WORKSHOP 1

Establishing the Baseline

Study of Campus Decarbonization

April 3, 2024

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AECOM

Agenda

00 Welcome and Introductions
01 Context and Workshop Goals
02 Existing Conditions
03 Future Projections
04 Evaluation Criteria and KPIs
05 Path Forward / Next Steps

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Meet Our Team

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01

Context and Workshop Goals

Planning Process

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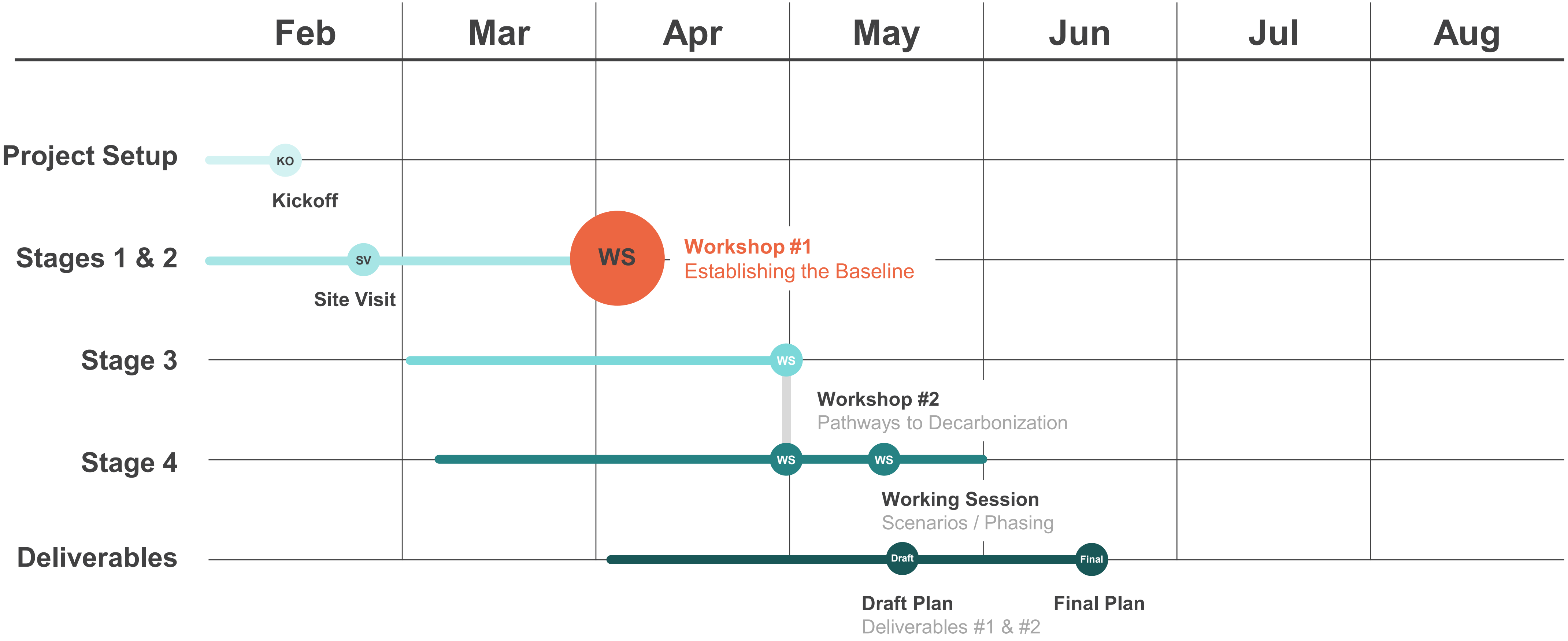
Project Schedule



#1 – Decarbonization Plan
#2 – Cost-Benefit Analysis
#3 – Climate Justice / Equity Analysis
#4 – Next Steps: Climate Action Planning
#5 – Next Steps: Collaborative Involvement

Workshop Goals

1. Validate campus infrastructure setup and conditions
2. Summarize infrastructure energy performance
3. Highlight key constraints & takeaways
4. Align future projections & review assumptions
5. Agree on analysis metrics & indicators
6. Confirm strategies to be evaluated *(if time allows)*

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02

Existing Conditions

References

Campus Orientation

- SQFT Building List + Campus Steam Building List
- UCR Campus AutoCAD Drawing

Campus Infrastructure

- PDF UCR Utility Maps
- PDF Electricity Site Plan
- Electrical Single Line Diagram
- Building Feeder Capacities and Demand

Campus Utility Data

- UCR Utility Data 2022-2023
- Monthly Gas Bills 2017-2021
- RPU + SCG Sample Bills Aug 2022, Aug 2023
- RPU 15-min Interval Data (2 meters) 2022-2023
- RPU 1-hr Interval Data (2 meters) 2017-2021
- 1990-2022 CCWG UCR GHG Inventory

HVAC & BMS

- Building MEP Drawings
- SAT Design Plans

HVAC & BMS (cont.)

- Building Floor Plans
- Phases 1-3 BMS Information + Site Visit BMS Data
- Building BMS Upgrades List
- Building HVAC List

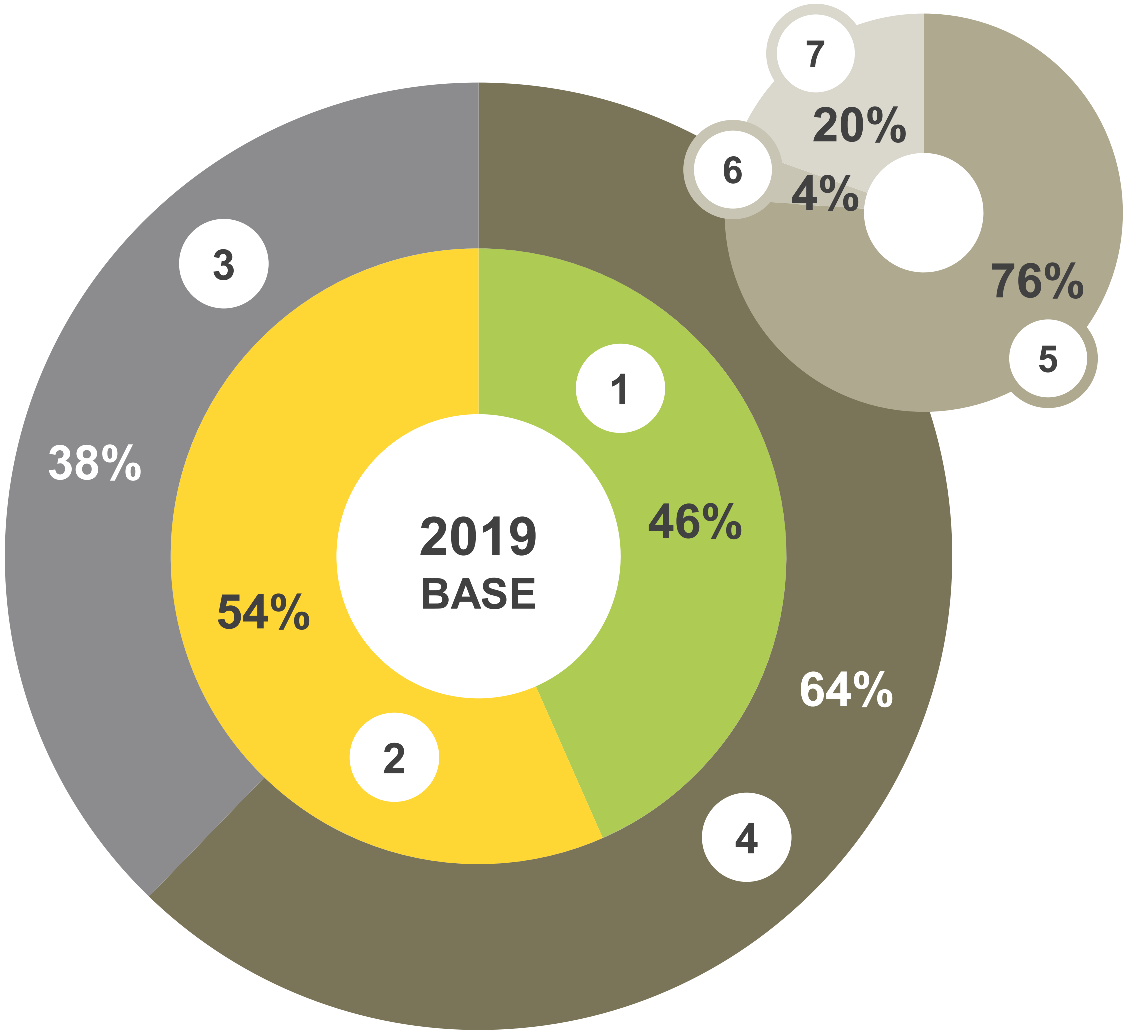
Centralized Energy Utility Data

- Daily CUP Steam Prod. + Gas Con. 2019-2021
- Boiler Interval Data 2019, 2022, 2023
- CHW + TES Interval Data 2019, 2022, 2023

Previous Reports

- SCG Project Feasibility Study UCR Central Plant
- RPU Tier II Energy Assessment (2 reports)
- GHG Annual Summary Reports 2017-2022
- Salas O’Brien Power System Analysis

Campus Energy



1 Electricity
391,046 MMBtu

2 Natural Gas
464,847 MMBtu

3 Scope 1 Emissions
24,670 $mtCO_2e$

4 Scope 2 Emissions
44,640 $mtCO_2e$

5 Central Utility Plant
349,527 MMBtu

6 Metered Housing
19,934 MMBtu

7 Other & Process
91,386 MMBtu

Note: The “GHG Annual CY 2019 Summary Report” presents a reporting discrepancy between the reported SCG and Shell purchase amounts and reported annual natural gas usages for each unit. 4,000 MMBtu is unaccounted for.

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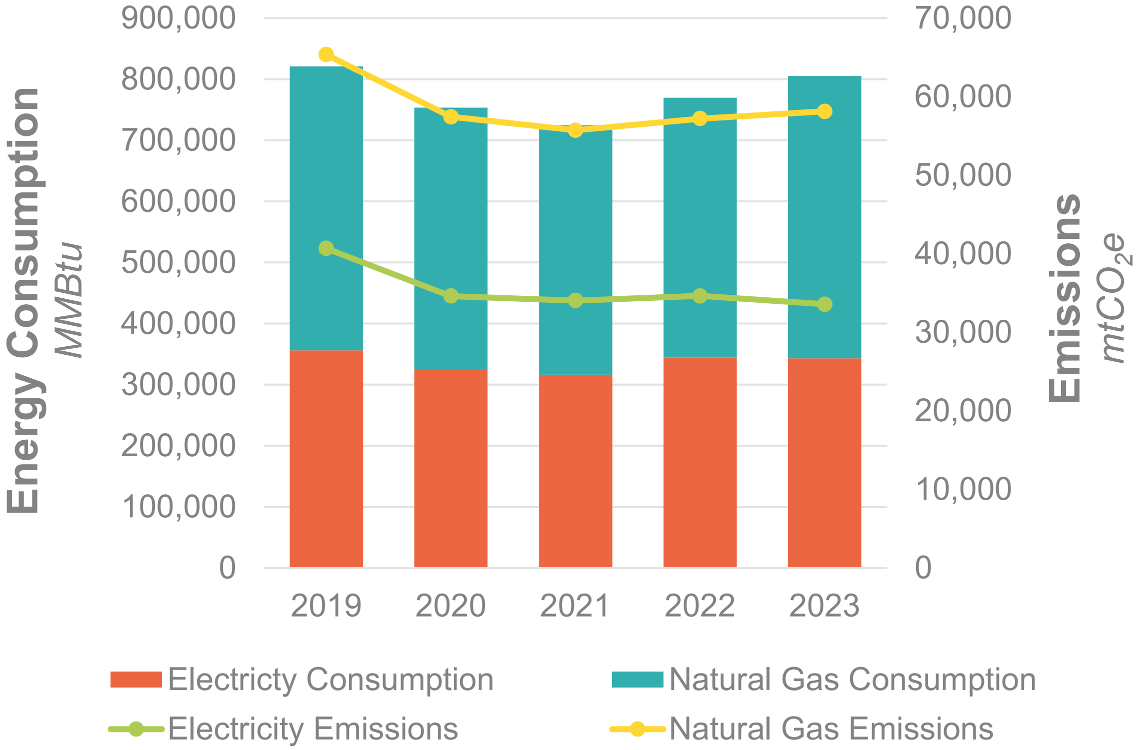
Campus Energy



	Electricity		Natural Gas		Goal[1]	GFA[2]	Cost[4]
Year	MMBtu	$mtCO_2e$	MMBtu	$mtCO_2e$	%	MSF	$MM
2019	356,295	40,675	464,847	24,670	NA	4.7	14.8
2020	323,727	34,611	429,889	22,815	8%	4.7 (0% ▲)	15.1
2021	316,388	34,037	408,559	21,684	14%	4.8 (2% ▲)	15.5
2022	344,454	34,628	425,328	22,574	9%	4.8 (2% ▲)	18.1
2023	343,307	33,581	462,157[3]	24,541[3]	0.6%	4.9 (3% ▲)	19.3

[1] 90% Scope 1 emissions reduction goal from the 2019 baseline
[2] Percent change of Gross Floor Area of the campus from 2019
[3] Value estimated based on the comparisons between utility bill data and Annual GHG Reported values of the provided years (2019-2022)
[4] Costs estimated based on blended utility rates for electricity and natural gas of the provided years (2015-2023)

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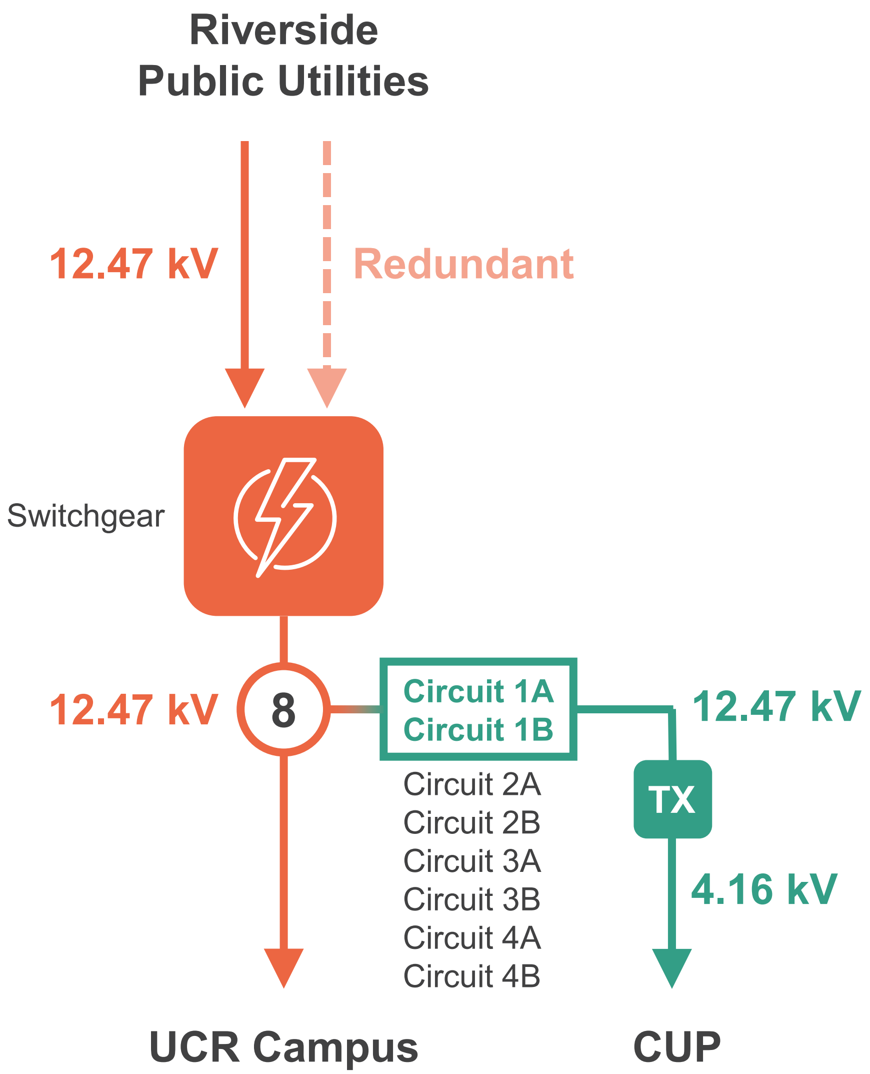
Electrical Infrastructure



- RPU supplies the campus with 12.47kV service to UCR's main-tie-main switchgear via (2) 26.88MVA transformers.
- 4.16-kV distribution throughout the campus. We understand that the 4.16kV system is now entirely **back fed by the 12.47kV service**. The 4.16kV and 12.47kV systems were previously separate services.
- A Load Study Report by Salas O'Brien (May 2020) showed that there is **little remaining capacity on the 12.47-kV service**. At that time, the max metered daily coincident demand was shown to be 31.92MVA and the average demand was 21.72MVA. RPU's transformers are rated 26.88MVA, meaning that **a single RPU transformer could not support the total max demand** of the campus, but it could support an average load.
- Electrification of the campus' utilities will likely necessitate an additional 12.47-kV service feed to avoid overloading the existing 12.47-kV service.

