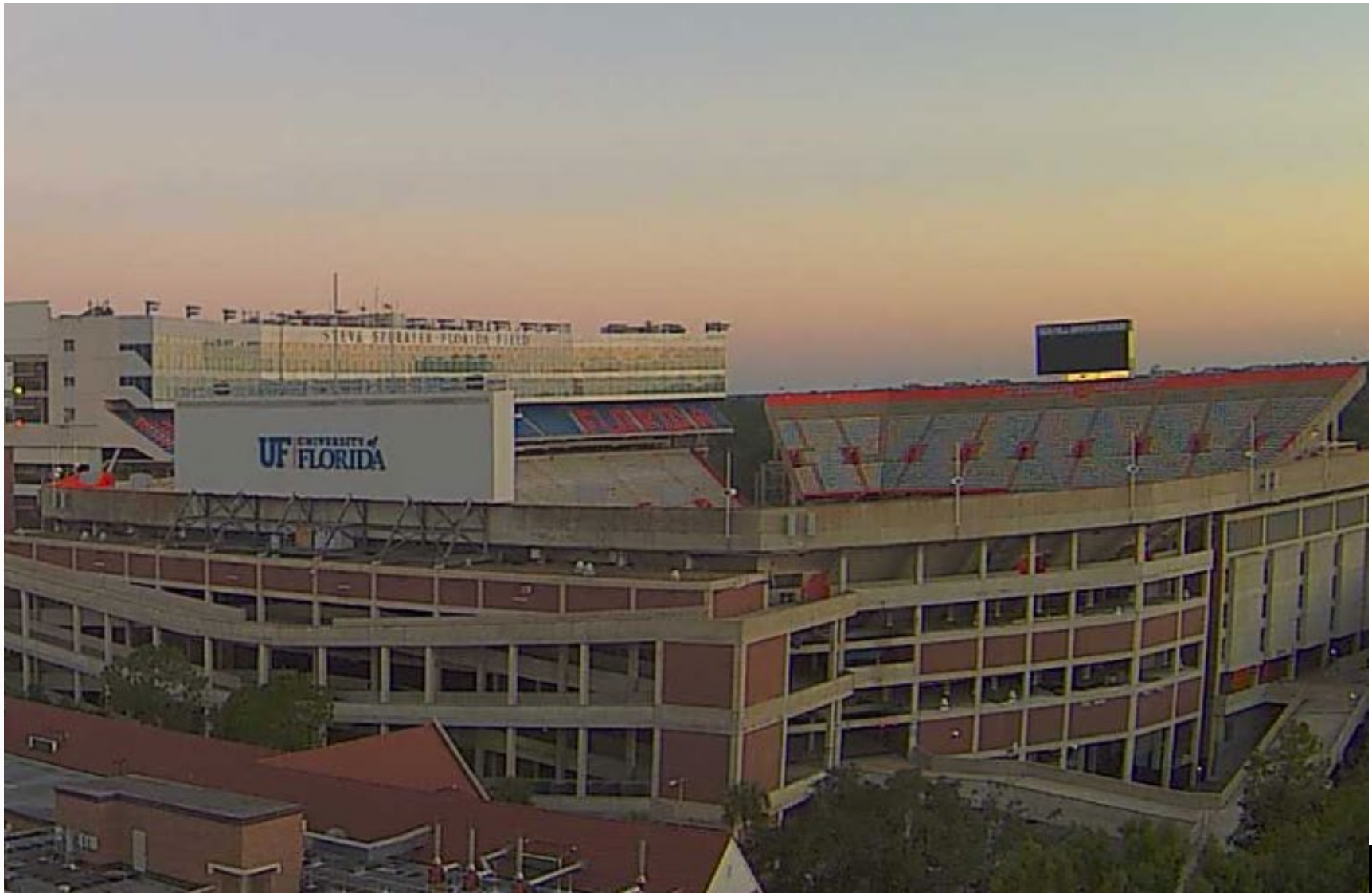
Developing an Optimal Solution at the University of Florida

Chuson McFadden, PMP
Kevin Fox, PE, CEM

CampusEnergy2020
THE POWER TO CHANGE
FEBRUARY 10-14 ▲ SHERATON DENVER DOWNTOWN ▲ DENVER, CO

The University of Florida



Where They Are Today

Aging Infrastructure

Duke Energy Agreement Termination

Path Forward

The Campus


University of Flori
Levin College of Law
Ben Hill Griffin Stadium
UF Marston
Science Library
Flavet Field
Harmonic
Woods
Welcome Center
University
Gardens
University
of Florida
Lake Alice
Lake Alice
Conservation
Area
UF Health
Shands Hospital
Malcom Randall
VA Medical Center
Lake Alice
South

