UCF Board of Trustees

Facilities and Infrastructure Committee

April 16, 2025

Agenda Item

DISC-1: Overview of Utilities and Engineering Services

Proposed Action

This item is being presented for discussion at the Board's request to provide trustees with an overview of UCF's utilities and engineering operation including relevant data related to all utilities commodities.

Authority for Board of Trustees Action

N/A

Supporting Documentation Included
Attachment A: Utilities and Engineering Services Presentation
Facilitators/Presenters
Jon Varnell, Vice President for Administrative Operations and Chief Infrastructure Officer Duane Siemen, Associate Vice President, Utilities and Engineering Services

Summary of Key Observations/Recommendations

This item is being presented for discussion at the Board's request to provide trustees with an overview of UCF's utilities and engineering operation including relevant data related to all utilities commodities. Attachment A provides a detailed overview of UCF's robust utility infrastructure and strategic energy initiatives, offering key insights into efficiency improvements, conservation efforts, and cost optimization. Since 2007, UCF has experienced a 20% increase in campus square footage while simultaneously achieving a 20.5% reduction in overall utility consumption, demonstrating significant efficiency improvements.

Additional Background

The university is actively implementing energy efficiency initiatives to enhance occupant safety and increased cost savings. UCF operates one of the largest district energy systems in Central Florida, efficiently supporting over 73% of campus square footage with a system efficiency of 0.73 kW/ton for total cooling capacity of 21,150 tons, supplemented by a 3-million-gallon thermal energy storage tank and four district energy chiller plants.

The current potable water system spans 21 miles of distribution piping, supported by four potable wells and a 200,000-gallon elevated storage tank. Additionally, UCF provides a backup interconnection for the Central Florida Research Park.

The main campus consumes approximately 110,000-megawatt hours (MWh) of electricity annually, with a peak demand of 22MW, including 5MW from the Combined Heat and Power (CHP) system that provides peak load shedding for Duke. Duke CST-3 rate change is projected to yield substantial utility savings for the university.

The natural gas system operates a 9.6-mile private gas distribution network, ranking among the top 15 in Florida, and is managed under a Master Meter designation per 49 CFR 191.3. The university has also deployed smart metering and AI Integration, enabling real-time smart grid monitoring, automated utility billing, predictive analytics for energy optimization, and AI-driven visualization through the Willow platform.

Implementation Plan

N/A

Resource Considerations

The proposed 9-year Mitsubishi maintenance contract renewal for CHP utilities will yield $450K in total savings. The campus district energy infrastructure is expanding to accommodate 650 tons of chilled water to the UCF Recreation and Wellness Center and 1,500 tons of future housing/university load. Additionally, investments in digital twin technology/artificial intelligence (Willow), and automated energy management will continue to optimize campus operations for additional savings.