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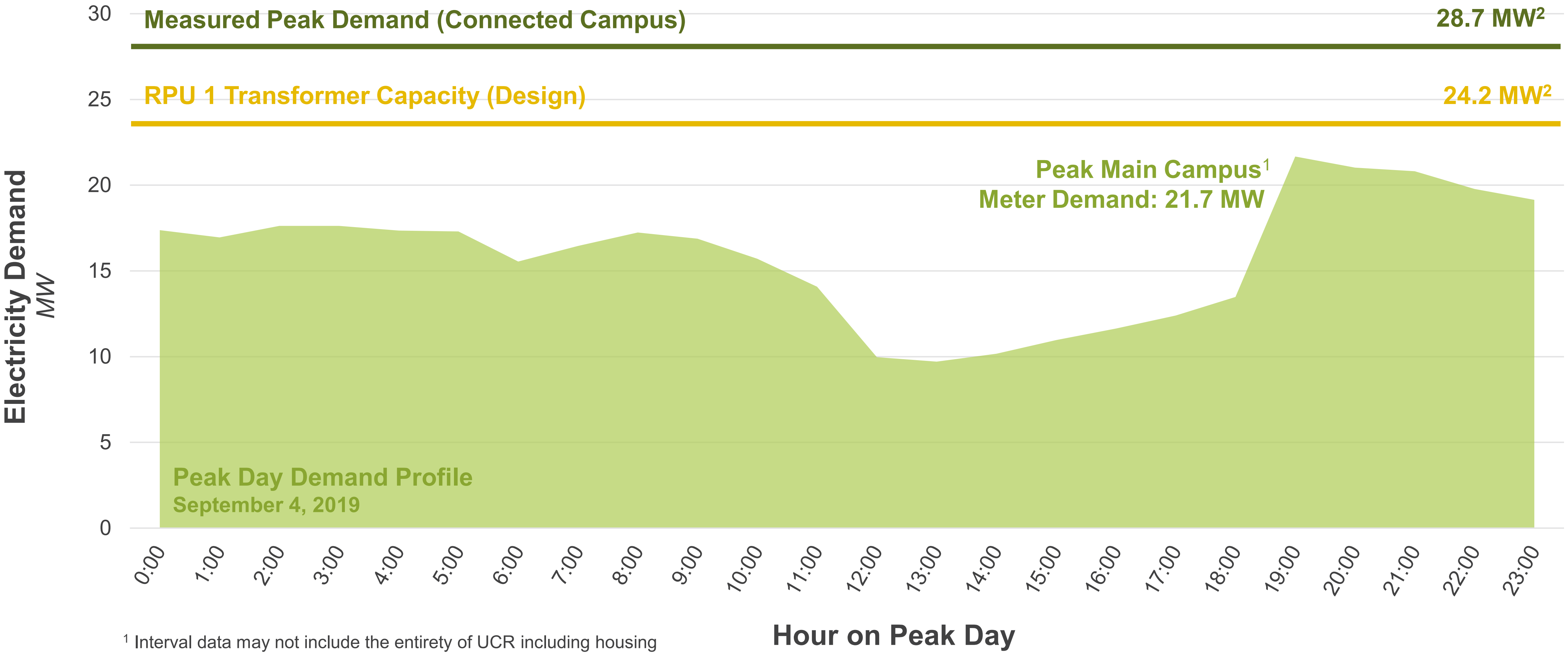
Campus Energy – Peak Electrical[1,3]

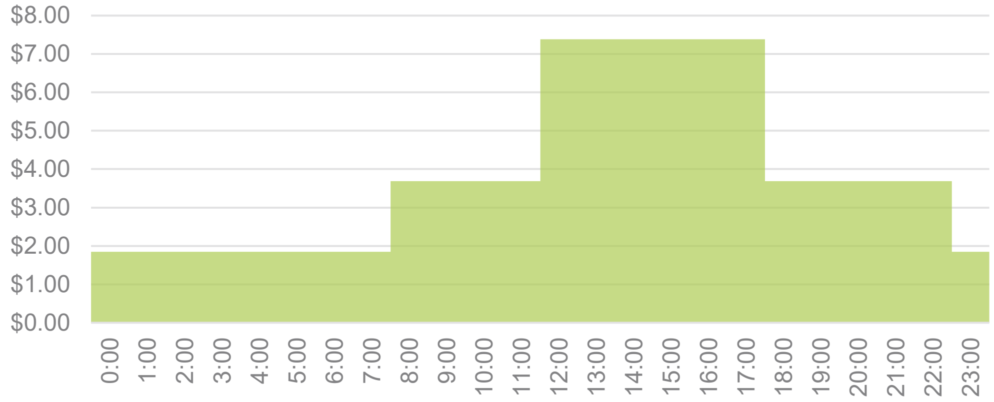


[1] Interval data may not include the entirety of UCR including housing
[2] Power factor assumed to be 0.90
[3] Data based on the load data 2020 Load Study by Salas O'Brien

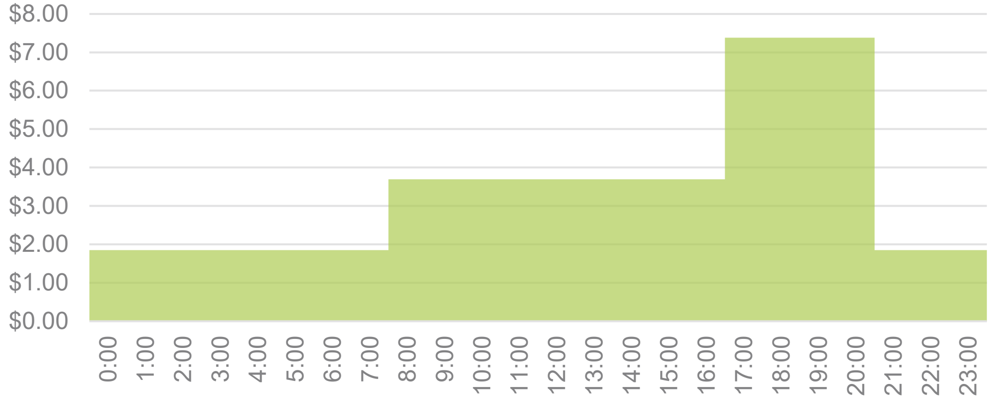
Campus Energy – Utility Rates

2023 RPU Demand Charges

Summer Demand – $ per kW

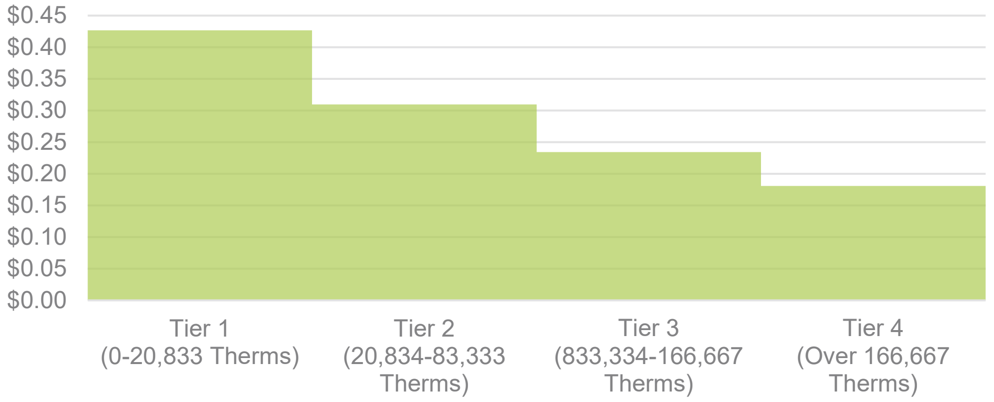


Winter Demand – $ per kW



2024 SoCal Gas GT-3NC Rates

Year Round – $ per therm

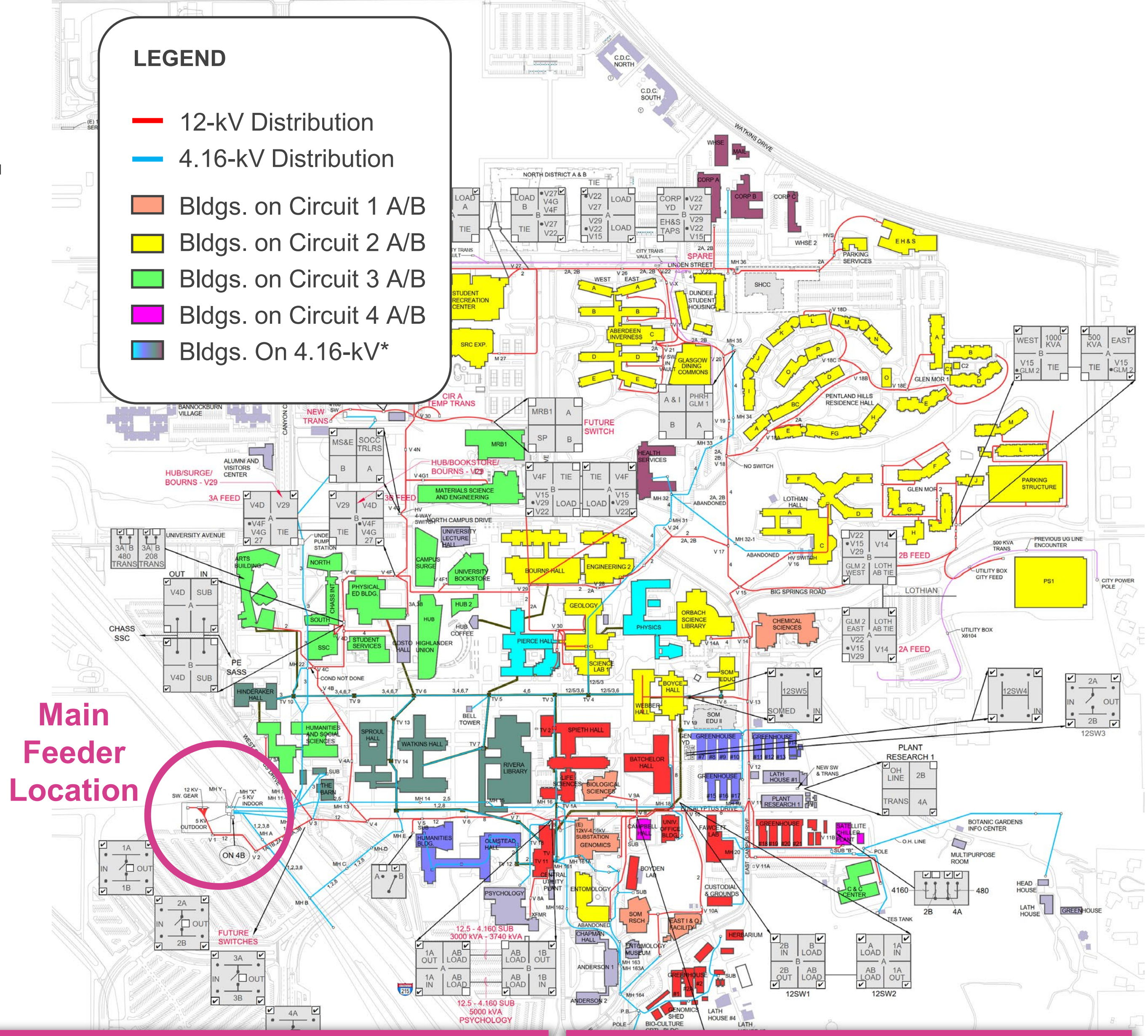


- Low electricity and gas cost (relatively)
- Gas commodity purchase from Shell at lower rate.
- No incentive for demand management
- Electricity rate schedule locked in for the next five years

Electrical Infrastructure

- UCR's primary supply feeders and switchgear are located west of main campus, across the 215 freeway.
- 12.47kV and 4.16kV distribution serves the campus via underground duct banks and tunnel vaults..
- Feeders are arranged in an A/B configuration to provide redundancy in supply to buildings.
- UCR facility's ideal scenario is to have each circuit loaded at no more than 50% of their individual capacity, however this is not currently possible.
- Housing areas mostly rely on the 12-kV medium voltage distribution. New RPU substation planned
- **Circuit 1 A/B** primarily supply buildings to the S/SE and CUP. **Circuit 2 A/B** primarily supply buildings to the NE. **Circuit 3 A/B** primarily supply buildings to the NW. **Circuit 4 A/B** primarily supply solar field, central campus, and satellite chiller plant.