The Road to Rehabilitation

1 Utility Master Planning

Project Objectives

PREPARE FOR NEW CAMPUS ENERGY SOURCE

RENEW CAMPUS INFRASTRUCTURE

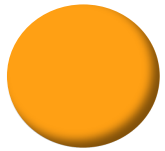
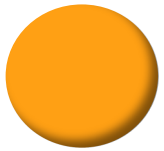
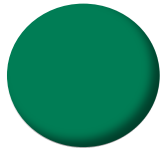
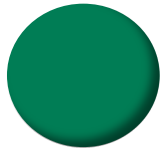
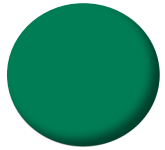
OPTIMIZE LIFE CYCLE COST PERFORMANCE

BOOST RESILIENCY OF SYSTEMS

IMPROVE ENERGY EFFICIENCY

REDUCE CARBON EMISSIONS

Electrical Interconnect Study

	Archer Road	Gale Lemerand Commuter Lot
Capital Cost		
Life Cycle Cost		
Campus Impact		
Environmental Impact		
Reliability		

Electrical Interconnect Study: Archer Road

23 kV Service

– Higher life cycle cost

– Rate structure doesn't provide attractive payback for 23 kV

69 kV Service

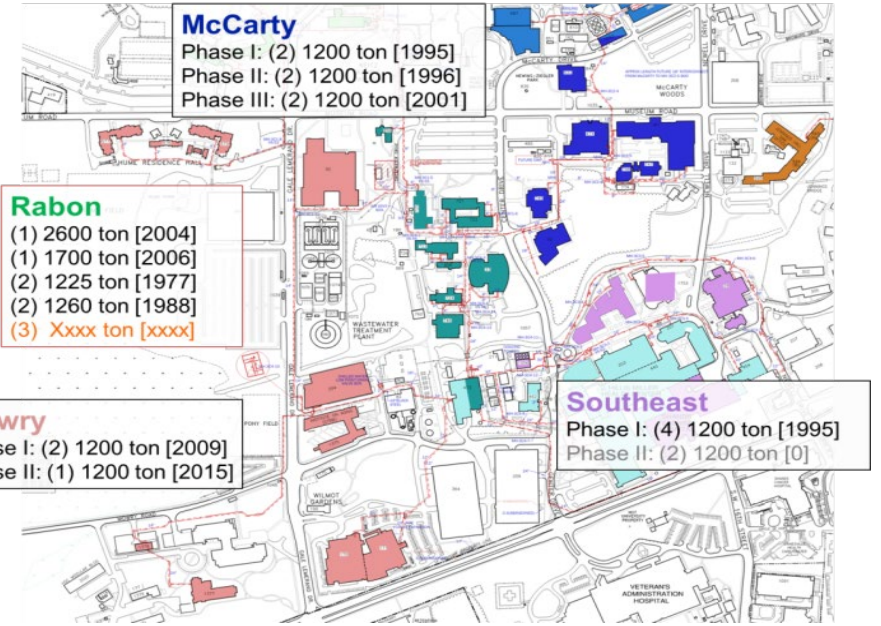
+ Lowest life cycle cost with/without cogen, using current or predicted future rates

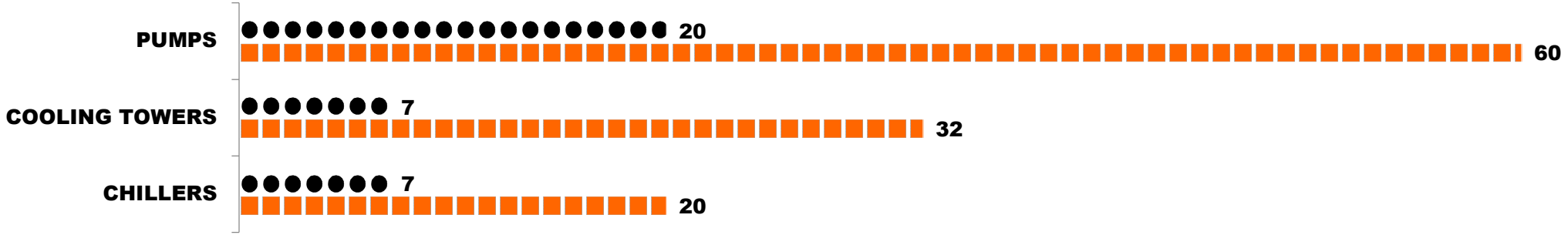
+ Cost of service advantages with 69 kV rate structure

