

University of California, Santa Barbara



Annual Utility and Energy Report Fiscal Year 2021

UC **SANTA BARBARA**

Energy & Engineering

Design, Facilities and Safety Services

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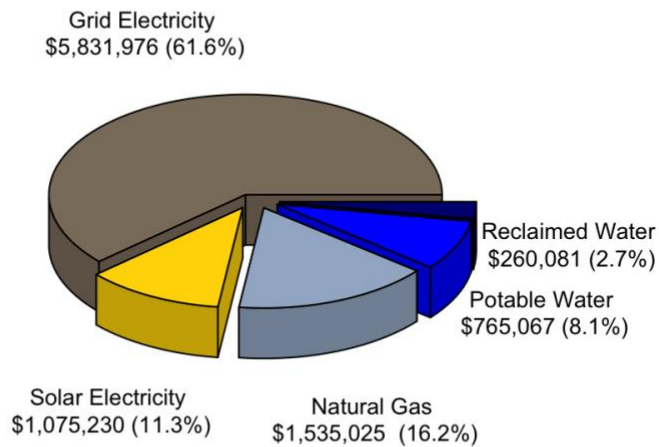
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Utility Use & Cost FY 2020

	2019-2020	2020-2021
Electricity Use	77,276,563 kWh	68,139,155 kWh
Solar Generation	10,446,638 kWh	9,915,956 kWh
Natural Gas Use	2,776,662 therms	2,483,712 therms
Potable Water Use	194,209 HCF	96,596 HCF
Reclaimed Water Use	62,667 HCF	62,819 HCF
Total Water Use	256,876 HCF	159,415 HCF

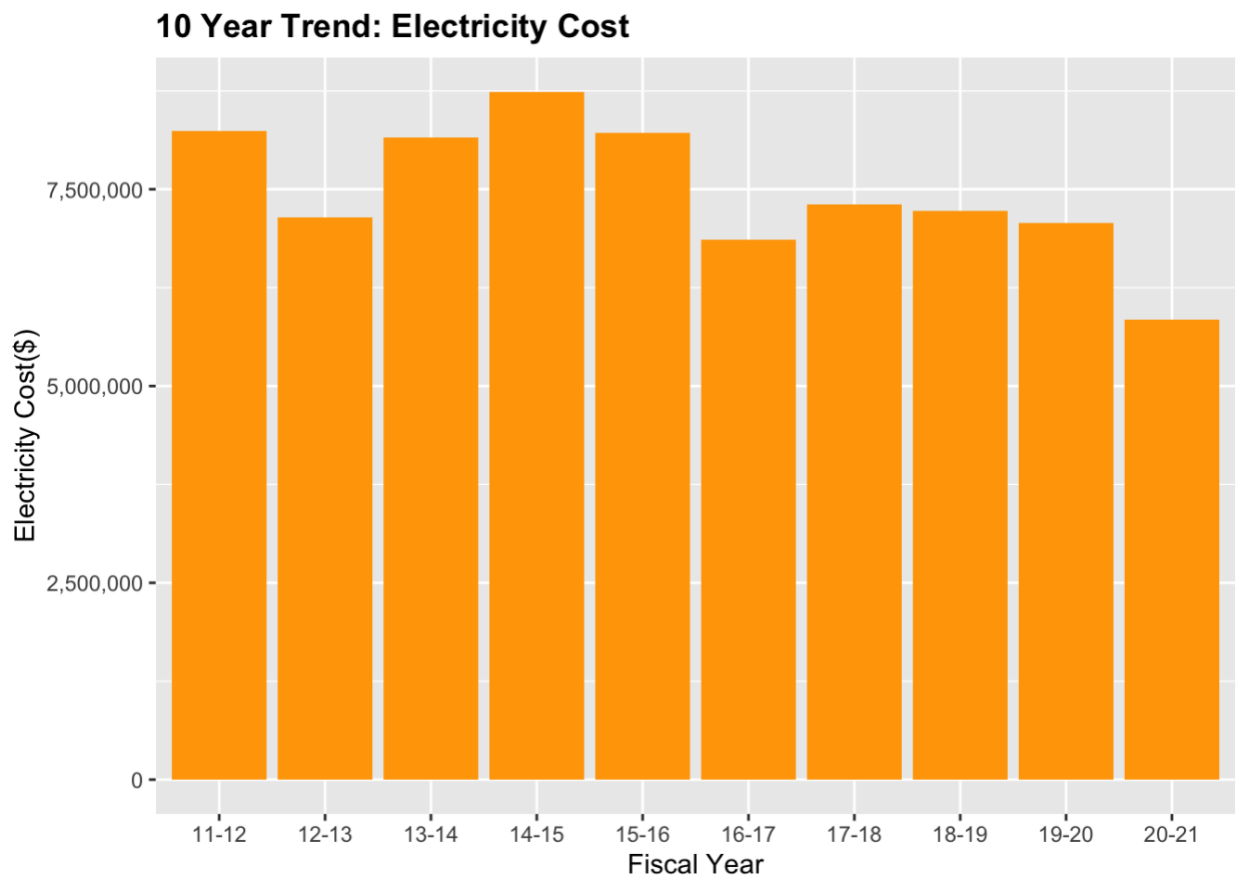
Total utility expenditures for the main campus decreased by 14.6% in fiscal year 2021 as compared to the previous year. Fiscal year 2021 expenditures were the lowest in the previous 10 years, down 21.2% from the 10 year expenditure peak in fiscal year 2020. All expenditures went down except for natural gas, which increased despite lower gas usage due to an increase in gas price per therm.

