

10 utilities

CHILLED WATER

GOAL 1: To provide efficient, reliable, chilled water service to all buildings on campus via district energy distribution.

The FAU Jupiter campus has a combination of water cooled and air-cooled plants in three locations on campus:

- MC04 Plant: 570-ton Air cooled – 2 years old.
- MC20 Plant: 570-ton Trane water cooled centrifugal – 15 years old
- MC20A Plant: two (2) 500-ton air cooled chillers – 5 years old.

The existing chilled water distribution system connects all three plants in a looped system, which in turn feeds each of the buildings on campus. Additionally, the MC04 plant has a thermal energy storage system that has reportedly been decommissioned and is no longer in service.

Objective 1A: Consolidate plants into one single chiller plant at MC20

- **Policy 1A-1:** Provide a new central water-cooled chiller plant at MC20 sized for both existing and future loads.
- **Policy 1A-2:** Master plan building loads for year 2028 is approximated at 1000-tons without diversity. The new / combined plant should be sized for a diversified load of 800 to 900 tons, depending upon owner requirements.

Objective 1B: Distribution Piping

- **Policy 1B-1:** The existing 16" chilled water mains running north and south will serve as main piping for all loads. The maximum flow through this main would be approximately 5500GPM which equates to 2750-tons at a 12-degree building delta T.
- **Policy 1B-2:** The 6" chilled water supply and return loop serving the northern portion of the campus will provide up to 800 GPM of chilled water flow, which equates to 400 tons of cooling at a 12-degree building delta T.

Objective 1C: Thermal energy storage

- **Policy 1C-1:** Provide for and develop a time of use based chilled water storage facility that will save the university on demand charges, while increasing the resiliency and tolerances of the chilled water distribution system.