Thermal Plant Evaluation

Recommendations – Chilled Water Production

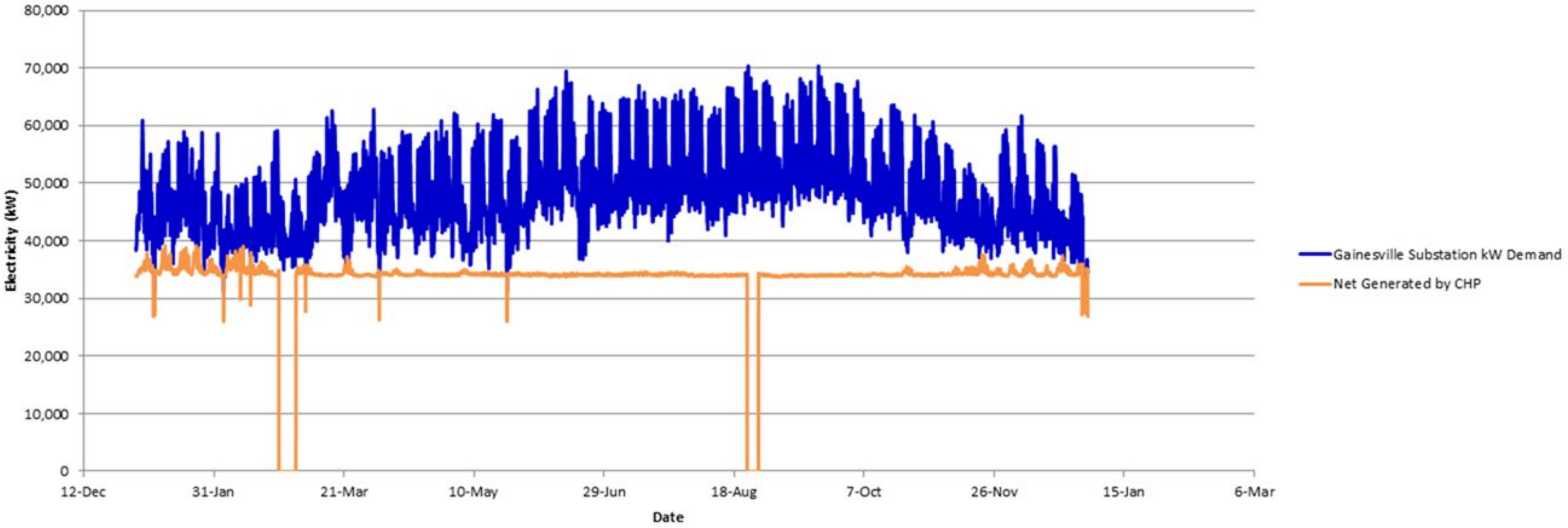
- Consolidate plants
- Improve efficiency
- Lower life cycle cost