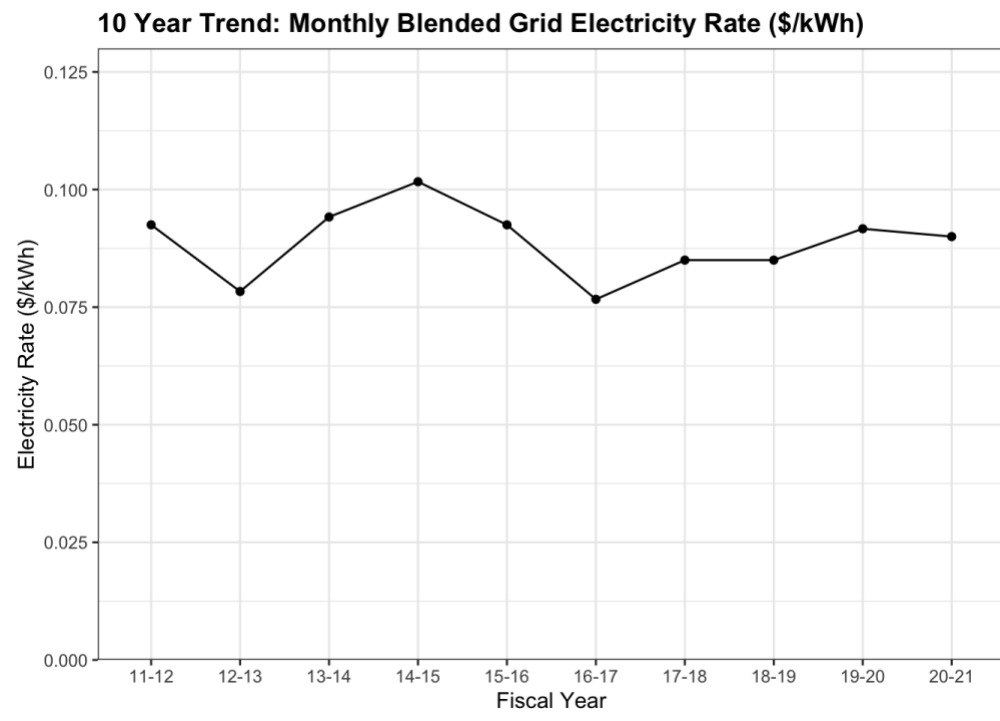
Energy Expenditure Breakdown



Grid Purchased Electricity Cost

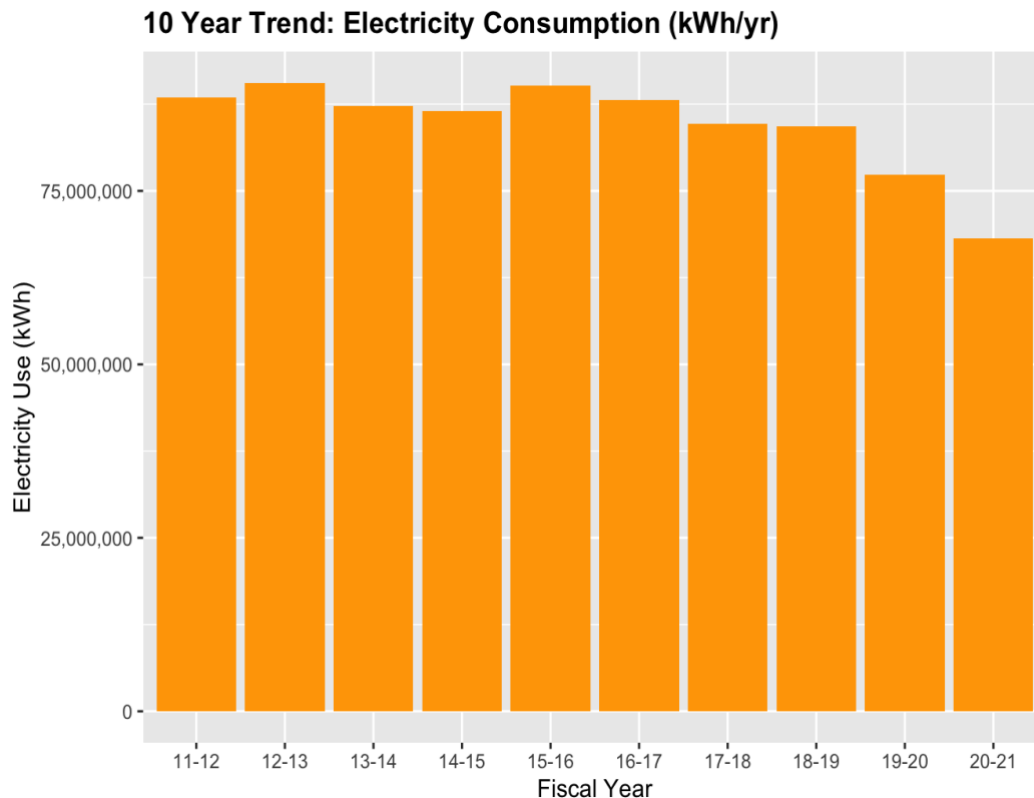
Cost: The UCSB main campus electrical account transitioned from bundled service, time-of-use (TOU) power generation to the University of California’s Clean Power Program on July 15, 2020. The campus’ grid-purchased electrical expenditures decreased by 17.4% as compared to the prior year. The primary driver for reduced electricity cost was the partial closure of the campus due to the COVID-19 pandemic. Savings were also generated by the Clean Energy Optimization Pilot (CEOP), a program that UCSB participated in with Southern California Edison (SCE) and other University of California and California State University campuses, to incentivize reducing greenhouse gas (GHG) emissions from electricity use. Through the CEOP program UCSB received financial incentives to reduce GHG emissions relative to the previous year. The first performance year, after the baseline year, began in July 2019 and went through the end of March, when the program paused due to campus closures from COVID-19. Participation in the CEOP program provided an opportunity for UCSB to reset building heating, ventilation, and air condition (HVAC) schedules to be more efficient and save money and energy. The program commenced performance year number two in October 2021, and savings from projects completed during the program pause will be incentivized at the conclusion of the second program year.



