

ELEMENT 10

UTILITIES ELEMENT

INCLUDING SUB-ELEMENTS:

Chilled Water and Reheat Water

Electrical Power and Other Fuels

Telecommunications Systems

UTILITIES ELEMENT

CHILLED WATER SUB-ELEMENT

Goal 1

To provide heating water and chilled water to satisfy the building demands to support the mission of the University.

Objective 1A

Maintain existing levels of heating and chilled water service within existing campus buildings and ensure that new buildings meet levels of service (temperatures, humidity, ventilation, etc.) required by the Board of Governors Regents and appropriate codes and standards as well as undertake periodic readings to verify adequate levels of heating and chilled water service.

Policy 1A-1

For each new building project review the program documents for reference to the ~~State University System~~ FAU Professional Services Guide, Cost Containment Guidelines and the FAU Supplements those guidelines. ~~to CCG for the State University System of Florida.~~ These documents set minimum levels of service for building HVAC system design parameters. These requirements should be reviewed with the Design Professional at the start of each design project and, following the review procedures in the Cost Containment Guidelines, should be checked/reviewed during the design process.

Policy 1A-2

For each building renovation, include a review of existing systems, including a pre test and balance of any existing HVAC system that is to be modified, to determine if the level of service provided meets the minimum levels of service required in the ~~State University~~

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System FAU Professional Services Guide and Cost Containment Guidelines for the State University System of Florida.

Policy 1A-3

FAU shall establish and adopt a level of service standard for hot water supply which provides and maintains a minimum of 190 ~~210~~ degrees hot water supply temperature to meet building heating demands.

Policy 1A-4

FAU shall establish and adopt a level of service standard for chilled water supply which provides and maintains a maximum of 45 degrees chilled water supply temperature to meet building cooling demands.

Objective 1B

Ensure provision of future heating water and chilled water capacity to core campus and undertake periodic meter date readings (every 6 months) to verify adequate levels of heating and chilled water service.

Policy 1B-1

Expand ~~Build~~ satellite utility plant concurrently with Master Plan expansion of new facilities. ~~the Schmidt Center Addition.~~ Interconnect the satellite plant with the Central Chiller Plant for growth and redundancy. This requires a utility corridor north of Lee Street from the satellite plant westward; thence crossing southward beneath Lee Street in the sleeves that were placed with the construction of Lee Street; thence southward to the Central Plant. The timing, ~~and~~ phasing requirements and priorities for the provision of an additional satellite utility plant are high, and ~~or plants~~ are established in the Capital Improvements Element.

Policy 1B-2

Provide a new cooling tower at the existing Central Chiller Plant. Upgrade existing cooling towers. NOTE: The need for the additional cooling tower is immediate to gain efficiencies in the plant due to soaring electricity costs and for redundancy in order to rehabilitate existing towers. ~~As buildings are added to the North loop, increase capacity of the central chiller plant.~~

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Policy 1B-3

Provide each new building with flow meters in the chilled water and heating water service piping. Meters shall be connected to the central control system. Periodically calibrate existing meters.

Policy 1-B4

Continue to upgrade Acquire control software to read and present meter data in a usable format.

Policy 1-B5

Perform periodic inspections of water quality and internal pipe conditions.

Objective 1C

Correct existing heating water facility deficiencies.

Policy 1C-1

Implement the recommendations made by consultants regarding heating water deficiencies. of the Gartek Report.

Policy 1C-2

Replace existing heating water boilers generators upon failure. Existing Boilers are relatively new and should not require replacement in the foreseeable future.

Policy 1C-3

Periodically provide and update the timing, phasing requirements and priorities for correcting existing heating water deficiencies. are established in projects in the Capital Improvements Element.

Objective 1D

Ensure the provision of future heating water capacity.

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Policy 1D-1

Study increasing system capacity when purchasing replacement heating water boilers.

Policy 1D-2

After adoption of the campus master plan maintain the liaison with the local gas/oil providers.

Policy 1D-3

Every 5 years, review the master plan with the gas/oil providers to discuss effects of campus growth on fuel supply for heating water systems.

Policy 1D-4

Where is not practical to bring central heating water (for reheat and hot water) the proposed facility shall include an independent boiler system, appropriately sized for its needs. For new development in the triangular parcel south of Glades Road, provide independent heating systems.

Objective 1E

Correct existing chilled water facility deficiencies.

Policy 1E-1

Annually create a list of chilled water system deferred maintenance items. Accomplish these items where feasible, through performance contracting.