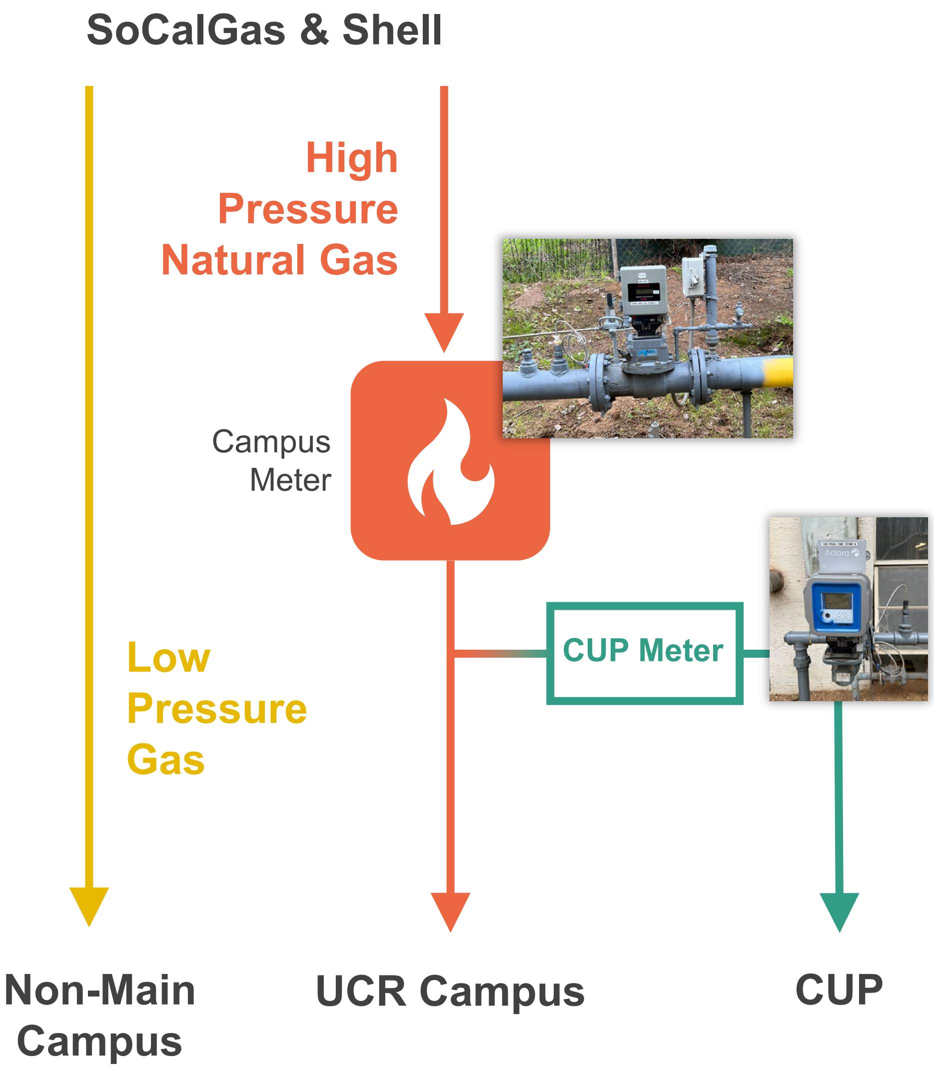
* Teal, purple, dark green, maroon, and red buildings were part of the original 4.16kV system that have been refed by feeders from the 12.47kV system.



What is the timeline for the new RPU substation?

Which substation will OASIS Park be supplied from?

Natural Gas Infrastructure



- Primary use of natural gas includes:
  - Boilers at the Central Utility Plant for steam production
  - Direct building uses for laboratories,
  - Decentralized heat and process —especially for housing— domestic hot water, and other processes (e.g., cooking).
- Main campus gas feed starts at the Steam Plant. 100 psi natural gas is then distributed through tunnels and underground with local meters/regulators at facilities that use natural gas.
- Housing areas are served by a **separate gas service** not from this main.
- SoCalGas infrastructure, purchased from both SoCalGas (21%) and Shell (79%)
- Purchasing **UCOP gas starting summer 2024** (replacing Shell)

What are the UCOP gas rates?

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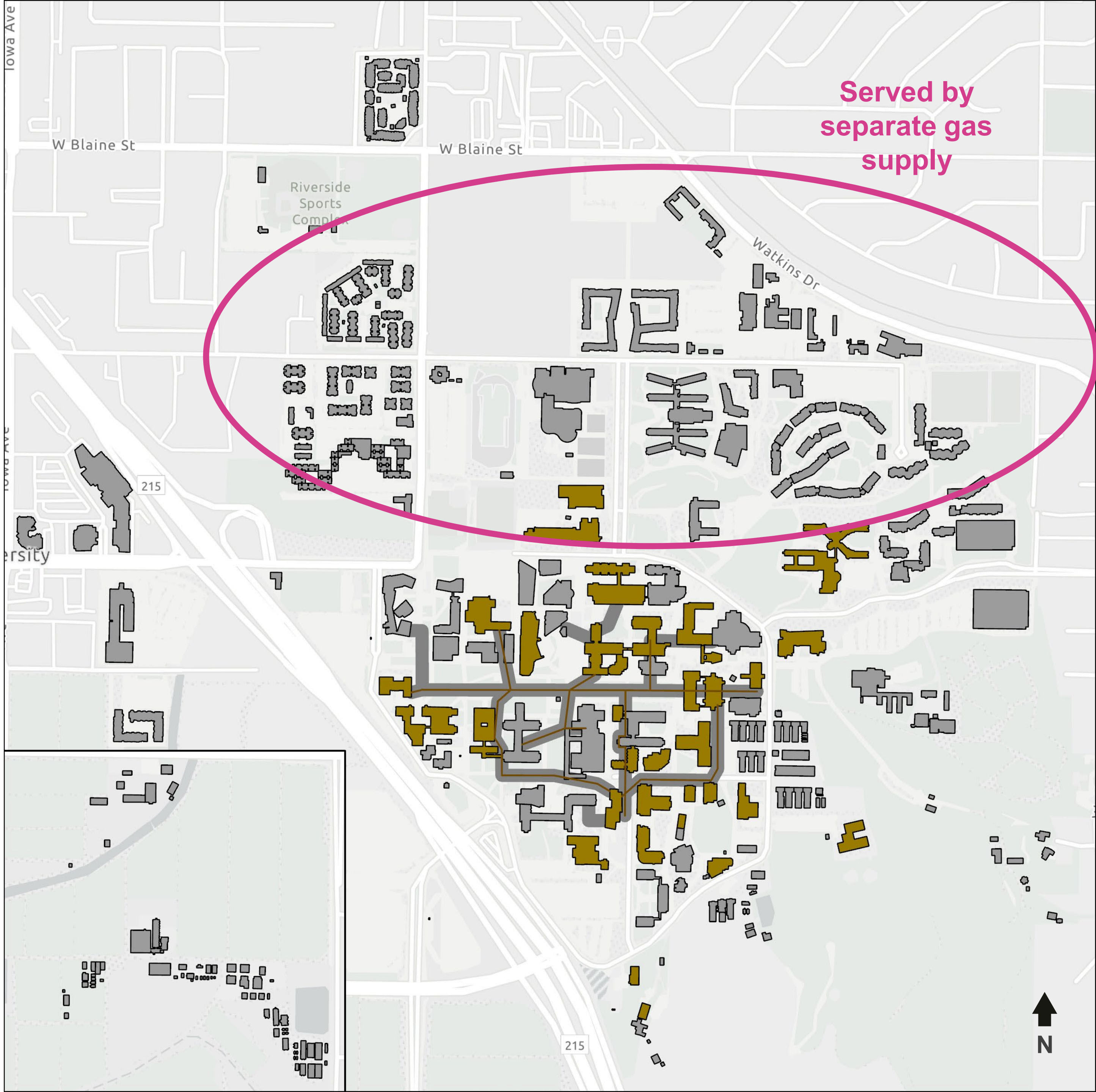
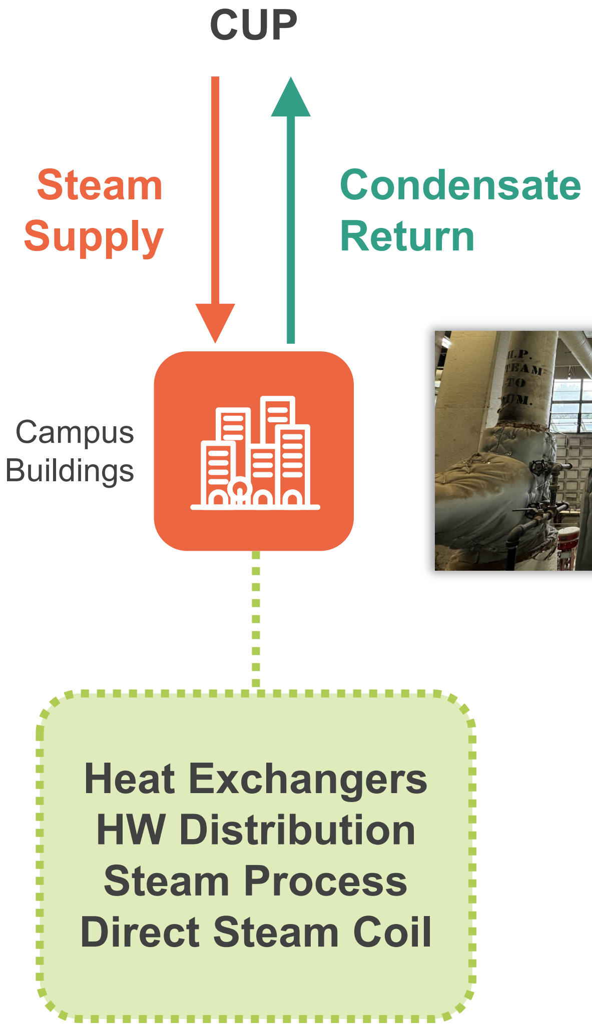
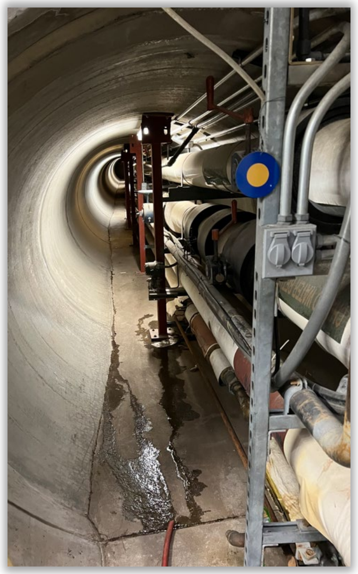
Natural Gas Infrastructure

34 Bldgs	Natural gas connection	
356 Bldgs	Not on main campus supply	
7,100 LF	Gas infrastructure (1.3 miles)	
8,870 LF	Tunnel infrastructure (1.7 miles)	



Steam Infrastructure





- Steam is distributed through piping within tunnels at minimum 85 psi.
- Condensate is collected from buildings and pumped back to the central steam plant for re-introduction into the system. Roughly 85% of steam is recovered as condensate back at the plant.
- Pipes as old as 1950s but generally in good condition insulated (with some additions needed).

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Steam Infrastructure

21 Blgs	Direct or process steam	
	Other steam uses	
	No steam connection	
17,800 LF	Steam infrastructure (3.4 miles)	
8,870 LF	Tunnel infrastructure (1.7 miles)	
---	Central Utility Plant	

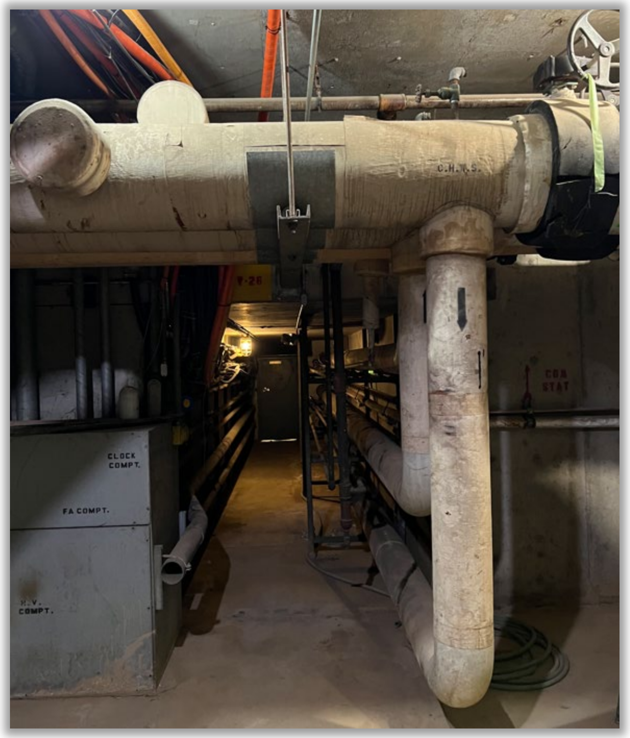
Chilled Water Infrastructure

- Chilled water is distributed around the campus from the central plant and the satellite plant. Chilled water is either direct buried or routed through tunnels.

- Current distribution pumps vary speed based on a single differential pressure transmitter near Bourns Hall. In the process of adding more.

- Steam Plant cooling system has some operational limitations:
  - No isolation valves / control values
  - Requires chillers connected in series to get to 38 °F (inefficient)
  - Losing capacity due to series configuration