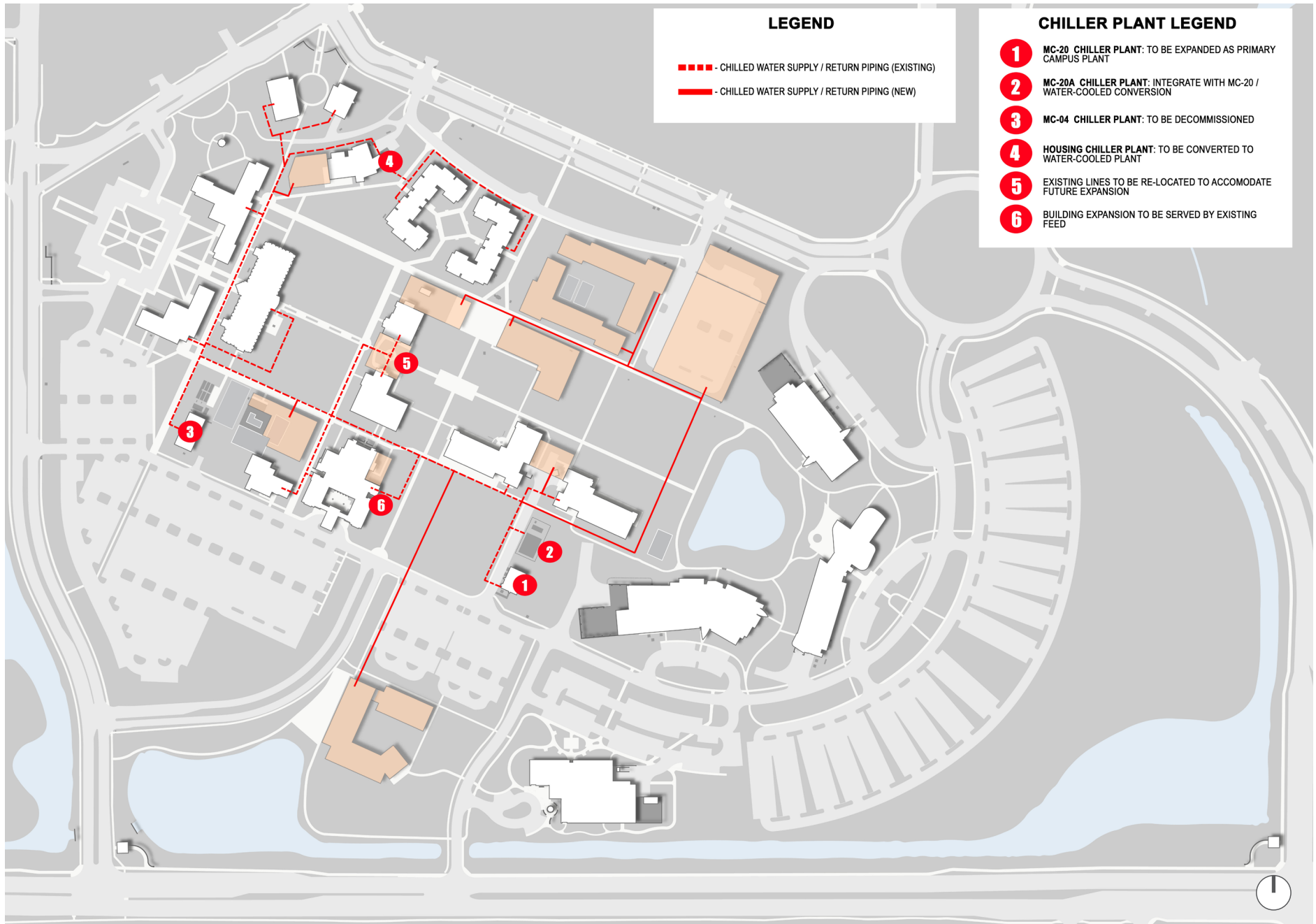


Figure 10.1 Chilled Water

utilities

ELECTRICAL

GOAL 1: It is the goal to provide cost effective, efficient, and reliable electric power to meet the needs of the existing and future Jupiter campus facilities.

The Jupiter campus is supplied electrical power from overhead FP&L distribution lines that traverse along the east edge of campus and then transition to underground distribution just south of the Scripps Research Institute. The underground primary network is owned and operated by FP&L and each building is individually metered on the secondary side of pad-mounted transformers.

Objective 1A: Improve power reliability and continue to expand the capacity of the power distribution network to meet the needs of future campus facilities.

- **Policy 1A-1:** Coordinate with FP&L to develop a dedicated substation to serve as a reliable power source for the campus. Seek improved power quality through redundant primary feeders routed underground to the campus by FP&L.
- **Policy 1A-2:** Coordinate with FP&L to maintain demand loads on primary feeders to within 50% of their rated capacity to allow for redundancy and flexibility in feeder switching during routine maintenance operations.
- **Policy 1A-3:** Coordinate with FP&L to develop additional primary feeder capacity over time in conjunction with planned growth of campus facilities.

Objective 1B: Provide standby power generation capability on the campus to serve as a redundant power source for critical building loads, including research buildings and chilled water plants (partial capacity).

- **Policy 1B-1:** Evaluate opportunities to reduce the number of individual building level standby generators and provide a more centralized approach to providing back up power.
- **Policy 1B-2:** Evaluate opportunities with FP&L to provide centralized power generation capability on the campus to serve as a redundant power source and allow for peak-shaving to reduce electrical demand charges.

Objective 1C: Optimize the efficiency of building level electrical systems through the application of modern technologies and through standardization of components.

- **Policy 1C-1:** Develop capital renewal projects to gradually replace antiquated lighting fixtures across the campus with new solid state LED high efficiency fixtures and provide automatic controls.
- **Policy 1C-2:** Develop campus standards for major electrical products that are installed within new buildings to improve consistency and allow for more efficient operations and maintenance.
- **Policy 1C-3:** Implement use of standardized digital electrical submeters within each building to allow for monitoring of building power consumption. Integrate power meters with the campus-wide building automation system to allow for remote monitoring, trending and reporting.

GOAL 2: It is the goal to meet the electrical demands for the campus with sustainably derived energy.

Objective 2A: Explore renewable energy purchase agreements with FP&L and other utilities to reduce the reliance on energy generated from fossil fuels.

- **Policy 2A-1:** Evaluate campus-wide long term solar power purchase agreements to derive up to 50% of the campus energy supply from off-campus solar power installations.
- **Policy 2A-2:** On new building projects and major building renovations, evaluate long term solar power purchase agreements to derive up to 50% of the building level energy supply from off-campus solar power installations.

Objective 2B: Explore opportunities to integrate solar power and other alternative energy sources in to the design of new projects on the campus.

- **Policy 2B-1:** Evaluate the feasibility and life cycle cost for adding solar power on each new building so that a minimum of 10% of the building energy is derived from the building level solar installation.
- **Policy 2B-2:** Evaluate the feasibility and life cycle cost for integrating solar power with new parking structures and covered walkways.