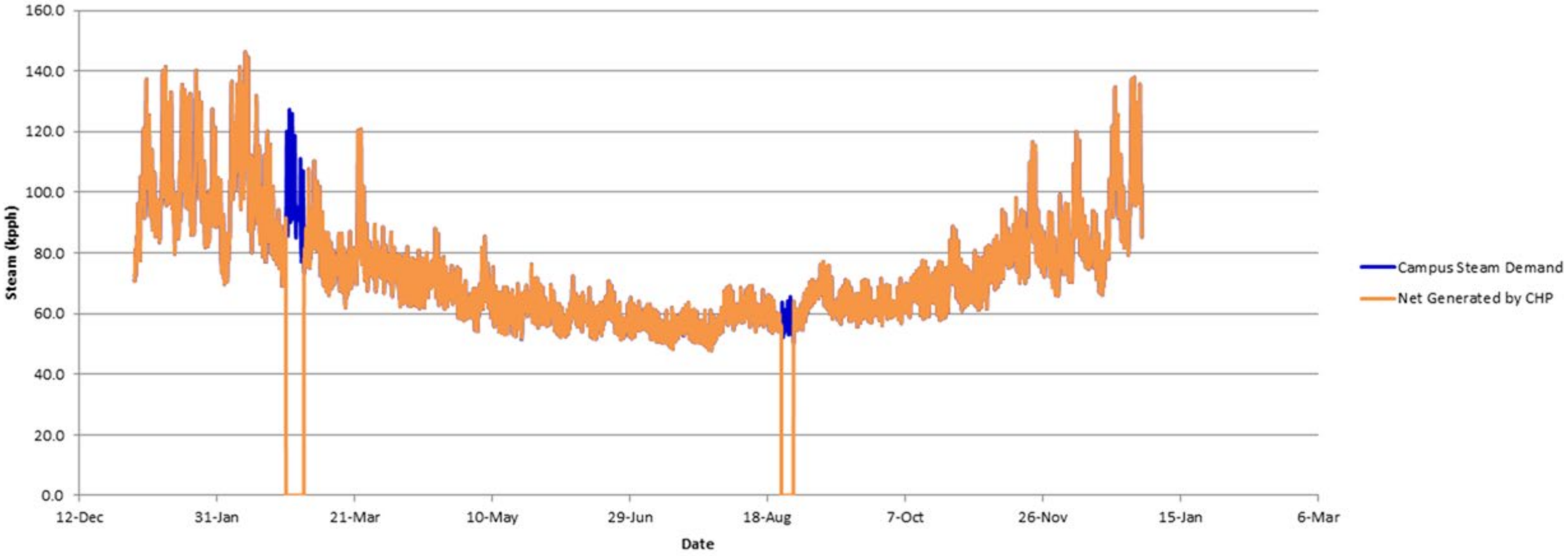
CHP Evaluation

Gainesville Substation kW Demand vs Generated (Future Loads)



CHP Evaluation

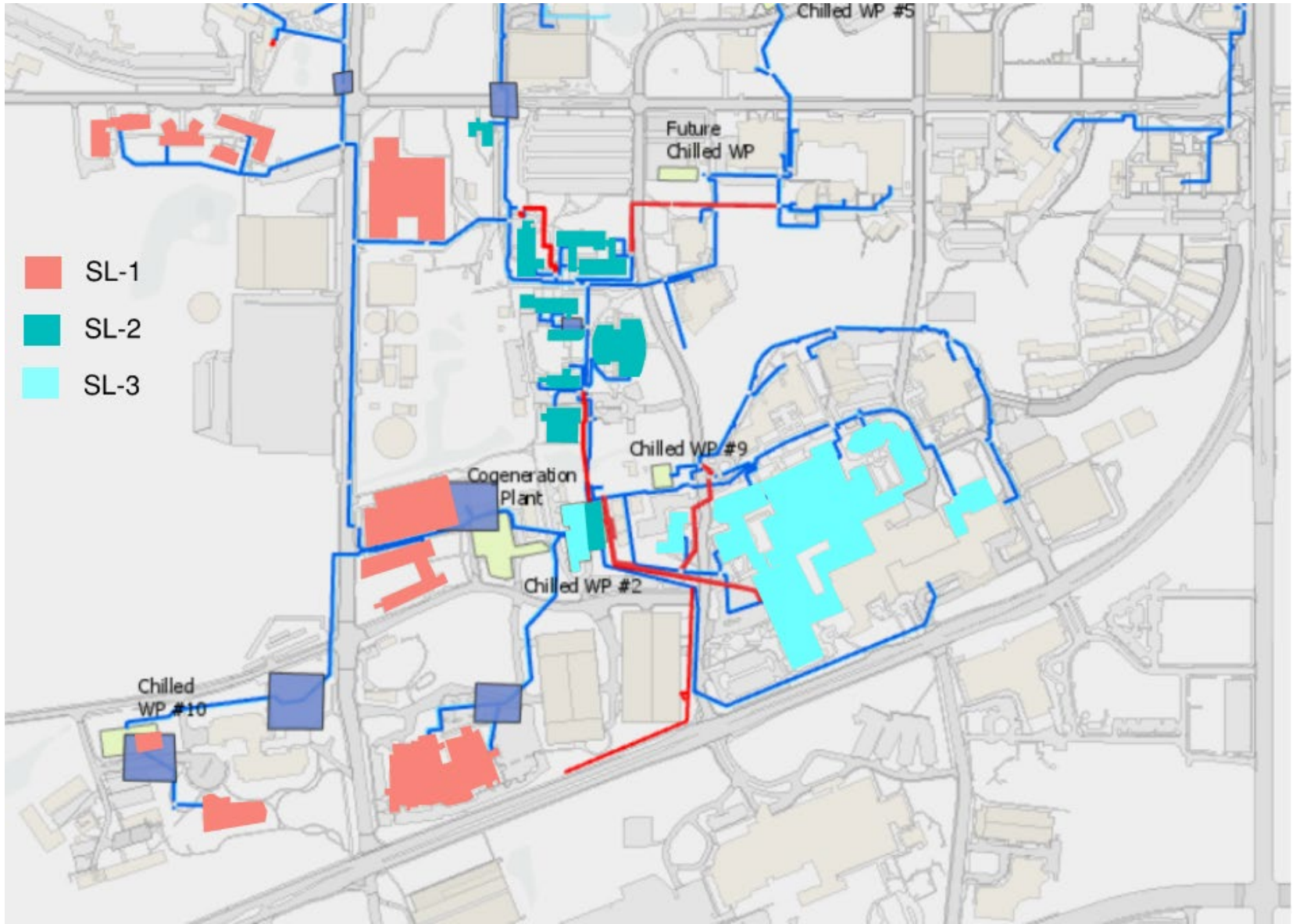
Total Steam Demand vs Generated (Current Loads)