- Satellite plant serves most of the demand



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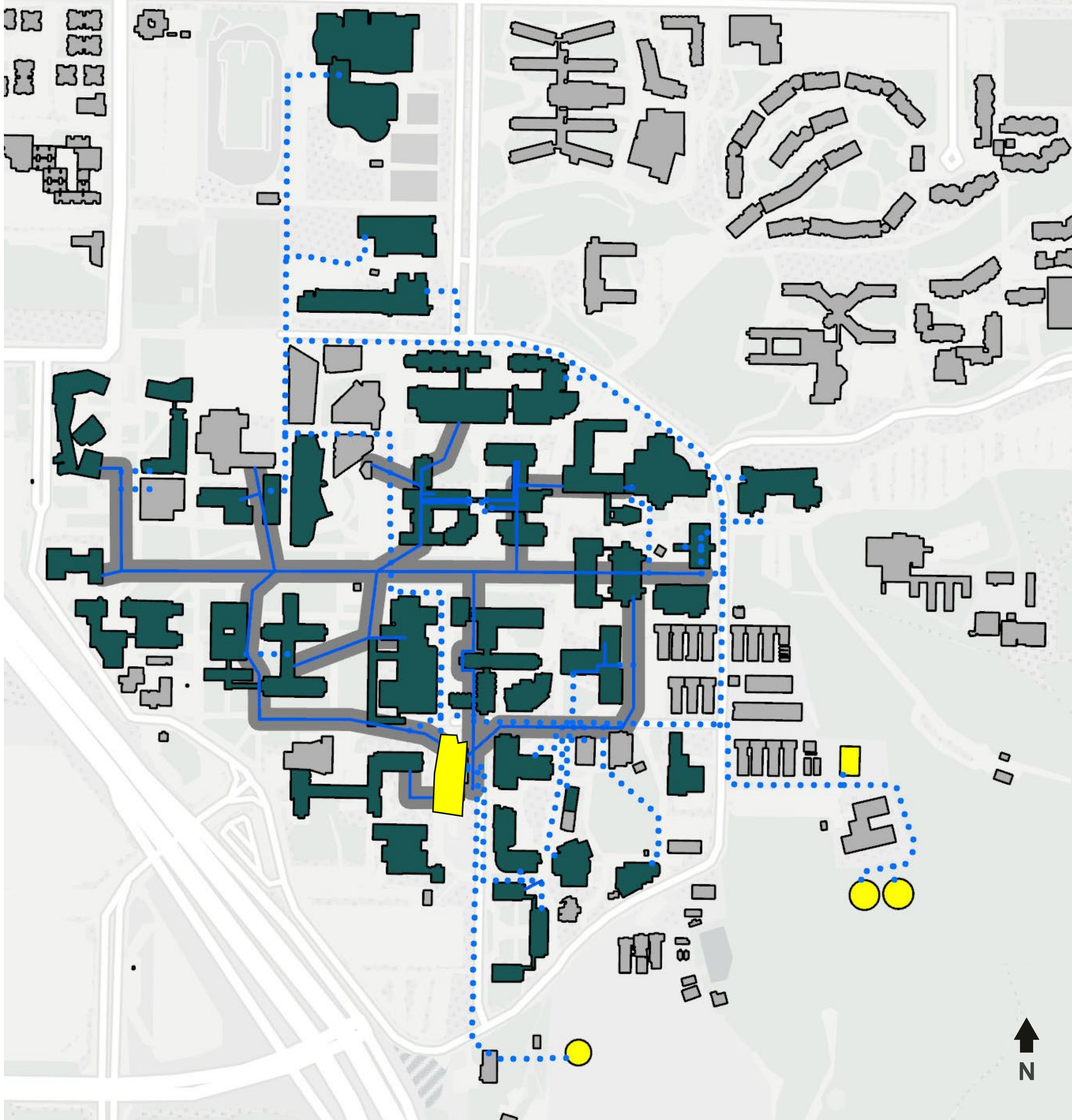
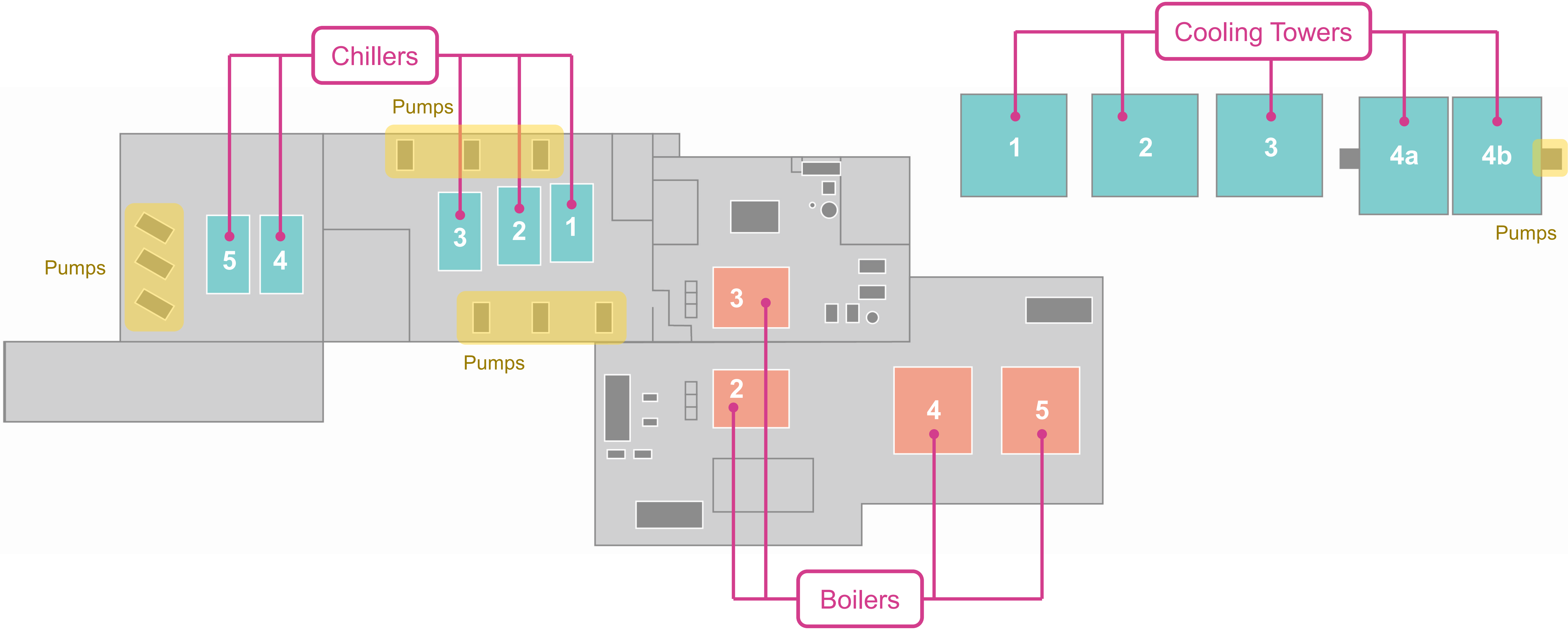
Chilled Water Infrastructure

46 Bldgs	CHW connection	
344 Bldgs	No CHW connection	
25,120 LF	CHW infrastructure (4.8 miles)	
8,870 LF	Tunnel infrastructure (1.7 miles)	
---	Plants & Thermal Energy Storage	



Central Utility Plant Layout



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CUP Equipment

Equipment		Identifier	Capacity	Install Date
	**Water-Cooled Chillers**	**CH-1**	1,275 Tons	2006 (18 yrs)
		CH-2	1,250 Tons	2017 (7 yrs)
		CH-3	1,250 Tons	1999 (25 yrs)
		CH-4	1,240 Tons	1995 (29 yrs)
		CH-5	1,240 Tons	1995 (29 yrs)
	**Cooling Towers**	**CT-1**	1,500 Tons	2000 (24 yrs)
		CT-2	1,500 Tons	2000 (24 yrs)
		CT-3	1,500 Tons	2000 (24 yrs)
		CT-4A	1,600 Tons	2000 (24 yrs)
		CT-4B	1,600 Tons	2000 (24 yrs)
	**Gas-Fired Boilers**	**B-2**	30,000 lbs/hr	1958 (66 yrs)[1]
		B-3	30,000 lbs/hr	1962 (62 yrs)[2]
		B-4	40,000 lbs/hr	1967 (57 yrs)[3]
		B-5	50,000 lbs/hr	2013 (11 yrs)

[1] Modified in 1985 to LO-NOx burner
[2] Modified in 1986 to LO-NOx burner
[3] Modified in 1987 to LO-NOx burner

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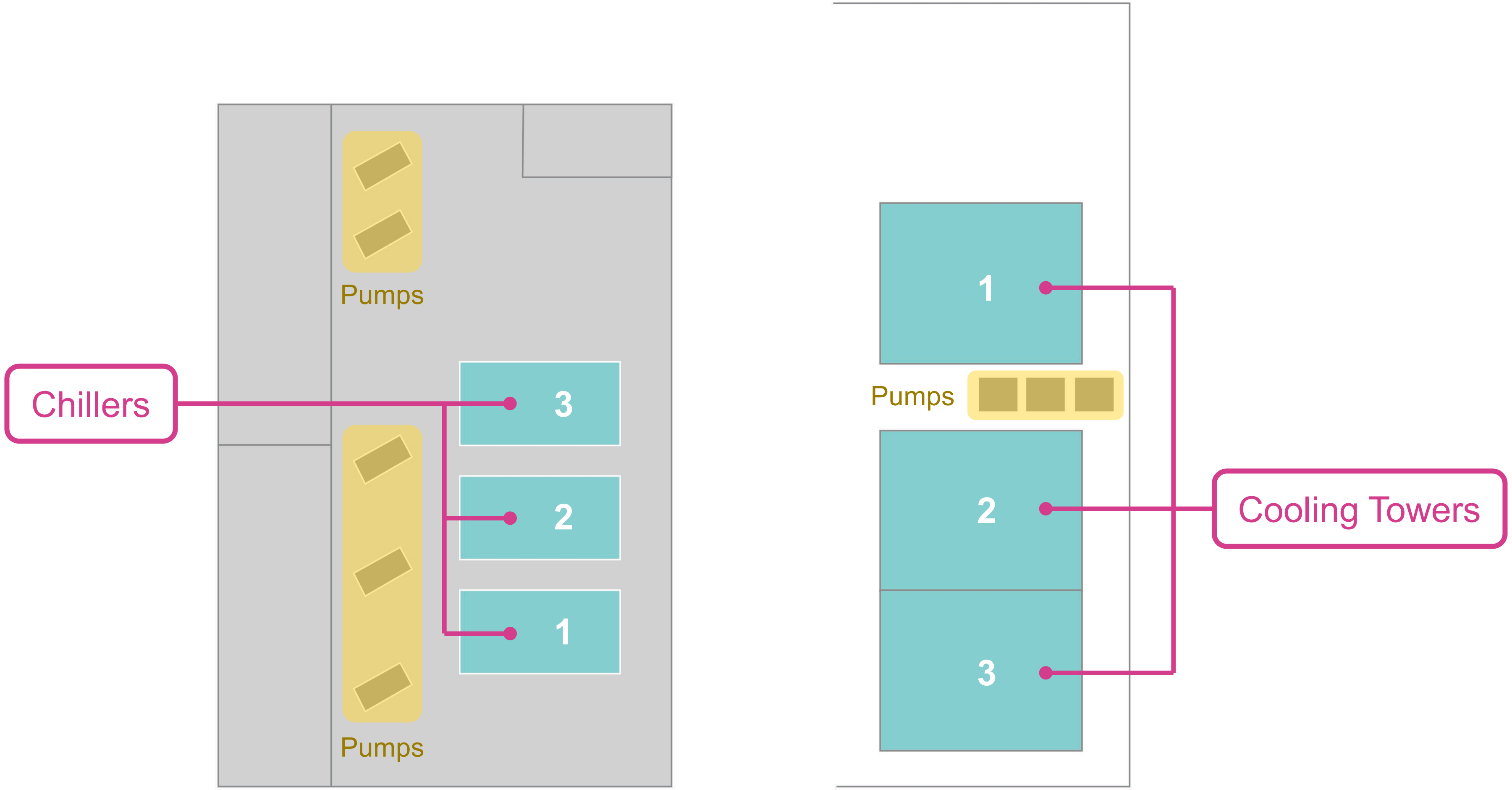
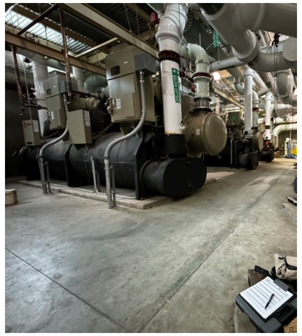
CUP Possible Expansion

Satellite Plant Layout



SAT Plant Equipment

Equipment		Identifier	Capacity	Install Date
	Water-Cooled Chillers	CH-1 CH-2 CH-3	2,000 Tons 2,000 Tons 2,000 Tons	2003 (21 yrs) 2003 (21 yrs) 2003 (21 yrs)
	Cooling Towers	CT-1 CT-2 CT-3	2,350 Tons[1] 2,350 Tons[1] 2,350 Tons[1]	2003 (21 yrs) 2003 (21 yrs) 2003 (21 yrs)

[1] Estimations based on mechanical drawings

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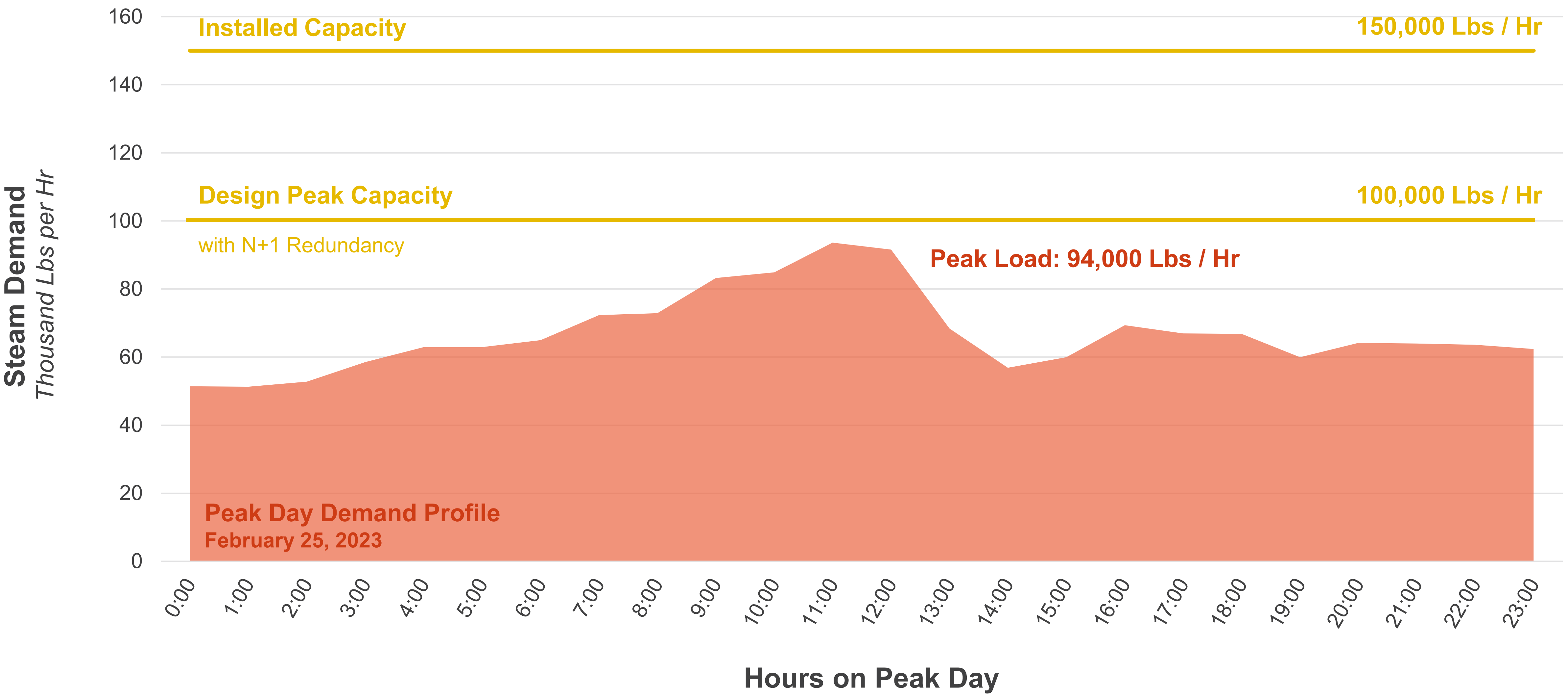
SAT Plant Possible Expansion

SAT Plant Equipment

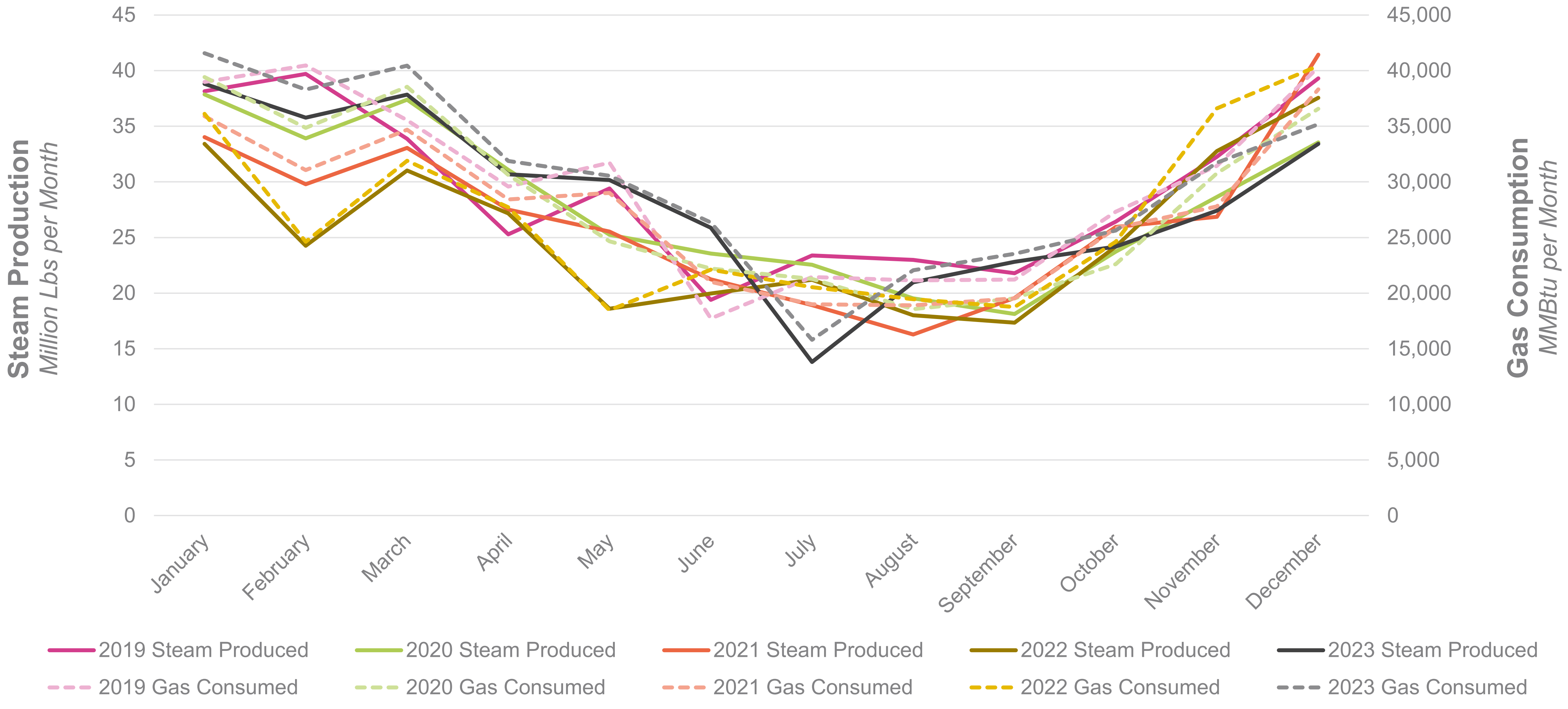
Equipment	Identifier	Capacity	Availability
TES Tanks	**TES-1**	2,200,000 gal	24,000 Ton-hrs
	TES-2	2,700,000 gal	24,000 Ton-hrs
	TES-3	2,700,000 gal	24,000 Ton-hrs

- TES-3 cannot be operated independently in the summer during high cooling demand periods.
- Opportunity for improvement.

