10.0 Utilities Element

The purpose of this element is to ensure adequate provision of utility services required to meet the future needs of the University, including the following:

1. Provision of adequate steam and chilled water supply to meet future University needs.
2. Provision of adequate electric power supply and other fuels to meet future University needs.
3. Provision of adequate telecommunications to meet future University needs.

STEAM: Steam production equipment includes four (4) natural gas boilers with a total steam capacity of one hundred, seventy-five thousand, two hundred (175,200) pounds/hour and current available capacity of one hundred, fifteen thousand, two hundred (115,200) pounds/hour (as boiler #4, installed in 1963 is not operable). The existing steam system was originally constructed in the early 1940’s and replaced in 1980’s, and is currently in need of major renovations. The existing steam distribution system was substantially rebuilt in 1981 and is generally in fair to poor operating condition. Florida Agricultural and Mechanical University (FAMU) currently has no plans to expand the steam central plant facilities; however, FAMU is considering implementation of Performance Energy Contract which may include Partial Decentralization of the Central Steam Plant. Future Sustainable heating improvement projects will include installation of new boilers and support systems, replacement of distribution piping systems and automation controls and monitoring systems.

CHILLED WATER: The Central Chilled Water Plant is located adjacent to the Heating Plant on Wahnish Way. This plant was constructed in 1995 and has gone through several expansions. The current capacity of the plant is 6,600 tons of refrigeration. This refrigeration capacity is used to create chilled water for distribution throughout the piping network. Condenser water supply and return wells are used to cool the water chillers and are located behind the plant and along Wahnish Way to the south. Condenser water wells are used for heat rejection rather than cooling towers because they are more efficient and ground water supply by the wells is normally in the 70 - 72 degrees range year round. Future Sustainable chiller plant projects will include the addition of a fourth (4th) Supply well (to provide back-up capacity for the plant), new variable speed drives for the condenser wells and secondary chilled water pumps and enhanced energy monitoring and controls. As load on the plant increases, it will be necessary to add a new chiller by expanding the existing plant.

ELECTRICAL POWER AND OTHER FUELS: The primary energy sources utilized at FAMU are natural gas, electricity, fuel oil and propane gas. Electrical power is provided by the City of Tallahassee and is currently fed to FAMU through two (2) electrical substations. One (1) electrical substation is located in the northern portion of campus and the other electrical substation is located in the southern portion of campus. Most of the electrical power distribution on campus is underground and is the responsibility of FAMU to operate and maintain. Future electrical power improvement projects will be limited to distribution extensions as necessary to meet future growth and repair/replacement activities.

NATURAL GAS: Natural gas purchased from the City of Tallahassee is the primary fuel used in the operation of the steam boilers, however, the boilers have duel fuel burners and may be fired using fuel oil. Fuel oil is stored in two above ground storage tanks located behind the Heating Plant. FAMU is responsible for only the natural gas piping within the buildings. Therefore, FAMU will not be responsible for future natural gas system improvements or associated construction costs.

TELECOMMUNICATIONS: Telecommunications, including the local cable provider and the University computer network system are currently available, on a limited basis, on campus. The TV cablevision system is operated and maintained by the local cable provider, which is a private telecommunication utility company. This service is primarily located in the campus housing units and the Student Union. The University also maintains its closed circuit TV system. The system's head end is located in the Instructional Media Center in Coleman Library with possible access to all academic and administrative buildings. The computer network system is still in its infancy of development. At present, it consists of underground copper wire cable systems and a telephone/modem interface system.
computer network system is maintained by FAMU. Computer network improvement projects include the installation of a campus wide telecommunication duct bank system using fiber optics for an interface system for data initially with voice and TV switching.
HEATING SUB-ELEMENT

GOAL 1: Florida Agricultural and Mechanical University (FAMU) shall continue to provide adequate Heating supplies to meet existing and future buildings needs at the University.

Objective 1.1: FAMU shall provide the heating system to meet and maintain its adopted level-of-service standards.

Policy 1.1.1
FAMU shall establish and adopt a level-of-service standard for heating supply, which provides and maintains heating capacity to meet the building heating demand at FAMU.

Policy 1.1.2
FAMU shall continue to maintain a "Heating Systems Analysis." The scope of the "Heating Systems Analysis" shall include, at a minimum, the following efforts:

- Evaluation of the existing heating distribution systems, including such items as boilers, pumps, piping distribution system, controls against the University's adopted level-of-service standards.
- Identification of specific deficiencies in the existing heating system.
- Identification of corrective measures and determination of associated costs for implementing these measures.
- Establishment of priorities for implementing corrective actions.

Policy 1.1.3
FAMU shall, if needed, amend this Master Plan Update to incorporate, at a minimum, the priorities, timing and phasing of required improvements recommended by the analysis. Policy shall include industry standard Sustainability and Technology practices.

