

Progress, Opportunities, and Challenges for Decarbonizing Cal Poly Humboldt



➤ Background-Campus Energy Context

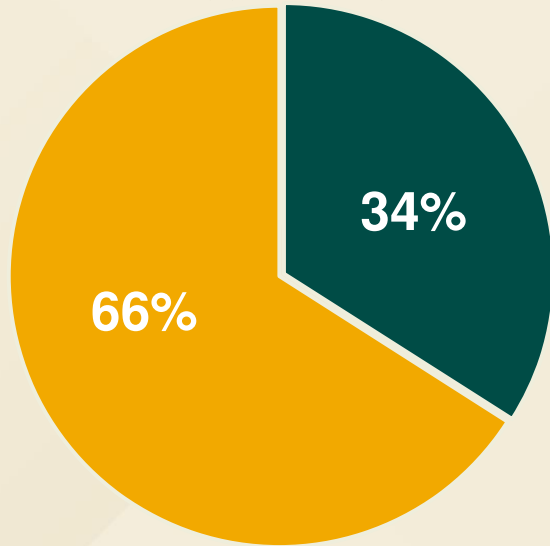
- **Direct Access electricity customer - Supplier Shell Energy NA. Contract negotiated through the CSU Chancellor's Office**
- **Non-Core Natural Gas customer- Supplier CA DGS, contract negotiated through CSU Chancellor's Office**
- **Additionally several smaller non-DA electricity accounts and core natural gas accounts**

Commodity FY21-22	Quantity	Quantity	Cost	GHG MTCDE*
Electricity	13,013,306 kWh	44,403 mmBTU	\$1,855,682	2775
Natural Gas	861,192 therms	86,099 mmBTU	\$1,080,783	4549
Total	N/A	130,501 mmBTU	\$2,936,465	7315

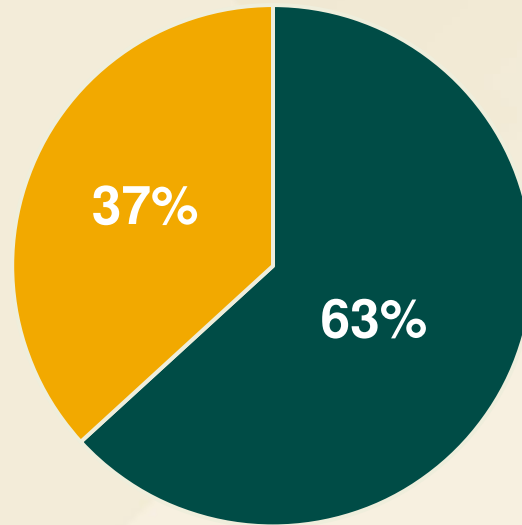
* Metric Tons of Carbon Dioxide Equivalent

➤ Background – FY 21-22

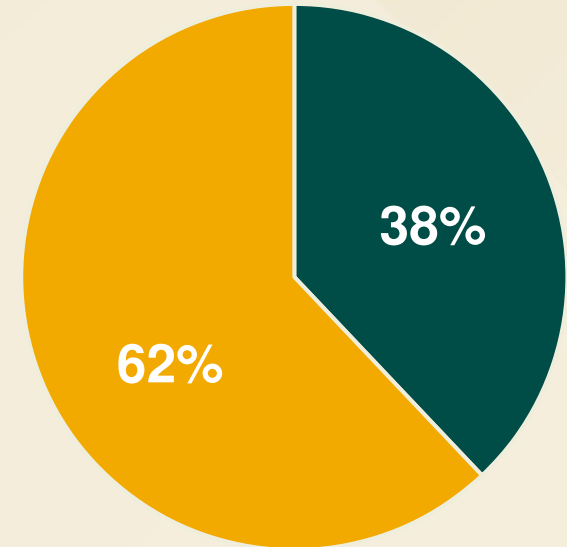
Energy Usage



Energy Expenditures



GHG Emissions



Electricity



Natural Gas

➤ Background

- First Climate Action Plan approved by campus in 2017
- Climate Action Plan 2.0 was approved in 2022 incorporates resilience in addition to GHG reduction measures
- CAP 2.0 codified all electric initiative for new buildings and major renovations
- Targets 2045 for carbon neutrality in line with the CSU Sustainability Policy