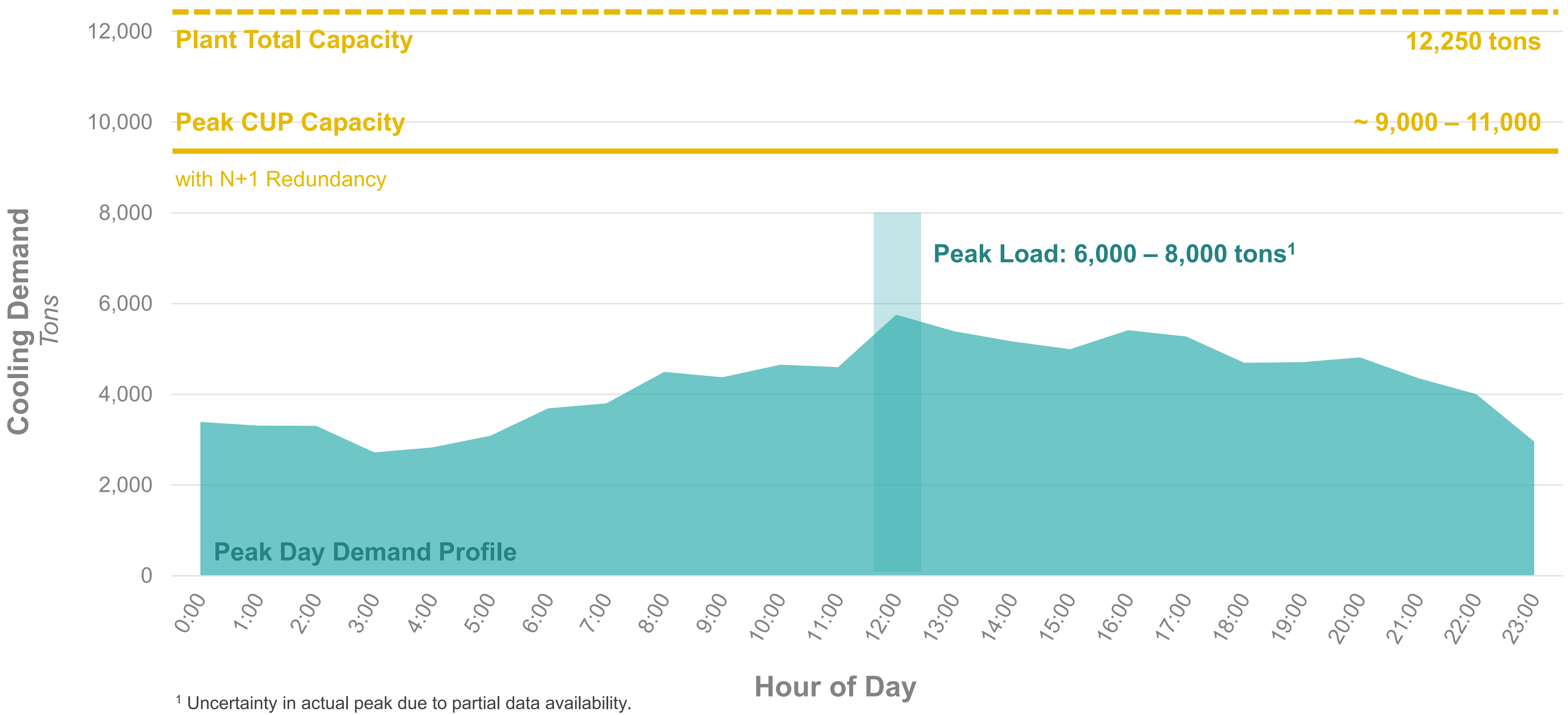
Thermal Demand – Peak Heating



CUP Performance – Steam Production

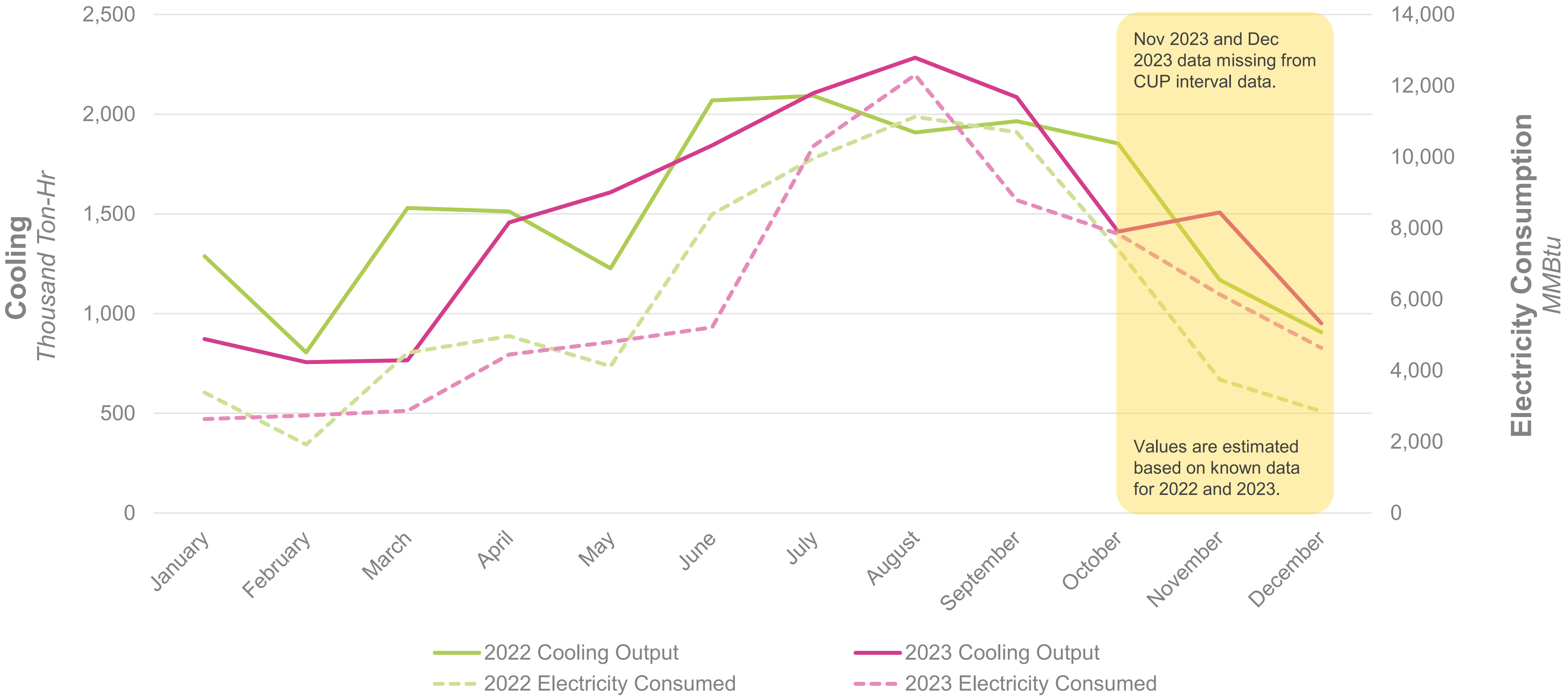


Thermal Demand – Peak Cooling



[1] Uncertainty in actual peak due to partial data availability.
Modeled pending calibration.

CUP Performance – Cooling Supplied



Controls Infrastructure

- Building systems are controlled across **five different** interfaces that are getting consolidated.
- Controls for the CUP have fallen out of effective use. **Steam metering** has fallen out of calibration and is not functional. Recent control upgrades have yet to be commissioned but should resolve this issue.
- Programmed **control strategies** are not consistent across buildings or optimally set for specific building types.
- System controls have the opportunity to be optimized and programmed **efficiently**. Communication between the buildings can also be improved.
- The campus would benefit from a widespread controls **retro-commissioning** initiative.
- Lack of historical **trending resource data** has required additional modeling to be made to provide a complete hourly profile for systems analysis.

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Other Findings

- Campus staff are well-trained to operate the **steam** system. From an operational standpoint, steam is preferred.

- UCR could **benefit from additional resources** (i.e. staff) to support the identification and implementation on energy projects as well as ongoing system performance tracking.

- Some **decentralized heat pumps** at a few buildings have had issues with design, commissioning, startup, and support from manufacturers.

- Utilities are **relatively inexpensive** compared to peers. This can increase ROI on proposed projects.

- The campus has a heavy agricultural presence. Experimental crop waste, in combination with food waste, could potentially be used as **biofuels**. This can be an opportunity for a student project to assess its full potential.

03

Future Projections

References

Campus Plans

- Long Range Development Plan (LRDP)
- UCR 2023 Central Campus Level Strategic Initiatives
- Other UC Campus Decarbonization Plans: UC Berkeley, UC Davis, UC Santa Cruz

Benchmarks & Targets

- 2018 CBECS Survey Data
- UC Whole Building Energy Benchmarks & Targets (Excel Spreadsheet)
- UC Whole Building Energy Benchmarks & Targets (Report)
- 2022 CEC Building Energy Efficiency Standards
- UC Policy on Sustainable Practices

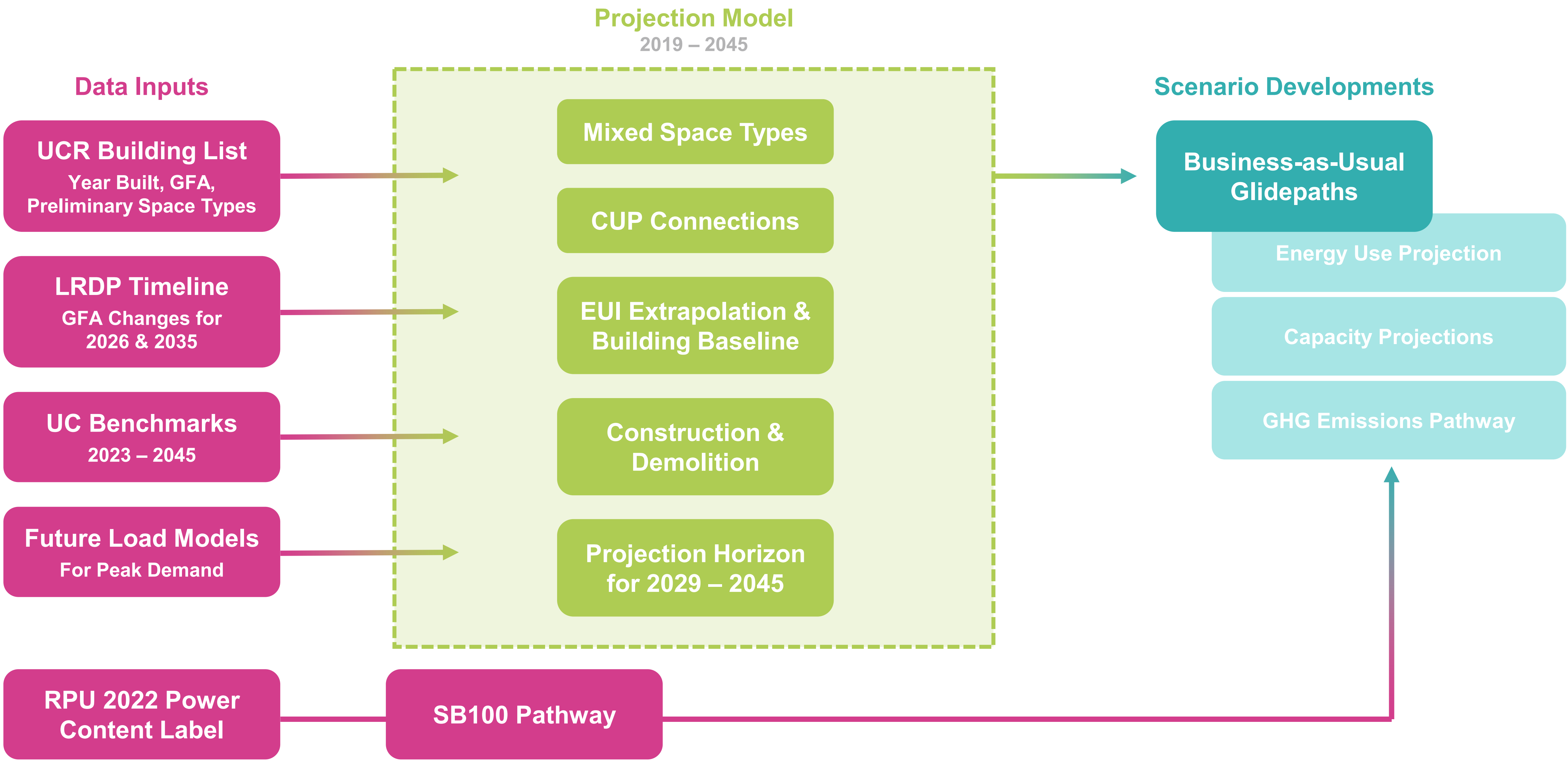
Emissions

- 2019-2022 RPU Power Content Labels
- 1990-2022 UC Climate Change Working Group (CCWG) UCR GHG Inventory