Objective 1.2: FAMU shall provide adequate on-campus heating services in support of projected facilities growth.

Policy 1.2.1
As part of the "Heating Systems Analysis", FAMU shall perform an analysis of projected heating demand requirements against the University's adopted level-of-service standards. The scope of the part of the "Heating Systems Analysis" addressing future needs shall include, at a minimum, the following efforts:

- Evaluation of long-range needs through the planning period.
- Identification of anticipated systems deficiencies.
- Identification of projects required to redress identified deficiencies and determination of associated costs.
- Establishment of priorities for heating projects to be implemented prior to initiation of new construction projects.
- Inclusion of Sustainability and Technology practices consistent with the University objectives.

Policy 1.2.2
Following implementation of any system improvement or expansion project, FAMU shall reprioritize the remaining projects in its 14.0 Capital Improvement Element and shall subsequently amend this Master Plan Update to reflect same.
Policy 1.2.3
It is not anticipated that at any time during this planning period that FAMU will require off-campus heating services.

Policy 1.2.4
FAMU shall provide heating services to all new or expanded facilities prior to occupancy of the building.

Policy 1.2.5
FAMU shall, at a minimum, adhere to the following energy consumption reduction initiatives:

1. Adhere to the Architectural Design Guidelines included as Appendix B and adopted as part of this plan, for all new, expanded or renovated facilities.
2. Require that all plans, designs and construction specifications for new or expanded facilities meet Florida Energy Code requirements.
3. Adopt and adhere to the Solid Waste Sub-Element of the 9.0 General Infrastructure Element.
4. Adopt and adhere to the 13.0 Conservation Element of this plan.
5. Adhere to the level-of-service standards for heating and chilled water adopted as part of this plan, immediately preceding.

CHILLED WATER SUB-ELEMENT

GOAL 2: Florida Agricultural and Mechanical University (FAMU) shall provide adequate supplies of chilled water to meet existing and future buildings needs at the University.

Objective 2.1: FAMU shall provide the chilled water system to meet and maintain its adopted level-of-service standards.

Policy 2.1.1
By the end of the planning period, FAMU shall endeavor to complete a “Chilled Water System Analysis” to determine the capacity and deficiencies in the existing chilled water system.

Policy 2.1.2
FAMU shall establish and adopt a level-of-service standard for chilled water supply to provide and maintain a maximum of forty-five (45) degrees chilled water supply temperature to meet the building cooling demand at FAMU.

Policy 2.1.3
FAMU shall, if needed, amend this Master Plan Update to incorporate, at a minimum, the priorities, timing and phasing of required improvements recommended by the analysis. Policy shall include industry standard Sustainability and Technology practices.

Policy 2.1.4
In accordance with projected chiller plant loads, FAMU shall expand the central plant and install a fifth chiller to provide sufficient reliable capacity for current and projected loads.
Objective 2.2: FAMU shall provide adequate on-campus chilled water services in support of projected facilities growth.

Policy 2.2.1
FAMU shall continue improvements to the centralized chilled water plant and subsequent distribution system to assist in maintaining adopted level-of-service standards.

Policy 2.2.2
Following implementation of any system improvement or expansion project, FAMU shall reprioritize the remaining projects in its 14.0 Capital Improvement Element and shall subsequently amend this Master Plan Update to reflect same.

Policy 2.2.3
It is not anticipated that at any time during this planning period that FAMU will require off-campus chilled water services.

Policy 2.2.4
FAMU shall provide chilled water services to new or expanded facilities in conjunction with the chilled water system improvements called for by this plan prior to occupancy of said building(s). The Director of Facilities Planning and Construction shall be responsible for making such determinations.

Policy 2.2.5
FAMU shall, at a minimum, adhere to the following energy consumption reduction initiatives:
1. Adhere to the Architectural Design Guidelines included as Appendix B and adopted as part of this plan, for all new, expanded or renovated facilities.
2. Require that all plan, design and construction specifications for new or expanded facilities meet Florida Energy Code requirements.
3. Adopt and adhere to the Solid Waste Sub-Element of the 9.0 General Infrastructure Element.
4. Adopt and adhere to the 13.0 Conservation Element of this plan.
5. Adhere to the level-of-service standards for chilled water adopted as part of this plan, immediately preceding.
6. Inclusion of Sustainability and Technology practices consistent with the University objectives.

ELECTRICAL POWER AND OTHER FUELS SUB-ELEMENT

GOAL 3: Florida Agricultural and Mechanical University (FAMU) shall ensure adequate provision of energy supply to meet existing and future University needs.

Objective 3.1: FAMU shall provide electrical power distribution and other fuel systems at the University to meet its adopted level-of-service standard.

Policy 3.1.1
FAMU shall establish and adopt a combined level-of-service standard for energy usage demand (electrical and other fuels) for the entire campus of 1.75 therms per square foot.