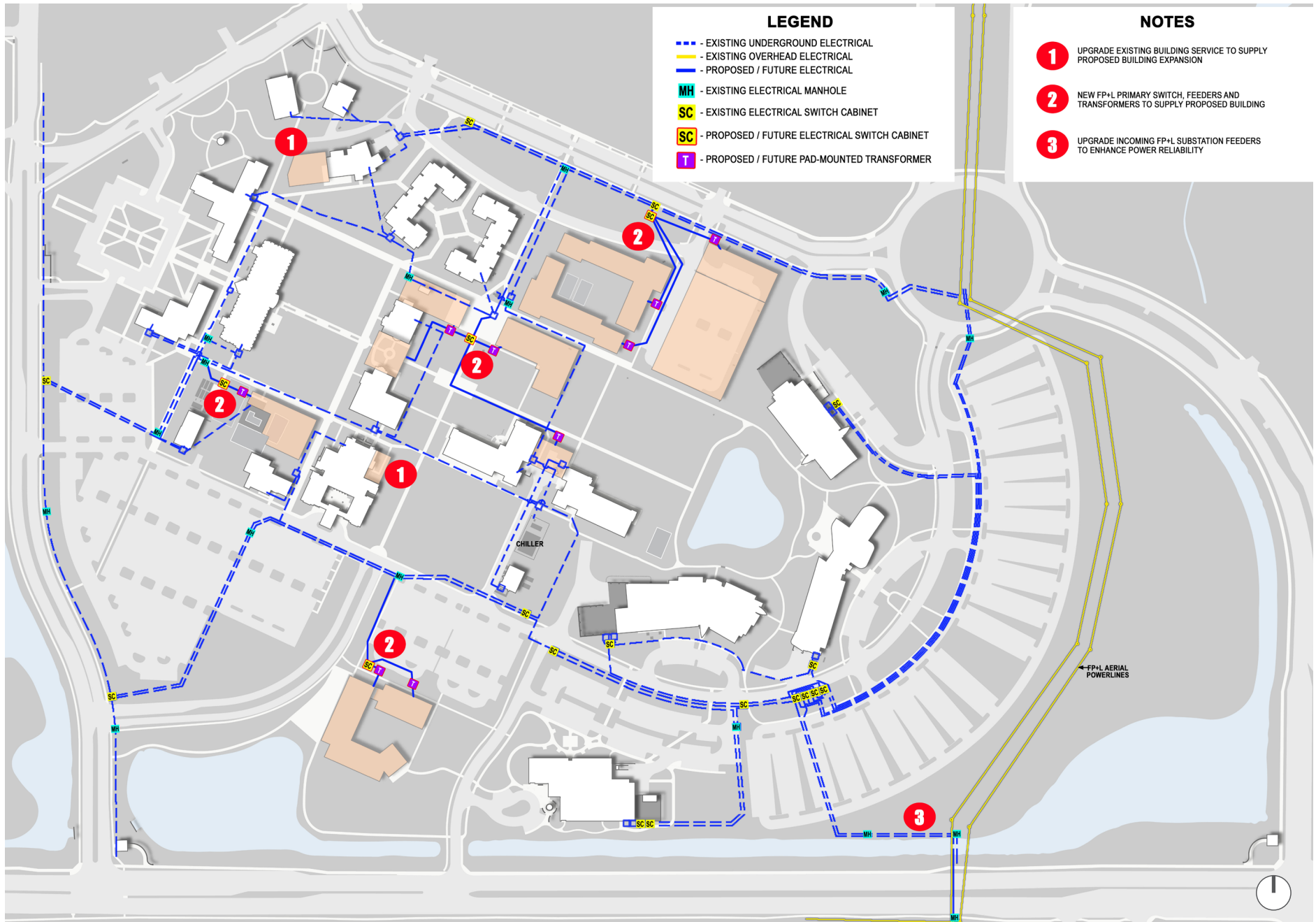


Figure 10.2 Electrical

utilities

TELECOMMUNICATIONS

GOAL 1: Maintain appropriate levels of network service to existing buildings and ensure new buildings meet levels of service required by current campus standards.

The Jupiter campus has a core data center in building MC-04. Current campus distribution consists of a system of duct banks containing 4" conduits. Each building requires a connection to the primary data center as well as adjacent buildings with single mode fiber.

Objective 1A: Expand the campus local area network infrastructure to accommodate new construction.

- **Policy 1A-1:** Evaluate opportunities to update existing building backbone and horizontal cabling infrastructure to meet or exceed current campus standards.
- **Policy 1A-2:** Extend the existing communications duct bank to the south and north ends of campus for new development.
- **Policy 1A-3:** Coordinate the requirements and projects of the Master Plan to AT&T and Comcast so they may tailor their services to accommodate the Jupiter Campus needs.