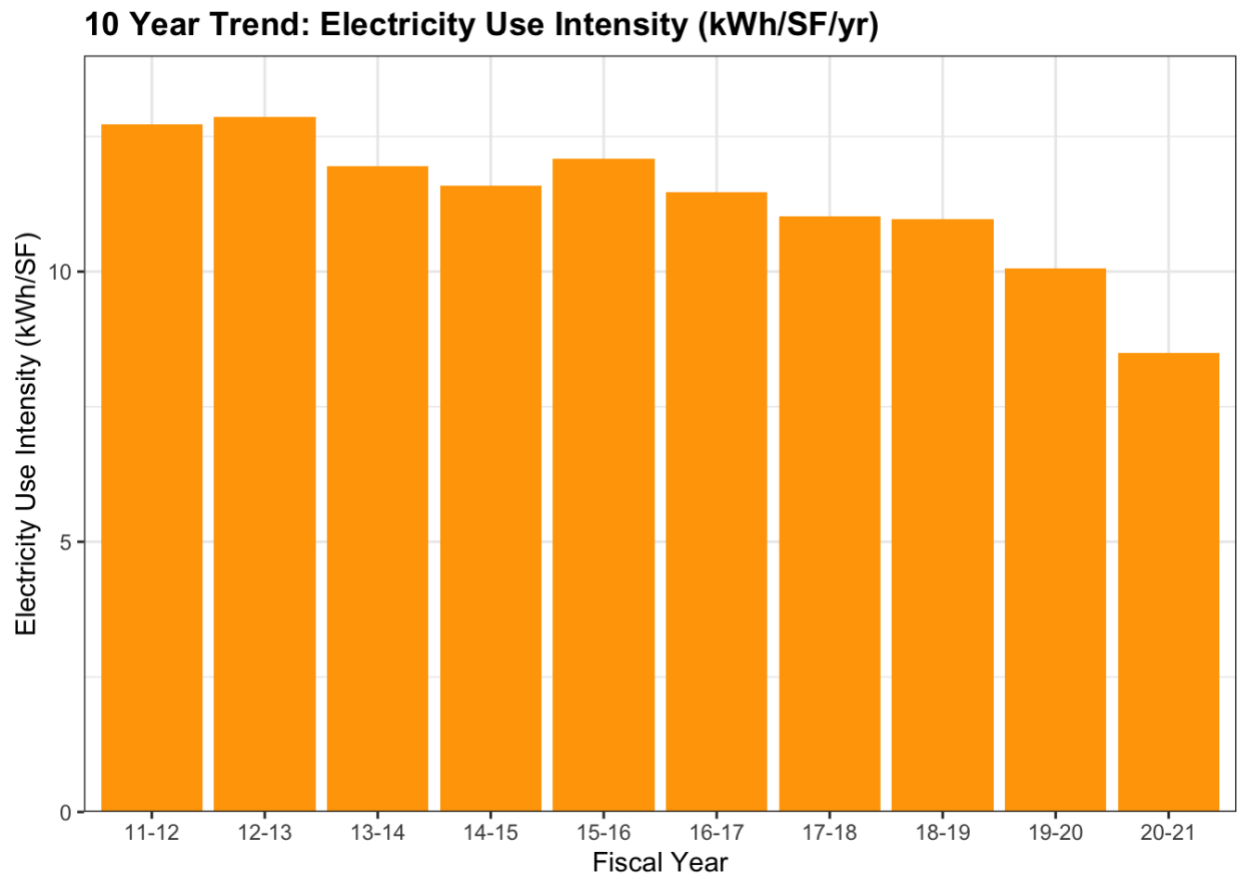


Grid Purchased Electricity Use

Consumption: Total campus grid-purchased electricity use during fiscal year 2021 