Policy 3.1.2
FAMU shall continue to maintain an "Energy Supply Systems Analysis." The scope of the "Energy Supply Systems Analysis" shall include, at a minimum, the following efforts:
- Evaluation of the existing energy distribution system against the University's adopted level-of-service standards.
• Identification of specific deficiencies in the existing system.
• Identification of corrective measures and determination of associated costs for implementing these measures.
• Establishment of priorities for implementing corrective actions.
• Inclusion of Sustainability and Technology practices consistent with the University objectives.

**Policy 3.1.3**
FAMU shall, if needed, amend this Master Plan Update to incorporate, at a minimum, the priorities, timing and phasing of required improvements recommended by the analysis. Policy shall include industry standard Sustainability and Technology practices.

**Policy 3.1.4**
FAMU shall continue to upgrade to correct deficiencies and improve the energy distribution system in accordance with the recommendations of the "Energy Supply Systems Analysis."

**Policy 3.1.5**
FAMU shall continue to coordinate with the City of Tallahassee to provide additional power to new campus buildings, if and where required. The provisions for outlining this coordination shall be established by the Development Agreement between FAMU and the City of Tallahassee.

**Policy 3.1.6**
FAMU shall require that all new on-campus buildings are provided electric power supply prior to occupancy of the facility.

**Objective 3.2:** FAMU shall maintain its level-of-service standard as it expands and upgrades the energy supply and distribution system in support of projected facilities growth.

**Policy 3.2.1**
As part of the "Energy Supply Systems Analysis", FAMU shall analyze projected energy demand against the University's adopted level-of-service standard. At a minimum, the scope of the effort addressing future needs shall include the following:
• Forecast of energy demand through the planning period.
• Identification of anticipated system deficiencies.
• Identification of projects required to redress these deficiencies and determination of associated costs.
• Establishment of priorities for future energy distribution projects prior to the initiation of new construction projects.

**Policy 3.2.2**
FAMU shall provide energy supply capacity for new or expanded facilities as required to maintain the University's adopted level-of-service standards. This capacity is to be constructed prior to occupation of any new or expanded facility.

**Policy 3.2.3**
Following implementation of any system improvement or expansion project, FAMU shall reprioritize the remaining projects in its 14.0 Capital Improvement Element and shall subsequently amend this Master Plan Update to reflect same.
Objective 3.3: FAMU shall establish practices to protect and conserve energy sources.

Policy 3.3.1
As part of the Design Review Committee review procedures (15.0 Architectural Design Guidelines Element), FAMU shall require that all plans, designs and construction specifications for University facilities meet Florida Energy Code requirements.

Policy 3.3.2
FAMU shall encourage energy conservation habits by students and employees through distribution of informational literature on conservation practices.

Policy 3.3.3
FAMU shall comply with protection and conservation practices established in the 13.0 Conservation Element of this Master Plan Update.

TELECOMMUNICATIONS SYSTEMS SUB-ELEMENT

GOAL 4: Florida Agricultural and Mechanical University (FAMU) shall ensure adequate provision of telecommunications services to meet existing and future University needs.

Objective 4.1: FAMU shall provide a technologically sound telecommunication systems at the University to significantly improve upon its present level-of-service standard through the planning period

Policy 4.1.1
FAMU shall continue to maintain a "Telecommunications Computer Network Systems Analysis." The scope of the "Telecommunications Computer Network Systems Analysis" shall include, at a minimum, the following efforts:

- Evaluation of the existing telecommunications distribution system.
- Identification of specific deficiencies in the existing system.
- Identification of corrective measures and determination of associated costs for implementing these measures.
- Establishment of priorities for implementing corrective actions.

Policy 4.1.2
FAMU shall, if needed, amend this Master Plan Update to incorporate, at a minimum, the priorities, timing and phasing of required improvements recommended by this analysis.

Policy 4.1.3
FAMU shall upgrade to correct deficiencies and improve the telecommunications system in accordance with the recommendations of the "Telecommunications Computer Network Systems Analysis" during the planning period.

Objective 4.2: FAMU shall expand and upgrade the telecommunications system in support of projected facilities growth.

Policy 4.2.1
As part of the "Telecommunications Computer Network Systems Analysis", FAMU shall perform an analysis of projected telecommunications needs. The scope of the portion of the "Telecommunication Computer Network System Analysis" addressing future needs shall include, at a minimum, the following efforts:

- Evaluation of long-range needs through the planning period.
- Forecasts of system deficiencies.
- Identification of projects required to redress these shortfalls and determination of associated costs.
- Establishment of priorities for future telecommunications system projects prior to the initiation of any new construction projects.

**Policy 4.2.2**
FAMU shall coordinate with the telecommunications network vendors and the local cable provider for the construction of additional on-site and off-site telecommunications facilities to meet the future telecommunications needs of the University when required by the University.