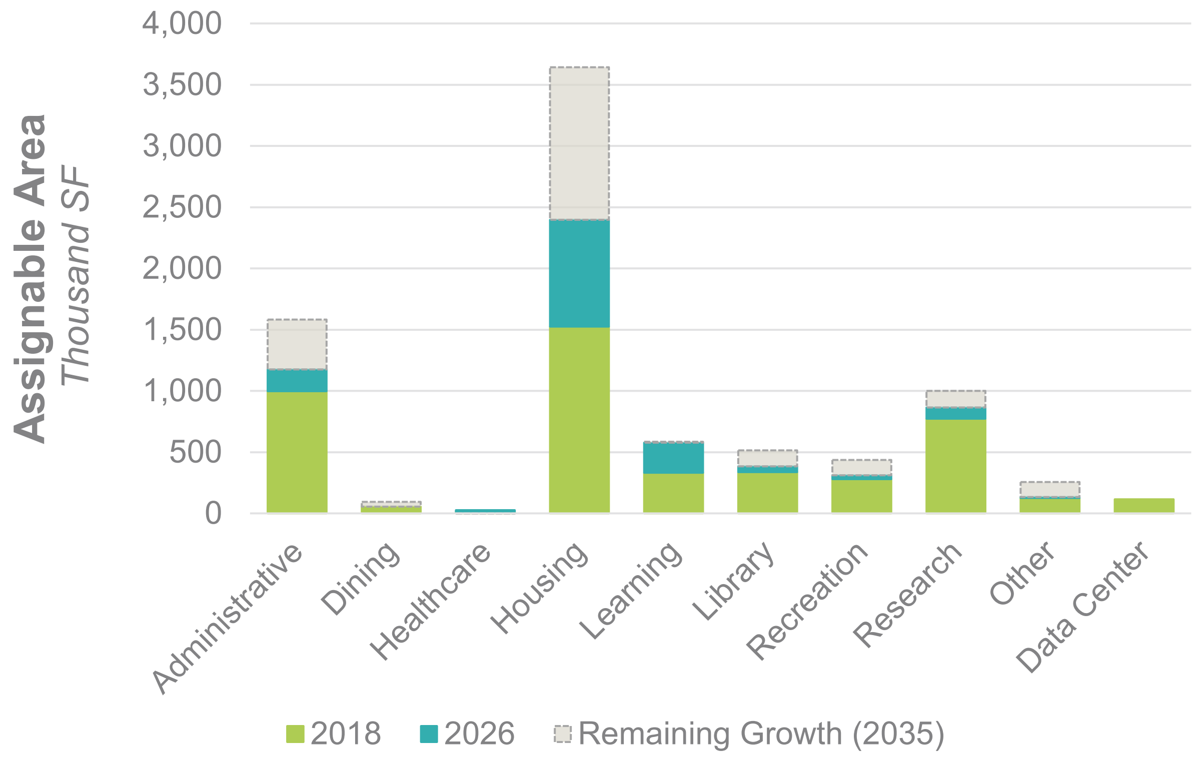
Model Assumptions

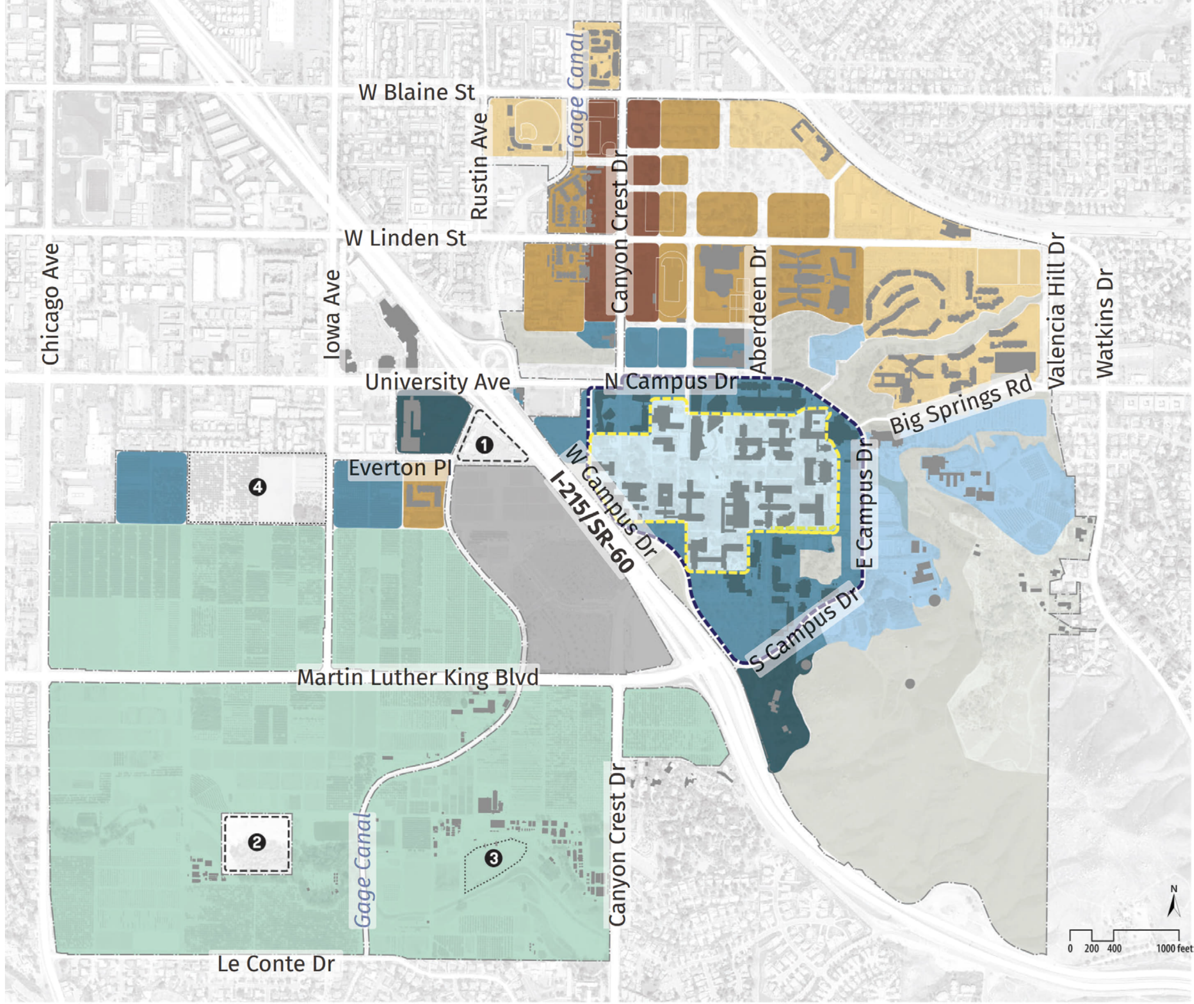
- UC Decarbonization Studies Assumptions

Projection Methodology



LRDP Space Needs





F3.2 DENSITY FRAMEWORK

*See Figure 3.1 Land Use Plan for footnotes

- MID-CENTURY MODERN CORE
- ACADEMIC CENTER
- 85' OR 5-6 STORIES (ACADEMICS/RESEARCH/ MIXED USE)
- 65' OR 4-5 STORIES (ACADEMICS/RESEARCH)
- 55' OR 3-4 STORIES (ACADEMICS/RESEARCH)
- IN CHARACTER WITH SURROUNDING BLDGS (ACADEMIC)
- 80' OR 7-8 STORIES (MIXED-USE HOUSING)
- 65' OR 5-6 STORIES (HOUSING)
- 55' OR 3-5 STORIES (HOUSING)
- 45' OR 2-3 STORIES (LAND-BASED RESEARCH)
- 55' OR 4-5 STORIES (CAMPUS SUPPORT)

Height limits do not include non-habitable components of the structure including but not limited to mechanical equipment, elevator shafts, stairwell for access, parapets, PV, etc. Story limits do not apply to parking structures.

Planned Development (2019 – 2026)

Building	Typology	Start Year	Estimated GFA
Multidisciplinary Research Building 1 (MRB 1)	Research	2019	125,000
Plant Research 1	Research	2021	30,000
Student Success Center (SSC)	Learning	2021	62,000
Student Health & Counseling Center (SHCC)	Healthcare	2023	40,000
School of Medicine Education Building 2 (SOM ED 2)	Learning	2023	90,000
School of Business	Learning	2024	63,400
North District Ph. 1 – Housing	Housing	2024	435,000
North District Ph. 2 – Housing	Housing	2025	436,000
Opportunities for Advancement, Social Inclusion and Sustainability (OASIS) Park	Research	2026	45,000
Undergraduate Teaching & Learning Facility (UTLF)	Learning	2026	104,000

Horizon Projects

Building	Typology	Start Year	Estimated GFA
UCR Agricultural Research, Education and Neighborhood Advancement Center (ARENA) Ph. 1	Research	No Details	No Details
Residence Hall	Housing	No Details	No Details
UCR Agricultural Research, Education and Neighborhood Advancement Center (ARENA) Ph. 2	Research	No Details	No Details
Undergraduate Teaching & Learning Facility 2 (UTLF 2)	Learning	No Details	No Details
Undergraduate Teaching Greenhouses	Learning	No Details	No Details
Multispecialty Ambulatory Clinic	Healthcare	No Details	No Details
South District Housing	Housing	No Details	No Details

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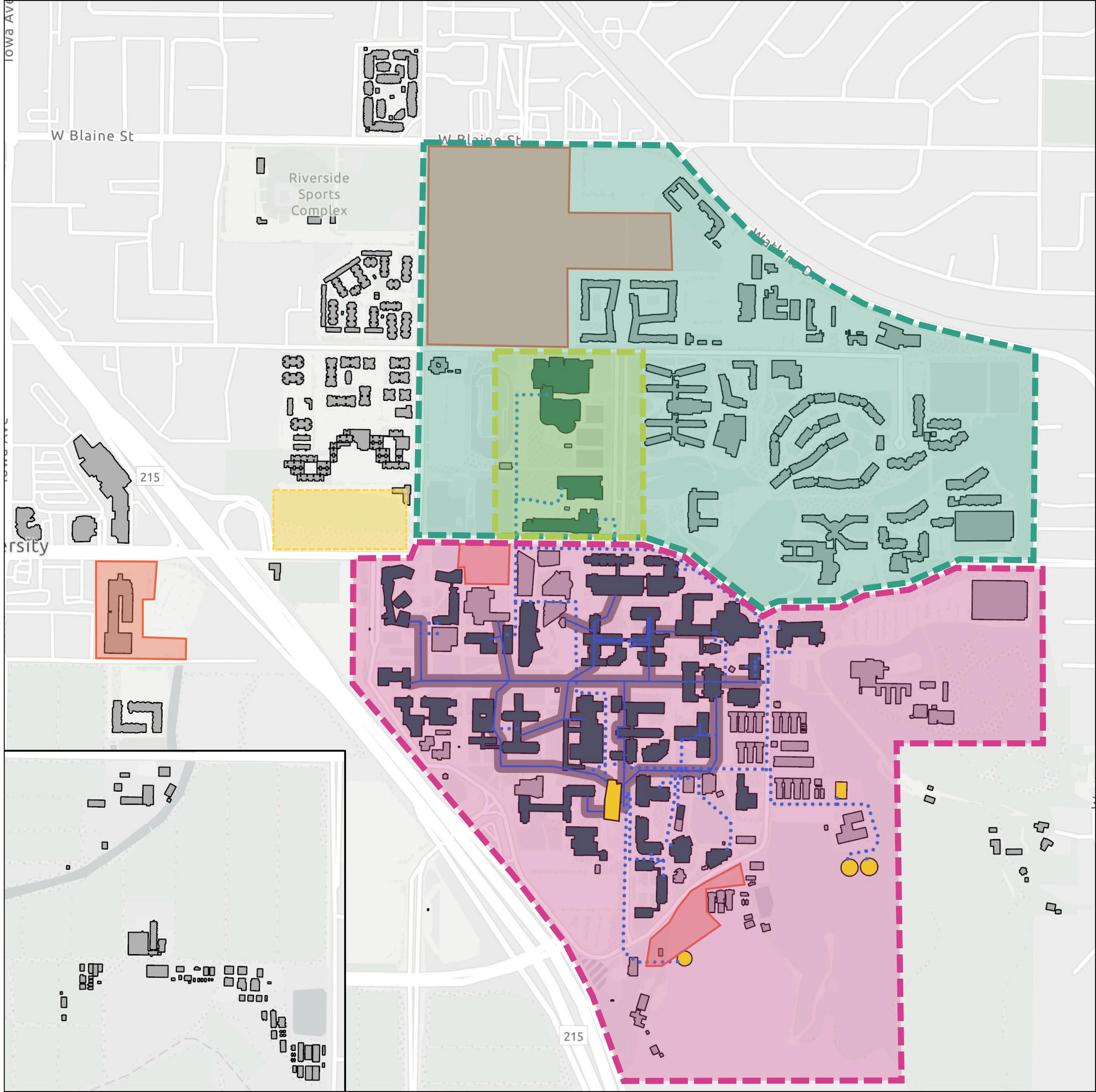
District Systems

Ongoing Buildouts	
Potential CUP Location	
District Boundary (North)	
District Boundary (South)	
Hybrid District	

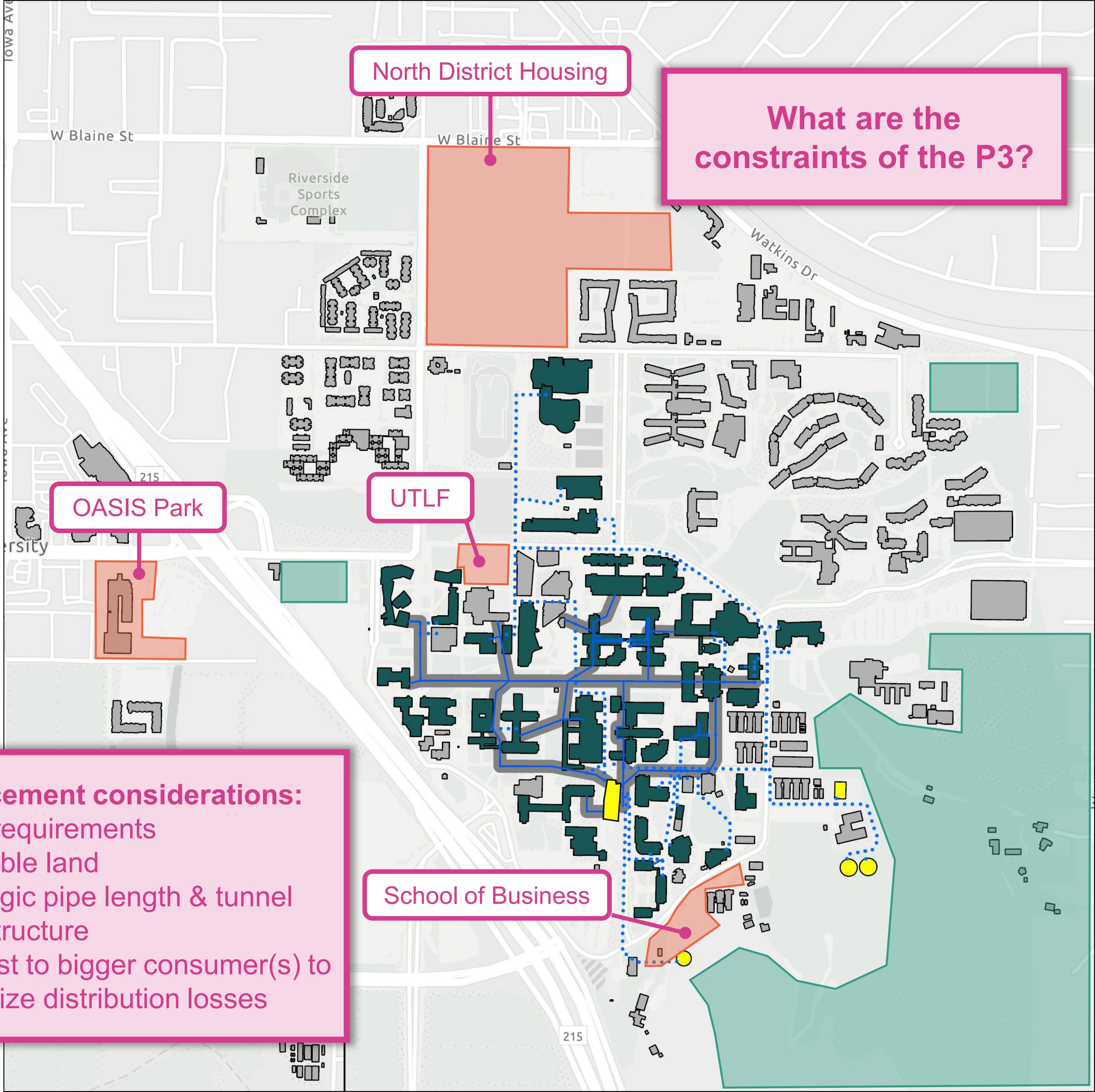
CHW connection	
No CHW connection	
CHW infrastructure	
Tunnel infrastructure	
CHW Assets	



