
Establish a policy to use the most economical, pad-mounted transformers of same size and characteristics for ease of maintenance and replacement. Coordinate this policy with FPL-provided transformers.

Policy 1002.2.4 ~~1004.1.4~~
Protect transformers from weather and vandalism.

Policy 1002.2.5 ~~1004.1.5~~
Use loop feed switch cabinets, on continuous loops, with radial feeds to transformers, sized to accommodate future growth and development.

Policy 1002.2.6 ~~1004.1.6~~
Expand utility distribution along roadways and service roads for ease of repair and maintenance.

Policy 1002.2.7 ~~1004.1.7~~
Establish a policy to provide spare conduits for electrical distribution from switch gear and manholes to buildings and structures.

Policy 1002.2.8 ~~1004.1.8~~
Reduce energy consumption by complying with State standards for construction of new facilities that are energy efficient.

Policy 1002.2.9 ~~1004.1.9~~
Undertake a review at 3 year intervals of on-campus energy utilization. Based on this review, identify potential ways to reduce energy consumption.

Policy 1002.2.10 ~~1004.1.10~~
Incorporate energy reduction recommendations from Policy 1002.2.9 ~~1004.1.9~~ in the 5-year Master Plan updates.

Policy 1002.2.11
Annually review future construction programs and priorities identified for deficiency remediation as part of the capital improvements requirements and procedures to ensure that electrical power improvements required to meet future University needs are in place and operational, at the adopted levels of service, prior to occupancy of any new University building.

~~**Objective 1004.2 – Priorities and Phasing of Electrical Service and Distribution Facilities**~~
~~Develop the electrical power service and distribution systems of the University in a priority/phasing sequence that meets the needs of the incremental construction of the campus.~~

Policy 1002.2.12 ~~1004.2.1~~
Construct the electrical power service and distribution facilities of the campus as part of the priority/phasing sequence shown in the Capital Improvements Element for the secondary metering arrangement. Modifications to this sequence shall be documented in the University's annual C.I.P. submission and incorporated as Master Plan amendments as required by Sec. 1013.30, F.S.

TELECOMMUNICATIONS SYSTEMS SUB-ELEMENT

GOAL 1003 ~~1005~~
Provide modern telecommunications to meet the demand for telephone, data, voice, and video to service the buildings and structures (See Figure 10-3 Future Telecommunications Distribution).

Objective 1003.1 ~~1005.1~~ – Telecommunications Service
Convert the existing telephone system from the Sprint switch to a voice-over-data telephone system.

Policy 1003.1.1 ~~1005.1.1~~
Expand the existing data system's capacity to accommodate the conversion from an analog phone system to a digital phone system.

Policy 1003.1.2 ~~1005.1.2~~
Convert all existing phones to a voice-over data phone system.

Policy 1003.1.3 ~~1005.1.3~~
De-commission and remove the existing Sprint switch.

Policy 1003.1.4 ~~1005.1.4~~
Remove the decommissioned telephone copper-pair distribution from existing ductbanks when additional ductbank capacity is required for other communications wiring needs.

Policy 1003.1.5 ~~1005.1.5~~
Develop the distribution in continuous loops to achieve higher degree of reliability. Expand the existing NOC in Building 1 to accommodate the projected growth.

Policy 1003.1.6 ~~1005.1.6~~
Establish an internal project development process that reviews short-range development in the context of long-range development to assure future expansions will migrate toward newer emerging technologies.

Policy 1003.1.7 ~~1005.1.7~~
Establish remote/ redundant network operating centers in the northeast quadrant, southeast quadrant, and northwest quadrant to accommodate projected growth.

Policy 1003.1.8
The Facilities Planning Department shall review all proposed construction and development on campus to ensure that any proposed increase in telecommunications service shall be implemented only upon a finding that existing facility capacity is already on-line to accommodate the increased need, or that additional capacity will be funded and on-line at the time of need.

Objective 1003.2 - Increased Facility Capacity To Meet Future Needs
Ensure that future telecommunications service capacity and capital improvements required to correct existing deficiencies and to meet future university needs are provided when required.

~~**GOAL 1006**~~
~~Develop a telecommunications distribution system sufficient to accommodate long range growth and development.~~
~~**Objective 1006.1 Telecommunications Distribution System**~~
~~Develop a telecommunications distribution network to accommodate high speed voice and data transfer on and off campus.~~

Policy 1003.2.1 ~~**1006.1.1**~~
Provide a system of high-speed fiber optic backbone with synchronous optical transmission for high speed and low error rate.

Policy 1003.2.2 ~~**1006.1.2**~~
Develop a structured cabled network for intra-building and inter-building connectivity consistent with the University's projected population and growth.

Policy 1003.2.3 ~~**1006.1.3**~~
Establish an internal project development process that reviews short-range development in the context of long-range development to assure future compatibility with new emerging technologies for distribution networks.

Policy 1003.2.4 ~~**1006.1.4**~~
Provide a central head end capable of transmitting multimedia to remote locations to facilitate distant learning.

Policy 1003.2.5 1006.1.5
Provide a distribution network that operates at high data transmission rates and simultaneously interfaces dissimilar topologies.

Policy 1003.2.6 ~~**1006.1.6**~~
Develop a campus-wide data highway that provides connectivity to building automation systems.

~~**Objective 1006.2 Priorities and Phasing of Telecommunication Facilities**~~
~~Develop on-campus telecommunications facilities in a priority/phasing sequence to meet the needs of the incremental construction of the University.~~

Policy 1003.2.7 ~~**1006.2.1**~~
Construct the telecommunications service and distribution facilities of the campus as part of the priority/phasing sequence shown in the Capital Improvements Element. Modifications to this sequence shall be documented in the University's annual C.I.P. submission and incorporated as Master Plan amendments as required by Sec. 1013.30, F.S.

Policy 1003.2.8
Annually review future construction programs and priorities identified for deficiency remediation as part of the capital improvements requirements and procedures to ensure that telecommunications improvements required to meet future University needs are in place and operational, at the adopted levels of service, prior to occupancy of any new University building.