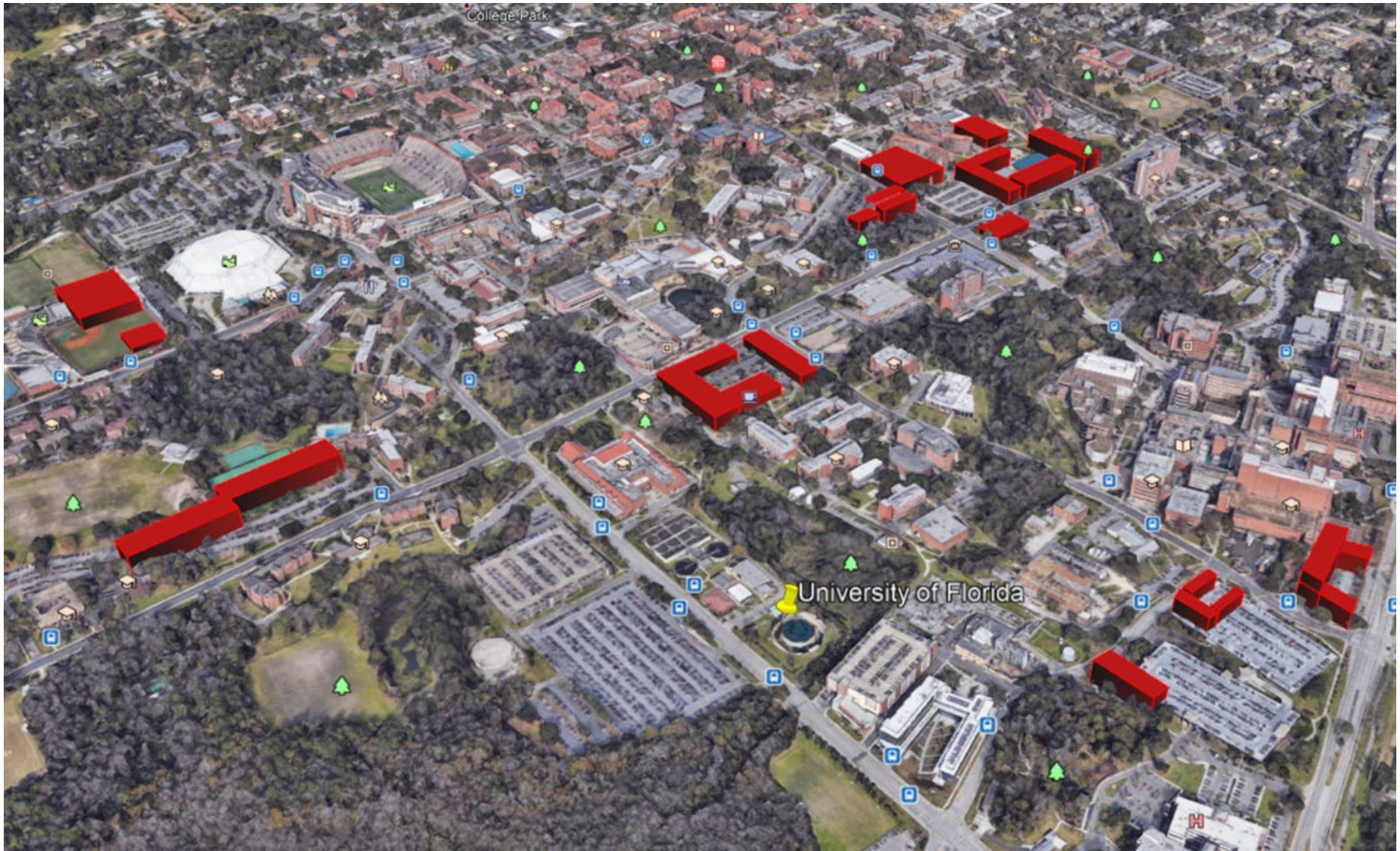
Thermal Distribution

Thermal Distribution

Thermal Distribution



Thermal Distribution

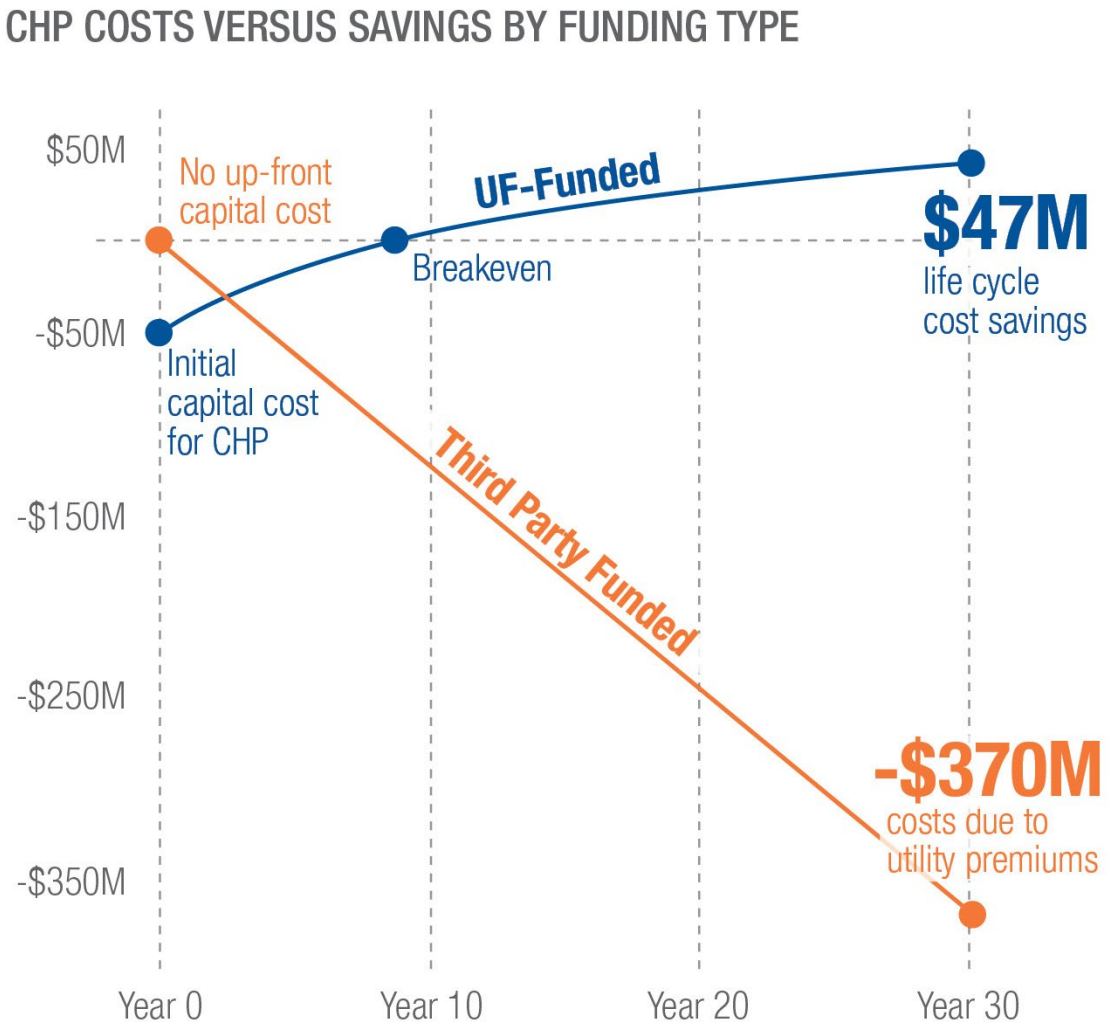