Objective 2A: Design and install voice, data and video transport systems that prepare the campus for future growth and for the adoption of newer technologies.

- **Policy 2A-1:** Consider developing campus standards for wirelessly connected devices how they impact the campus network bandwidth.
- **Policy 2A-2:** Consider developing campus standards for emergency responder radio enhancement systems, cellular distributed antenna systems and campus mass notifications systems.



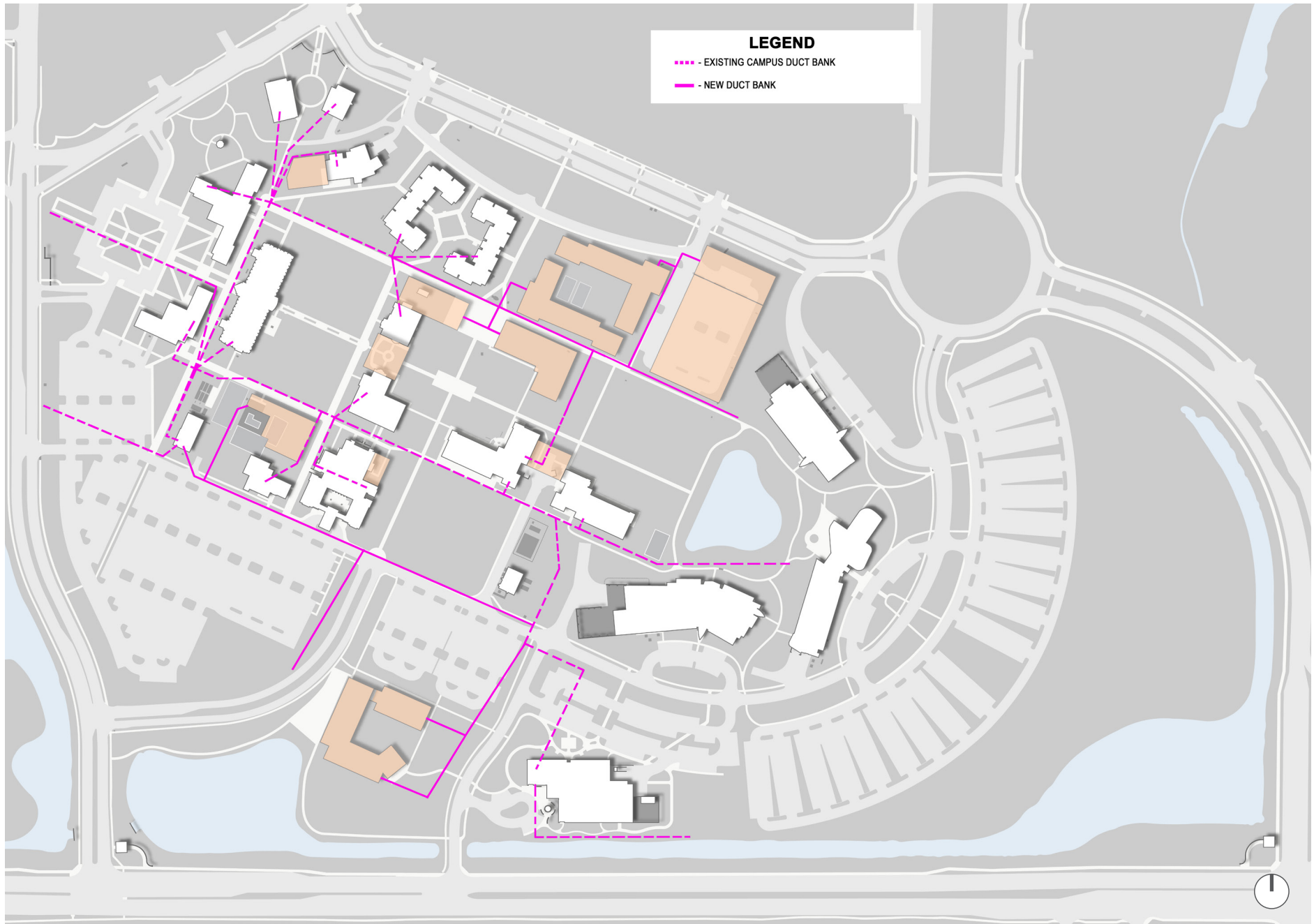


Figure 10.3 Telecommunications