Photo Credit Cal Poly Humboldt

➤ Background – Cal Poly Transition

- In 2021 CSU asked Cal Poly to perform self study to become third polytechnic university in CUS system, first in Northern California
- State allocated \$433 million in 1-time funds for polytechnic implementation
- Planning work done by campus set the stage for all new buildings to be all electric.
- In January 2022 Humboldt State was renamed Cal Poly Humboldt
- 12 new programs launched this Fall semester
- 27 total new programs by 2029

➤ Progress so Far

- Schatz Energy Research Center West Wing
- Completed in 2018
- 1900 square foot addition directly west of the main building, primarily office space
- Uses a Daikin split system to provide conditioning to offices and common spaces



The Schatz Center's West Wing

Photo Credit Schatz Center

➤ Progress so Far

- Campus Center for Appropriate Technology (CCAT)
- Live in sustainability demonstration house
- 2,400 GSF
- Renovated in 2021 with Daikin Split System for space heating
- HPWH utilizing existing solar thermal system for preheat
- Funded by Humboldt Energy Independence Fund, a student fee sustainability fund



Photo Credit Cal Poly Humboldt

➤ Progress so Far

- Trinity Children's Center
- Major renovation of vacant building that had previous been used for academic and research purposes
- 29,625 GSF
- Utilizes heat pumps for space and water heating
- All electric commercial kitchen with induction range
- Completed August 2023



Photo Credit Cal Poly Humboldt

➤ In Progress

Craftsman Student Housing



Artist rendering

➤ In Progress

- Off campus housing
- ~300,000 GSF
- 950 beds
- Cafe / retail space
- Other community spaces
- Construction currently underway
- Expected opening fall 2025
- \$200 million budget



Artist rendering

➤ In Progress

- Engineering and Technology Building
- ~70,000 GSF
- Instructional and office space
- Including a makers space, machine shop,
- Research lab
- Still in design
- Expected construction start spring 2024
- Expected completion January 2026
- \$135 Million budget

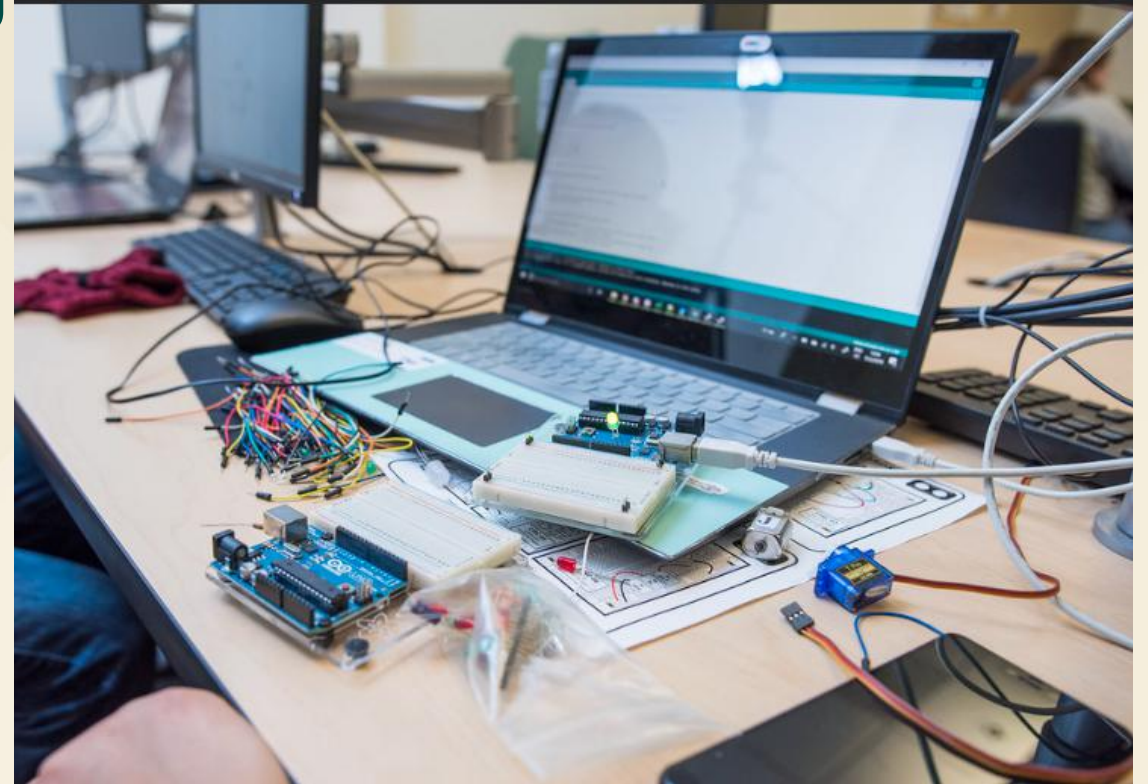


Photo Credit Cal Poly Humboldt

➤ In Progress

- Energy Research and Sustainability Center
- ~20,000 GSF
- Still in design – will include offices, classroom, seminar spaces, microgrid research test lab
- Looking to innovate as budget allows, e.g. thermal energy storage, grid responsive
- Expected construction start spring 2024
- Expected opening fall 2025
- \$24 Million budget