Policy 1E-2

Construct a Satellite chiller plant to service the Schmidt Biomedical Center by February 1, 2001. The Satellite Plant shall be expandable to eventually serve the future facilities at the Schmidt Bio-medical complex, the proposed College of Engineering and all other buildings located north and east of the campus core as shown in the Master Plan. Schmidt buildings, and the physical sciences buildings. Plant shall have recommended redundancy.

Policy 1E-3

Periodically, commission consulting engineers to study the performance and capacity of the existing systems and make recommendations towards added efficiency and

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replacements. After the adoption of the master plan, develop a plan for implementing the C3TS chilled water system report recommendations.

Policy 1E-4

Where practical, aAlter the As facilities are added to the south, and north loop of the central chiller plant, the transport system capacity so as to most economically share the chilled water load among the loops and to allow for the satellite tie-in, as required. Additions to either transport system shall be designed to service all master planned facilities.

Policy 1E-5

No longer used – work completed. Manifold the cooling towers at the central chiller plant together, to provide system redundancy.

Policy 1E-6

Replace 3-way bypass control valves in existing buildings with 2-way pressure independent two way shut-off valves. Use VFD's on tertiary pumps to minimize energy usage and over pressurization of piping.

Policy 1E-7

Periodically provide and update the timing, and phasing requirements and priorities for correcting existing chilled water deficiencies. are established in projects in the Capital Improvements Element.

Objective 1F

Ensure the provision of future chilled water capacity.

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Policy 1F-1

When the new satellite utility plant is constructed install additional, separate chiller capacity, Interconnect new and existing chilled water distribution systems and install valving to zone distribution of cooling water. See Policy 1A-1.

Policy 1F-2

As new buildings are constructed, use two way pressure independent control valves, not 3 way control valves, shut-off valve controls, not bypass valve controls, to take advantage of system design to produce best energy savings through high differences in chilled water temperature.

Policy 1F-3

As new buildings are constructed, connect them to the chilled water distribution system using a decoupled piping arrangement, to promote uniformity in the system operating characteristics.

Policy 1F-4

Where is not practical to bring central chilled water the proposed facility shall include an independent cooling system, appropriately sized for its needs. For new development in the triangular parcel south of Glades Road, provide independent cooling systems.

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UTILITIES ELEMENT
ELECTRICAL POWER & OTHER FUELS SUB-ELEMENT

Goal 2

To accommodate existing and future FAU needs for electric power and other fuels.

Objective 2A

Maintain existing levels of electrical service within existing campus buildings and ensure that new buildings meet levels of service required by the Board of Governors, Regents and appropriate codes and standards.

Policy 2A-1

For each new building project review the program documents for reference to the State University System FAU Professional Services Guide and Cost Containment Guidelines for the State University System of Florida. These documents set minimum levels of service for electrical system design parameters. These requirements should be reviewed with the Design Professional at the start of each design project and, following the review procedures in the Cost Containment Guidelines, should be checked/reviewed during the design process.

Policy 2A-2

For each building renovation, include a review of existing systems to determine if the level of service provided meets the minimum levels of service required in the State University System FAU Professional Services Guide and Cost Containment Guidelines for the State University System of Florida.

Objective 2B

Correct existing power deficiencies.

Policy 2B-1

Continue to upgrade deficient wiring systems, as necessary. ~~Within three years after adoption of the campus master plan, replace existing ungrounded wiring systems in buildings 22, 23, 24, 25.~~

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Policy 2B-2

Periodically check tunnels and areaways for any deficiencies, "hot-spots" in primary distribution cables, or other problem conditions, and report and correct such deficiencies. Within two years after adoption of the campus master plan, correct reported "hot spots" in distribution cables in tunnels.

Policy 2B-3

Periodically provide and update the timing and phasing requirements and priorities for correcting existing electrical power deficiencies. are established in the Capital Improvements Element.

Objective 2C

Ensure the safe provision of future power for FAU.

Policy 2C-1

As new buildings are added, consider the ~~overload~~load on all feeders 1 & 2 in planning for new loads/system modifications in the core campus and the extended campus to the north and northeast.