The Road to Rehabilitation

2 Establishing a New Vision

Establishing A New Vision

Bond vs Third Party Finance



Establishing A New Vision

Leadership team with
a vision to bring UF
into the future

The Road to Rehabilitation

3 An Ongoing Process

An Ongoing Process

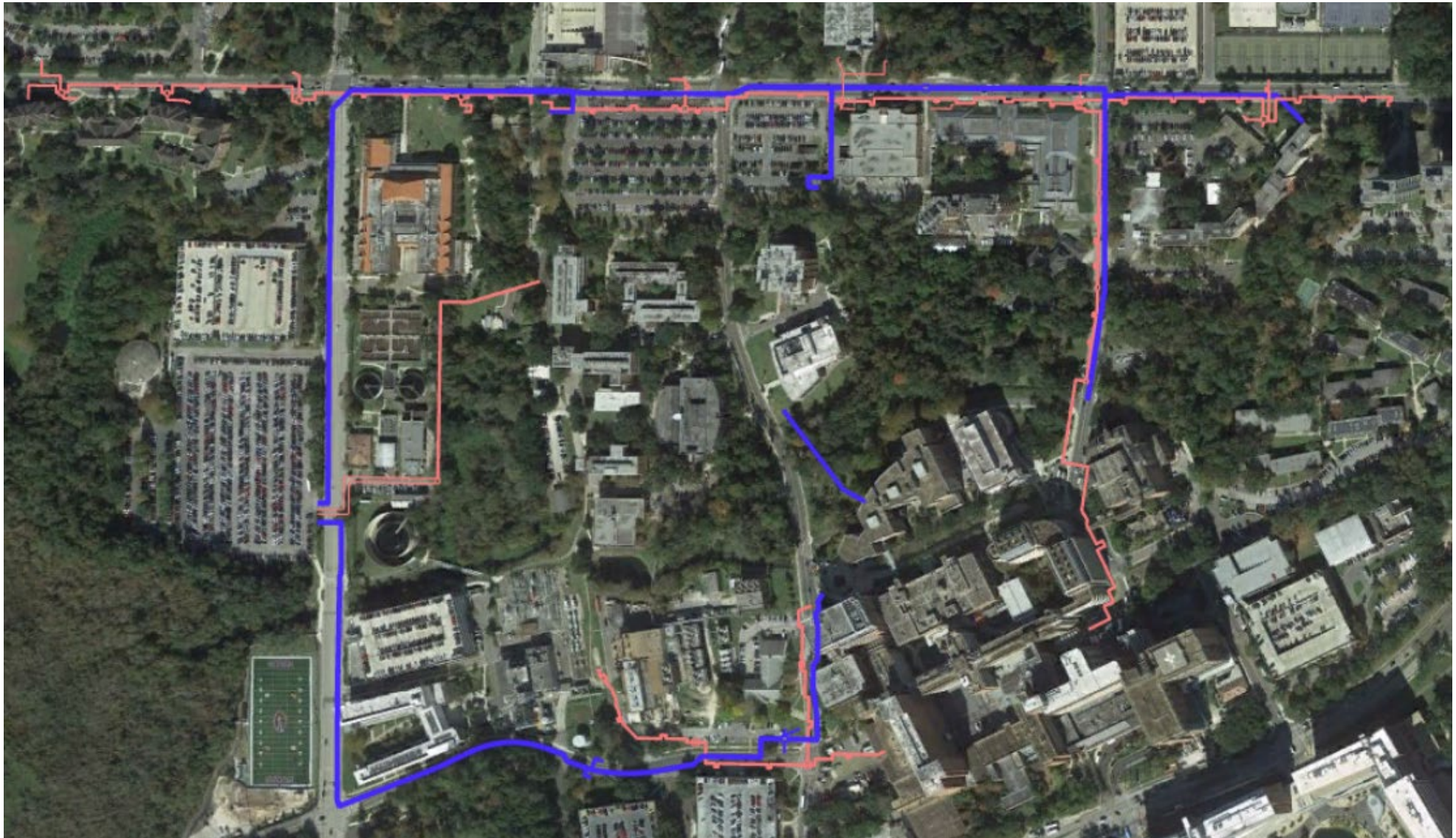
Mowry Substation

Three University owned transformers (transmission credit)