New CUP Locations

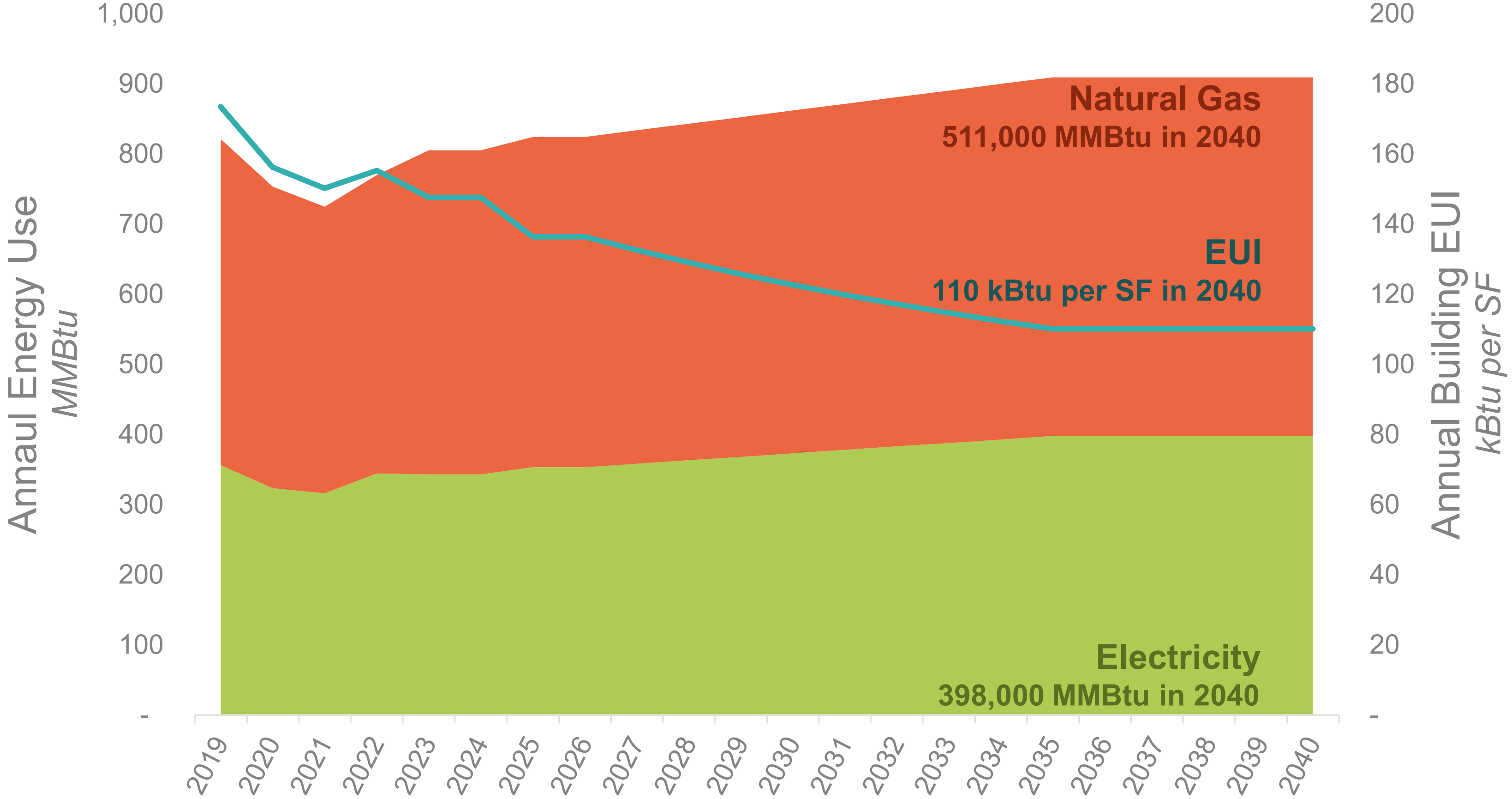
5 Sites	Ongoing Buildouts	
---	Infeasible Locations	

46 Bldgs	CHW connection	
344 Bldgs	No CHW connection	
25,120 LF	CHW infrastructure (4.8 miles)	
8,870 LF	Tunnel infrastructure (1.7 miles)	
---	Cooling Plants & TES	



CUP placement considerations:
- Area requirements
- Available land
- Strategic pipe length & tunnel infrastructure
- Closest to bigger consumer(s) to minimize distribution losses

Future Projections – BAU Energy



Modeled Future BAU Pathway based upon LRDP and UC Benchmarks

11% Increase
in Natural Gas Use

16% Increase
in Electricity Use

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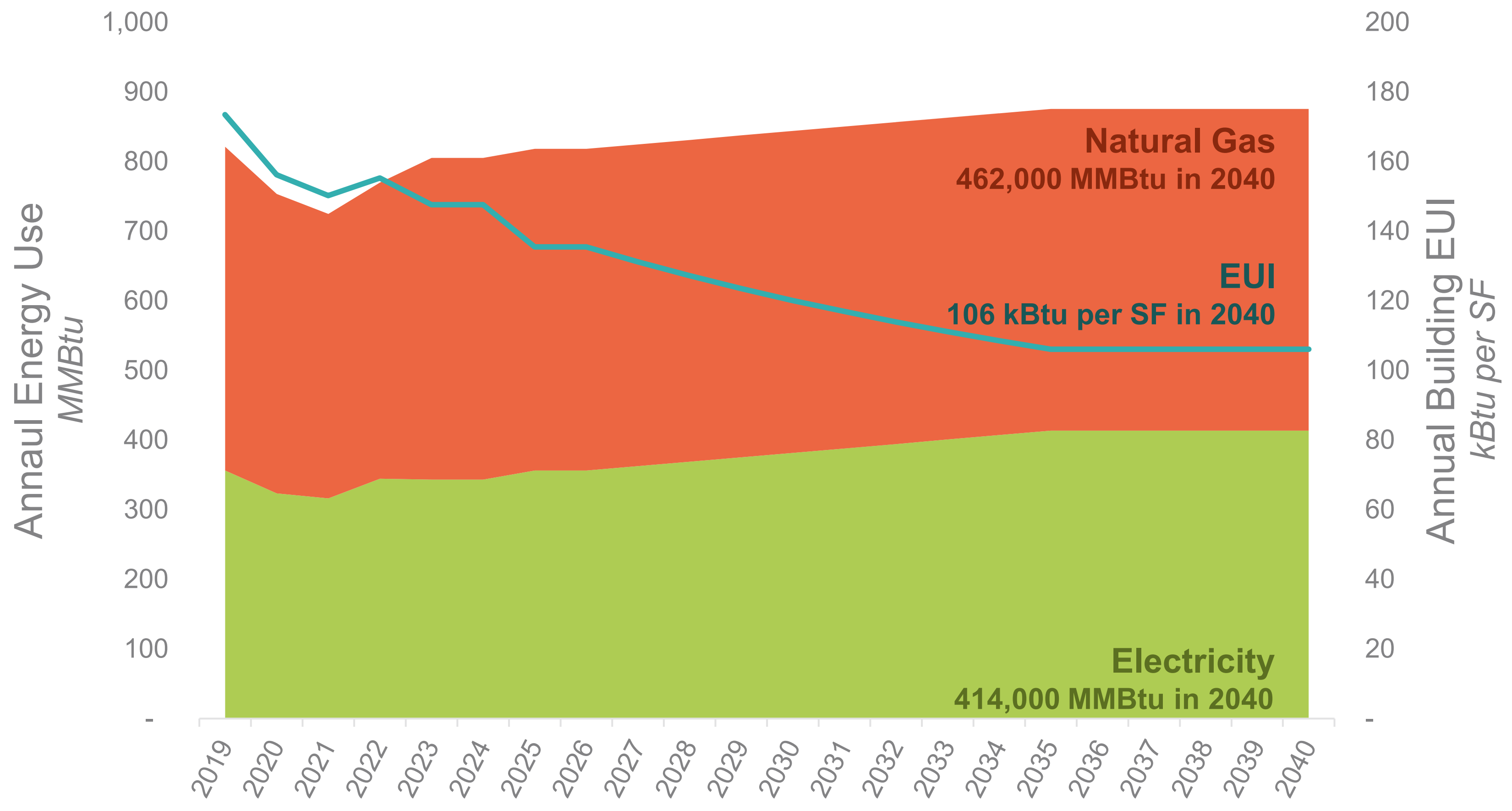
Future Projections – BAU Energy – New Building Electrification

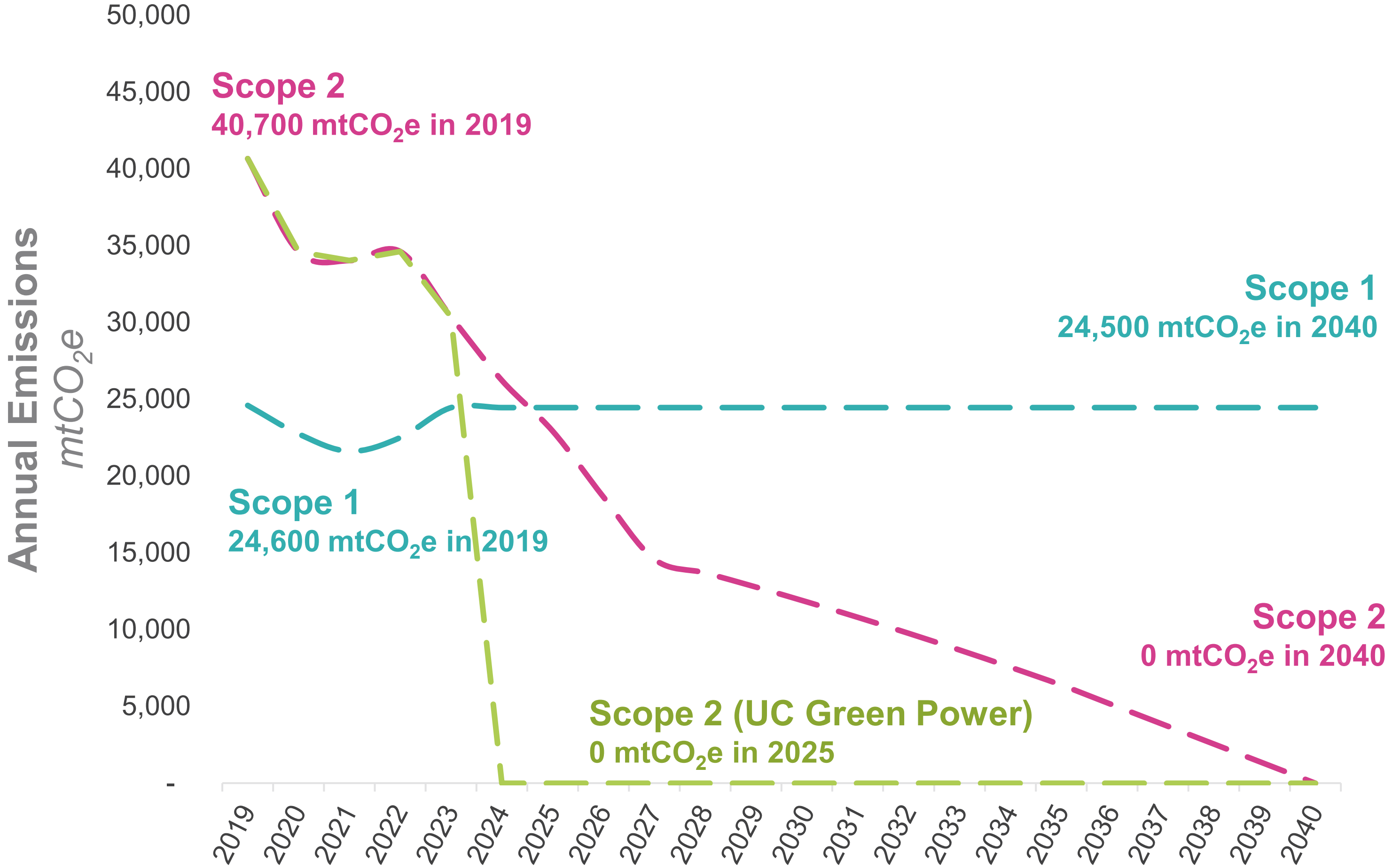


Modeled Future New Building Electrification Pathway based upon LRDP and UC Benchmarks

0% Increase
in Natural Gas Use

20% Increase
in Electricity Use

Future Projections – BAU Emissions



58% Reduction
in Annual Emissions

2019: Scope 1 is 38% of All Emissions

2040: Scope 1 is 100% of All Emissions

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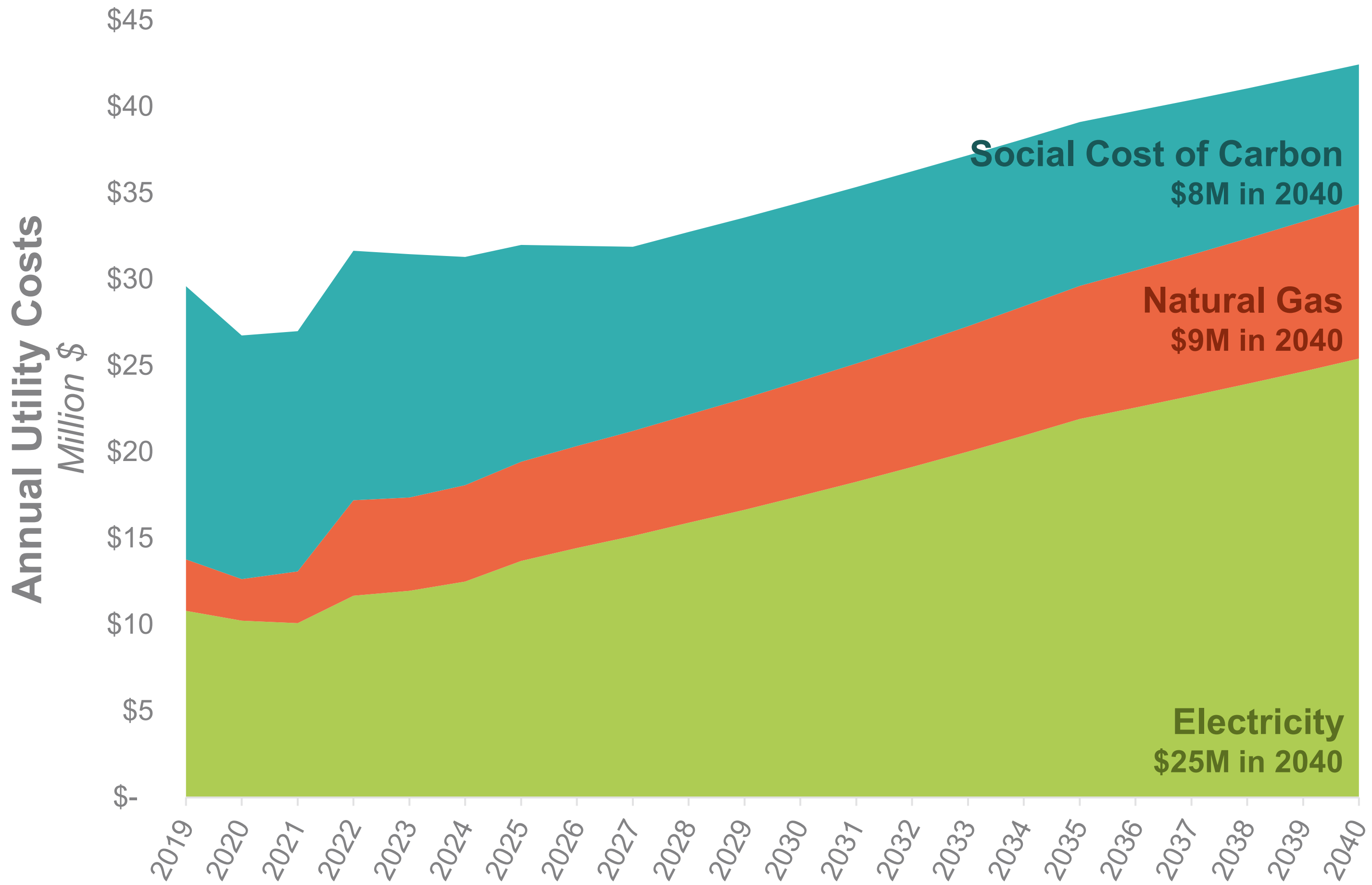
Future Projections – BAU Annual Costs



Future Projections utilizing 3% escalation rate for both electricity and gas.