Policy 2C-2

Extend the campus power grid as required to supply the power needs of all future development as shown on the Master Plan. ~~Within two years after adoption of the campus master plan, prepare a study and plans for installing feeders 7 & 8 and modifying Feeders 1 & 2 to alleviate the load on feeders 1 & 2 and to provide power for the future growth. The adopted campus master plan shall be amended to incorporate the results of these studies and plans and to include recommendations on extending the campus power grid to serve the T Buildings and to bring the residential areas on the East campus into the grid.~~

Policy 2C-3

Maximize the shared distribution of all existing feeders. ~~Within five years after adoption of the campus master plan, complete installation of feeders 7 & 8 and modifications to Feeders 1 & 2 per study in Policy 2B-2.~~

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Policy 2C-4

~~Continue to implement Within two years after adoption of the campus master plan, study requirements/desires and prepare recommendations for emergency power for hurricane/disaster operation on campus. Include study of need for emergency power to maintain minimum campus operations in the event of power outages. Recommendation should include size and location for new or replacement back-up power generators.~~

Policy 2C- 5

~~No longer used.~~

~~For new development in the triangular parcel south of Glades Road, provide connections to local power source, independently metered from the core campus.~~

Objective 2D

Within one year after adoption of the campus master plan, develop and Maintain a liaison with Florida Power and Light Company (FPL).

Policy 2D-1

~~Upon completion of the master plan, Periodically, review the master plan with FPL to discuss effects of campus growth on FPL.~~

Policy 2D-2

~~With FPL, discuss, plan and negotiate the routing of new power feeds from from a new substation at the the north entrance of campus near Spanish River Boulevard to provide additional power and redundancy to the core campus as well as the expanding north end end. In addition, coordinate the expansion of the existing Glades Road substation for an alternate source to the north end.~~

~~- Within two years after adoption of the campus master plan, investigate with FPL the costs, advantages and disadvantages of University ownership of the substation at the Glades Road entrance. In addition, coordinate the expansion of the existing Glades Road substation for an alternate source to the north end.~~

Objective 2E

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Consider alternate fuels and alternate sources of energy.

Policy 2E-1

Within three years after adoption of the campus master plan, Remain open and objective to alternative energy sources and methods of power generation, where appropriate. Study the feasibility and funding sources for photo-voltaic for alternate power demonstrations on campus. project for new breezeways.

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UTILITIES ELEMENT
TELECOMMUNICATIONS SUB-ELEMENT

Goal 3

To provide "State of the Art" voice, video, distance learning, and data systems throughout the Campus.

Objective 3A

Maintain appropriate levels of service within existing campus buildings and ensure that new buildings meet levels of service required by the Board of Trustees, The IRM Specification, and applicable codes and BICSI standards.

Goal 4

Design and install the campus voice, data, video and distance learning transport systems to support future growth and new technologies in accordance with the most recent version of the IRM Specification.

Goal 3 ——— The above goals 3 and 4 replace the entire adopted section shown stricken below:

To provide "State of the Art" telecommunications, video and data systems throughout the Campus.

Objective 3A

Maintain existing levels of service within existing campus buildings and ensure that new buildings meet levels of service required by the Board of Regents and appropriate codes and standards.

Policy 3A-1

For each new building project review the program documents for reference to the State University System Professional Services Guide and Cost Containment Guidelines for the State University System of Florida. These documents set minimum levels of service for building communication system design parameters. These requirements should be

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reviewed with the Design Professional at the start of each design project and, following the review procedures in the Cost Containment Guidelines, should be checked/reviewed during the design process.

Policy 3A-2

For each building renovation, include a review of existing systems to determine if the level of service provided meets the minimum levels of service required in the State University System Professional Services Guide and Cost Containment Guidelines for the State University System of Florida. If the existing system does not provide this level of service, determine if upgrading the system will be cost effective and worthwhile.

Policy 3A-3

Within three years, FAU shall establish and adopt a level of service standard for telecommunications systems which provides and maintains an appropriate level of communication within the campus and to and from the campus. The standard shall consider the service history of equipment and service suppliers. The standard shall reflect the findings of a survey of internal and external users to assess the expectations and satisfaction of the users. The standard shall review changing technology and recommend upgrading (if appropriate) as technology improves.

Policy 3A-4

Within one year after adoption of the campus master plan, develop and maintain a liaison with the local phone service and video cable providers.

Policy 3A-5

Upon completion of the master plan, review the master plan with the phone and cable providers to discuss effects of campus growth on local phone and cable systems.

Goal 4

Expand the voice cable plant to support future growth.

Objective 4A

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Expand the cable plant in an orderly manner and enhance the existing cable plant to provide the maximum ease of use, reliability, and cost effectiveness without degradation of service.