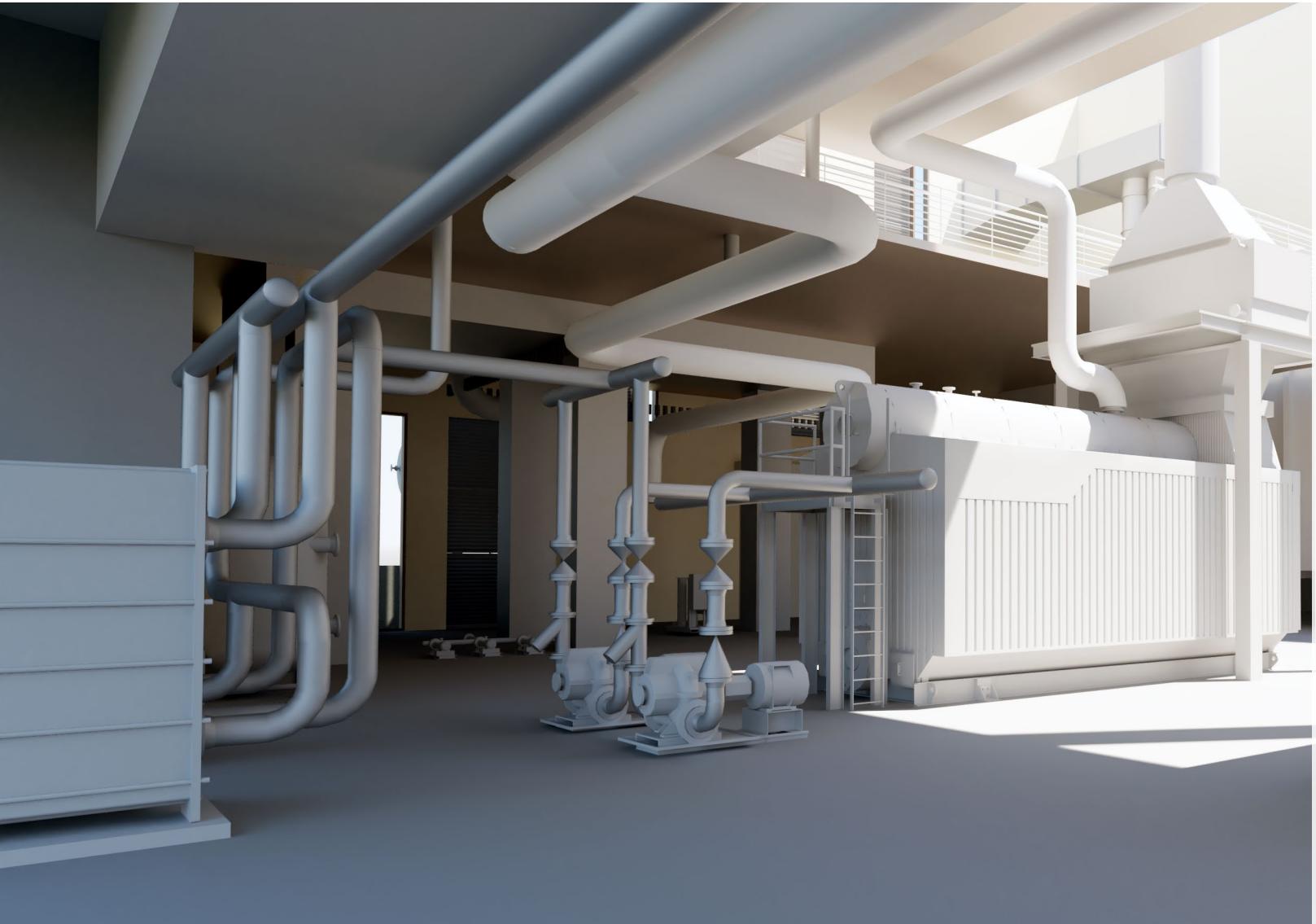
Fed from a new Duke Energy 69kV ring bus

Cables route underground to three switchgear by the new central plant for campus distribution

Thermal Distribution Improvements



Central Energy Plant



36MW combined cycle power plant

25,000 tons CHW with N+1

31,425 SF office space

The Road to Rehabilitation

4 UF’s Energy Future

UF’s Energy Future

Sustainability

Resiliency

Reliability

UF’s Energy Future

Combined cycle plant **optimized** to campus loads

Heat recovery to provide campus steam

$8M+ annual utility savings

83,000 tons CO_2 avoided annually

25% total campus GHG reduction

UF’s Energy Future

Sustainability | Resiliency | Reliability

$250M in capital improvements to be completed in 2026

Questions?

Chuson McFadden, PMP • Principal
Kevin Fox, PE, CEM • Managing Principal, E&P

Booth 77

chuson.mcfadden@jacobs.com