➤ In Progress

- Campus Microgrid
- Facilities Management is working with Schatz Center to design a campus level microgrid
- Contract negotiations are currently underway for a 5.8MW 2hr BESS lease and 2.5 MW PV PPA



Redwood Coast Airport Microgrid
Photo Credit Schatz Center

➤ In Progress – Farther out

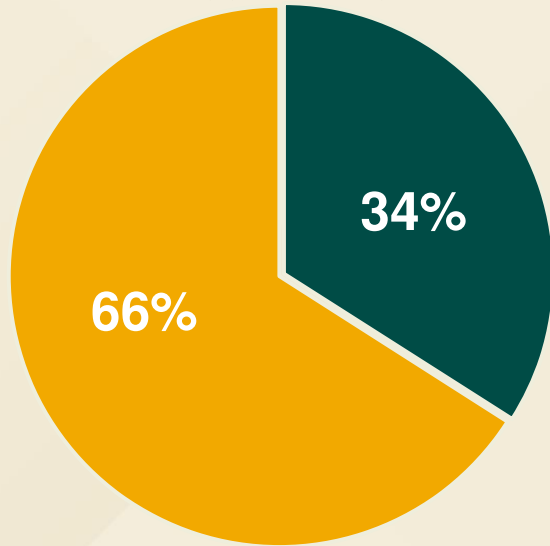
- Health, Dining and Housing
- ~200,000 GSF
- 450-500 bed residence hall
- Hub for campus dining
- New student health center
- Currently soliciting for collaborative design build team
- Expected completion 2027



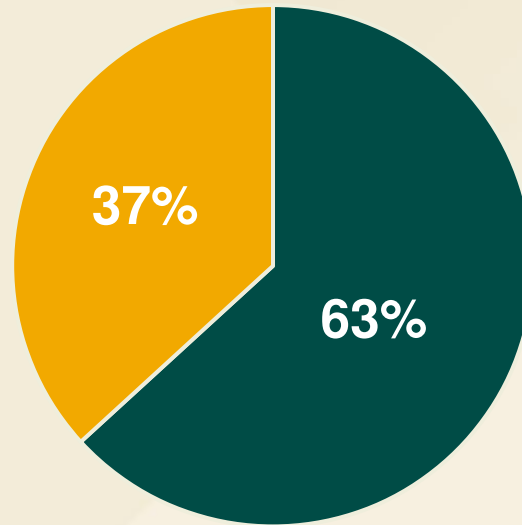
College Creek Marketplace and Residence Hall

➤ Challenges

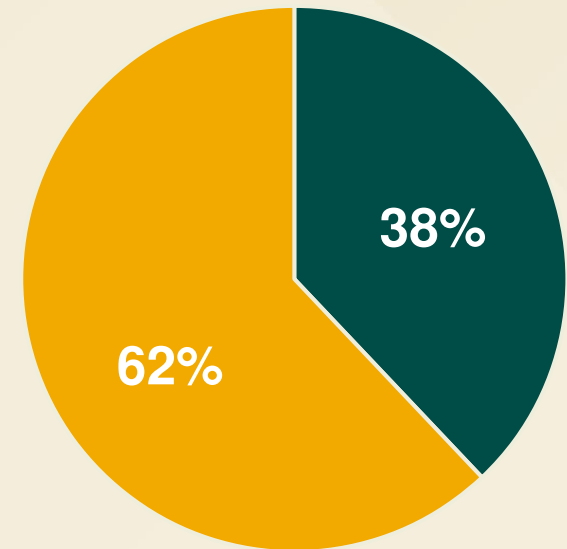
Energy Usage



Energy Expenditures



GHG Emissions



Electricity



Natural Gas

➤ Challenges

- Large stock of aging existing building
- Cost! Both to renovate and operate
- Refrigerants- low GWP products not readily commercially available, we may be building during an awkward transition phase as markets mature



Photo credit <https://procrewschedule.com/10-possible-causes-of-low-quality-construction-work/>

› Questions?

Thank you
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