Policy 4A-1

Fully review the impact of new structures to the duct bank system, the existing cable pair counts, and capacity of the closest switching node and the distance to the closest switching node.

Policy 4A-2

Determine the cost effectiveness of providing an additional switching node as opposed to increasing pair counts and cable lengths in the cable plant.

Policy 4A-3

For new development on the triangular parcel south of Glades Road, provide independent telecommunications, video and data systems.

Objective 4B

Standardize the site cable demarcation/termination method and the type of surge protection required.

Policy 4B-1

Ensure that the standards are maintained for placement of the demark point (first floor with outside entrance), the expected conduit entrance size and number of conduits, the type of termination (66, 110, or Krone block), and the protection type (solid state, gas tube or carbon block) and clamping voltage.

Objective 4C

Standardize the horizontal and vertical building cable and termination techniques, outlet configuration and communication room sizes for new buildings.

Policy 4C-1

Horizontal and vertical building cable and termination techniques shall comply with EIA/TIA 568 and 569 standards.

Policy 4C-2

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The minimum communications room size at the Main Distribution Frame and Intermediate Distribution frames shall be based on building square footage and/or occupaney count.

Policy 4C-3

Vertical riser pair counts shall be based on floor square footage and/or occupancy count.

Policy 4C-4

Horizontal cable runs shall not exceed 100 meters and shall be at least 4 pair, 24 AWG, category 5 cables run in a star configuration.

Policy 4C-5

Communication outlets shall be modular and contain at least one voice jack and one data jack which terminate cables on 110 style terminations.

Goal 5

Expand the campus data transport system to support future growth and new technologies as they become available.

Objective 5A

To provide reconfigurable high-speed data and video paths between "Information Outlets" and central locations. The systems shall provide an organized and efficient means of data distribution to a large number of users.

Policy 5A-1

Fully review the data requirements of new structures and determine the impact on the duct bank system and the existing data backbone and routing system.

Policy 5A-2

Provide an adequate number of single mode and multimode fiber optic cable based on current capacity and projected needs.

Objective 5B

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To provide for increasing demands of large bi-directional digital data transfers generated by the availability of multimedia applications and the growth of instructional television and video teleconferencing.

Policy 5B-1

Fully review the backbone transport capacity to determine if adequate bandwidth is available and to expand the bandwidth by the addition of fiber paths and/or a change in transport system protocols.

Objective 5C

Standardize the site fiber cable and building termination methods.

Policy 5C-1

Site fiber optic cables shall be duct rated 62.5/125 micron, multi-mode, or 8.3/125 micron single mode, loose tube type, terminated on rack mounted fiber optic distribution frames using "ST" style connectors.

Objective 5D

Standardize the horizontal and vertical building fiber optic cable and termination techniques and outlet configuration.

Policy 5D-1

Vertical risers shall be multimode fiber configured in a star or collapsed backbone arrangement with all routing equipment in a central location. Riser fiber shall terminate on rack mounted fiber optic distribution frames using "ST" style connectors.

Policy 5D-2

Horizontal cable runs shall not exceed 100 meters and shall be at least 4 pair, 24 AWG, category 5 cables and 4 strand fiber optic cables run in a star configuration. Category 5 cables shall terminate on category 5, RJ 45 modular patch panels.

Policy 5D-3

Data communications jacks shall share the same outlet as the voice jacks and contain modular RJ 45 jacks and "ST" fiber optic ports with fiber storage rings.

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Goal 6

To provide building HVAC, lighting, power and domestic water heating systems and central plant chiller, water heating and electrical distribution systems which are designed for maximum energy efficiency consistent with appropriate long term life cycle costs.

Objective 6A

To ensure that new buildings and campus systems meet the energy efficiency standards required by the Board of Regents and appropriate codes and standards.

Policy 6A-1

For each new building or campus system project review the program documents for reference to the State University System Professional Services Guide and Cost Containment Guidelines for the State University System of Florida. These documents require life cycle cost assessment of alternate system designs by comparing first costs, operating and maintenance costs. These alternate should be reviewed with the Design Professional at the start of each design project and, following the review procedures in the Cost Containment Guidelines, should be checked/reviewed during the design process.

Policy 6A-2

For each building renovation, include a review of existing systems to determine if system energy efficiency standards meet those required in the State University System Professional Services Guide and Cost Containment Guidelines for the State University System of Florida. If the existing system does not provide this level of service, determine if upgrading the system will be cost effective and worthwhile.

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