330% Increase
in Natural Gas Cost

230% Increase
in Electricity Cost

$11M per year
in Social Cost of Carbon

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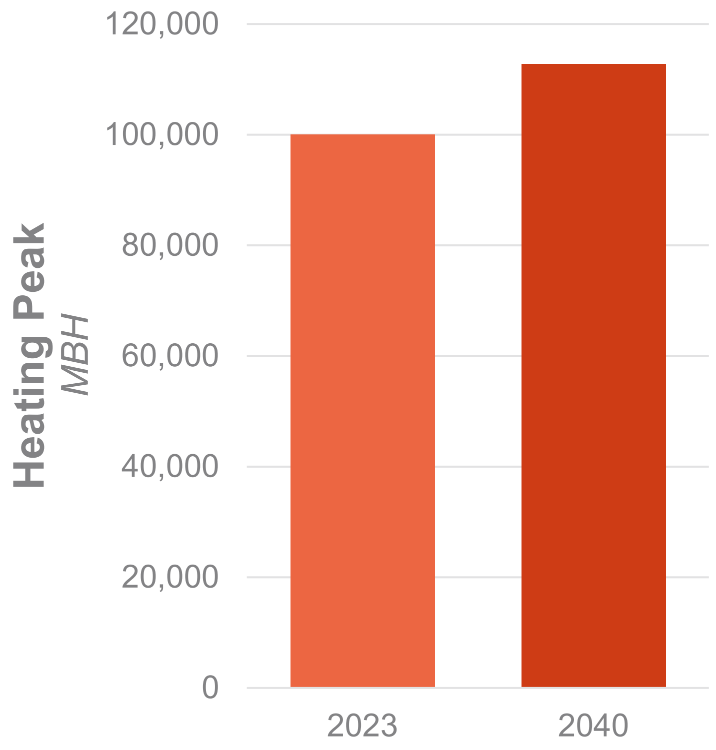
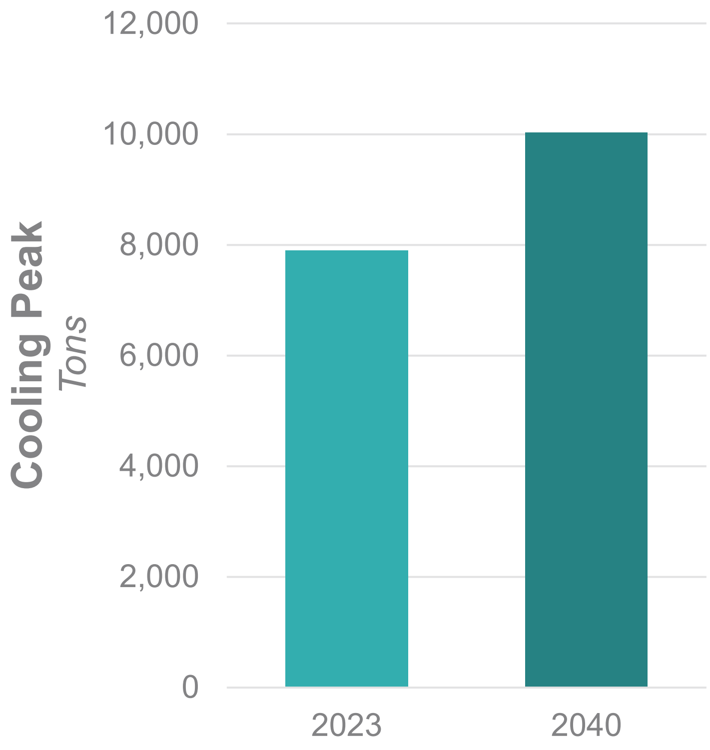
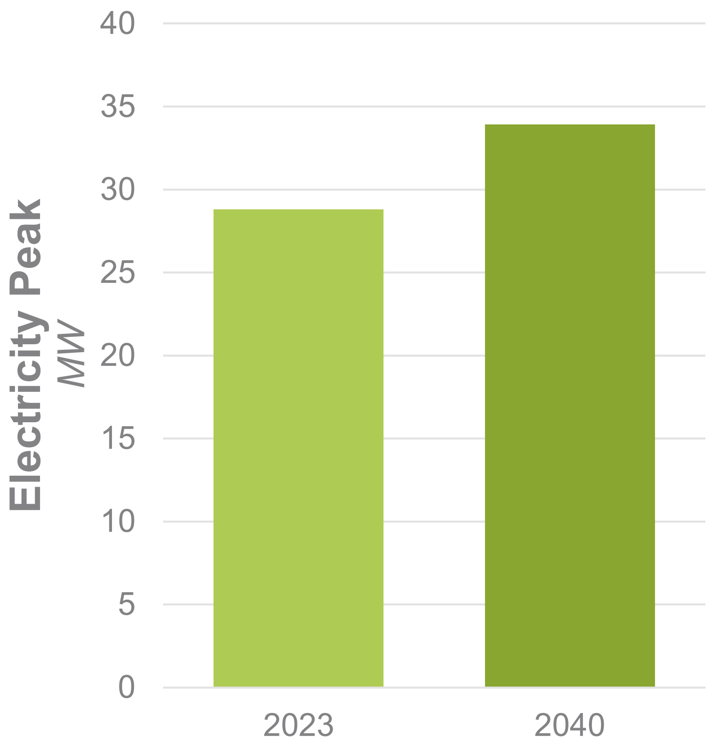
Future Projections – Thermal Demand



~13% Increase in Peak CUP Heating Demand[1]



~27% Increase in Peak CUP Cooling Demand[2]



Up to 18% Increase in Main Campus Electrical Demand[3]

[1] Doesn't include housing, which is projected to double in demand
[2] Doesn't include housing
[3] Only includes building-loads, no current provision for electrification; assumes all growth hits substation – needs to be updated.

Future Projections Summary

- Campus LRDP allocates approximately 3.2 MSF new growth by 2035. **Almost 2 MSF of that is programmed by 2026**.
- Projected growth will increase annual energy use by ~ 15% (if meeting UC benchmarks).
- The decarbonization of the **electrical grid alone** will reduce campus emissions by **>50%,** but remainder is Scope 2 which would increase.
- Majority of the growth is in the North District (housing) however meaningful main campus densification and south expansion will **increase demand on existing infrastructure** – especially electrical – necessitating expansion.
- Growth in North District Housing is significant new hot water demand – perhaps justifying **dedicated central plant**.

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Evaluation Criteria and KPIs

Campus Goals

Statewide UC System

- By 2025, campuses are expected to set interim Scope 1 reduction targets for 2030, 2035, and 2040.
- By Summer 2024, decarbonization studies will be completed for all campuses.
- By January 2026, reduction plans to meet targets are implemented.
- By 2040, Scope 1 carbon emissions to be reduced by 90% from 2019 baselines. Residual emissions to be negated via carbon removal projects.

UC Riverside Strategic Plan:

1. Targets the Central Utility Plant and Satellite Plant
2. Decarbonizes the decentralized gas-fired boilers
3. Considers climate justice and equity
4. Identifies opportunities to advance climate action planning
5. Identifies opportunities for collaborative involvement of students, faculty, and staff (i.e., “Living Laboratory”)

Evaluation Criteria

Evaluation of Strategies Needs to Consider:

- Ability to meet the campus and UC goals for decarbonization of Scope 1 emissions
- Capital and ongoing financial investment to install and operate
- Energy resource (electricity, natural gas, water) consumption and peak demand impact on infrastructure
- Resilience and reliability of the resultant energy system
- Potential to disrupt campus operations in speed and scale of implementation
- Impact of the construction and operation on the workforce and community
- Opportunities to leverage new systems as a living laboratory

Criteria Areas:

1. GHG Emissions Reduction
2. Life Cycle Cost
3. Annual and Peak Resource Use
4. Resilience and Reliability
5. Ease of Implementation
6. Environmental Justice and Equity
7. Collaborative Learning

Assessment KPIs

1 GHG Emissions Reduction

Indicator	Description	Metric
GHG Emissions		
Scope 1 Emissions	Total Scope 1 Emissions per year related to onsite fossil fuel combustion	$mtCO_2e$ per year % Reduction (2019)
Scope 2 Emissions	Total Scope 2 Emissions per year related to purchasing off-site electricity	$mtCO_2e$ per year

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Assessment KPIs

2 Life Cycle Cost

Indicator	Description	Metric
Life Cycle Cost		

Utility Costs	Costs associated with purchasing resources from utilities for the campus considering commodity and demand charges	$ per year, elec.
		$ per year, gas
		$ per year, water

Capital Costs	Capital expenses associated with technology transition per year	$ per year
Renewal Cost	Renewal costs for equipment with an anticipated asset life less than the study period	$ per year
Maintenance Cost	Annual and periodic estimated equipment maintenance costs	$ per year
Labor Cost	Annual anticipated operations labor cost	$ per year
Energy Procurement	Costs associated with procuring cleaner energy (electricity and natural gas) resources per year	$ per year
Grants / Incentives	Availability of grants, incentives, or other financing programs that could support the implementation of project(s)	# per % Scale
Social Cost of Carbon	Equity weighted social cost of carbon metric derived by UCOP to account for global economic climate impact	$ per $mtCO_2e$

Assessment KPIs

3 Resource Use

Indicator	Description	Metric
Resource Use		
Campus Energy	Total energy consumption of the campus	kWh per year
Electrical Use	Total electricity consumption of the campus	kWh per year
Gas Use	Total gas consumption of the campus	Therms per year
Peak Electrical Demand	Impact on peak electrical demand	kW
Campus Water	Total water consumption of the energy systems (e.g., cooling water)	kgal per year

Assessment KPIs

4 Resilience and Reliability

Indicator	Description	Metric
Resilience & Reliability		
Equipment Redundancy	Extra equipment in the system for allowing for backup when there is a local equipment failure or maintenance requirement.	Number of ‘Ns’
Supply Redundancy / Diversity	Supply pathways available	Number of alternative routes
Hardness	Ability to withstand local hazards or cyber attached without disruption	[Qualitative related to exposed infrastructure]
Islandability	Ability for the system to be operational without direct off-campus connection	Amount of on-site storage / generation
Serviceability	Ability for the local workforce and / or vendor support available to adequately commission and maintain the system	[Qualitative]
Recovery	Ability for the system to be controlled / automated for rapid recovery	[Qualitative]

Assessment KPIs

5 Ease of Implementation

Indicator	Description	Metric
Ease of Implementation		
Disruption	Recorded length of time a project(s) impact, inhibit or halt campus operations	Units of time
Disruption	Scale of operations compromised	e.g., # of buildings % load
Speed	Recorded length of time to complete a project(s) / phase	Units of time
Procurement	Availability and lead time for equipment to be acquired and installed	Units of time

Assessment KPIs

6 Environmental Justice and Equity

Indicator	Description	Metric
Environmental Justice & Equity		
Public Health	Benefits and impacts associated with air and water quality resulting from technology and infrastructure changes	Air & water quality metrics; qualitative
Workforce Equity	Job opportunities and risks for low wage workers associated with a technology or infrastructure transition	Qualitative
Supply Chain Equity	Opportunities and risks related to fair labor practices associated with infrastructure transition	Qualitative
Community Support / Stewardship	Support for community members for type of infrastructure; opportunities for co-design or living laboratories	Qualitative (e.g., listening session, survey, previous efforts)
Construction Impacts	Potential disruptions related to constructing new infrastructure	Qualitative (e.g., noise, traffic, length of construction time)
Community Impacts	Potential disruptions related to operating and maintaining new infrastructure	Qualitative (e.g., traffic, noise, trucks)

Assessment KPIs

7 Collaborative Learning

Indicator	Description	Metric
Collaborative Learning		
Accessibility for Research / Education	Ability to leverage the energy project to provide additional educational and/or research value	[Qualitative / comparative]
Value of Research / Educational Opportunity	Quality of research or education that could be enabled by the system	[Qualitative / comparative]
Community Accessibility	Opportunity for access and education of wider community	[Qualitative / comparative]
Knowledge Sharing	Opportunity for new research / innovation that can be shared with other institutions / industry	[Qualitative / comparative]

Assessment KPIs

Example Matrix (Illustrative)

Scenario Developments	Scenario Description	GHG Emissions	Life Cycle Cost	Resource Use	Resilience	Implementation	EJ & Equity	Collaborative Learning	Total
		Topic Areas							
Scenario BAU	Business-as-usual	1	4	2	1	2	1	5	15
Scenario 1	e.g., Existing Building Electrification	3	2	3	4	3	4	2	21
Scenario 2	e.g., New Building Electrification	5	1	4	5	4	5	3	27
Scenario 3	e.g., Clean Energy Program	2	5	3	1	3	1	4	19
Scenario 4	Sample Text	4	3	5	2	5	2	5	26
Scenario 5	Sample Text	5	1	2	4	2	4	3	21

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Path Forward / Next Steps

Next Steps

Deliverables #1 & #2

1. Technology Feasibility
2. Alternatives Definition
3. Alternatives Comparison

Workshop #2

Strategy Review / Pathways

Upcoming Dates

Workshop #2 – Pathways to Decarbonization

- Targeting Week of April 29

Earth Month Events – Deliverables #3, 4, 5

- April 10: Inland Southern California Climate Collaborative (ISC3) Culture & Climate Action Fair
- April 17: Sustainability Showcase & Flea Market
- April 23: Annual Academic Sustainability Retreat

Working Session – Phasing & Implementation

- Targeting Week of May 13

Target Draft Reports – by June 7th

Target Final Reports – July 12th

Submission to UC Task Force – By July 31st, 2024