decreased by 11.8% as compared with the prior year partially due to the campus closure during the COVID-19 pandemic.

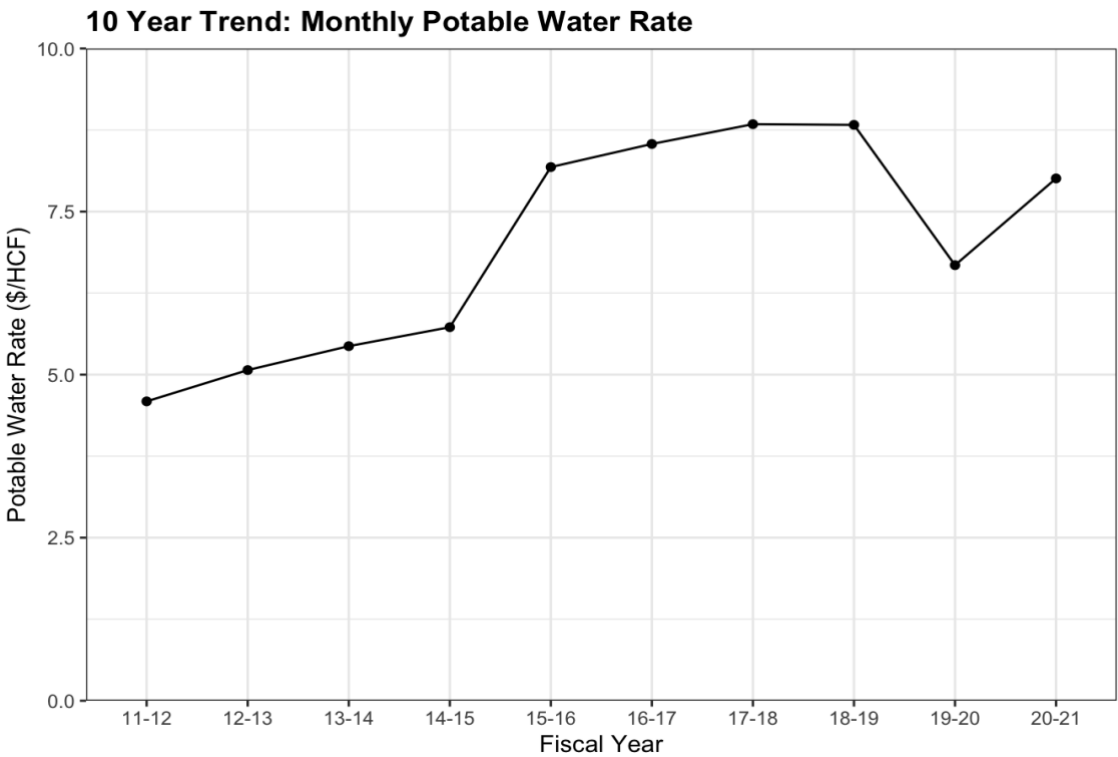
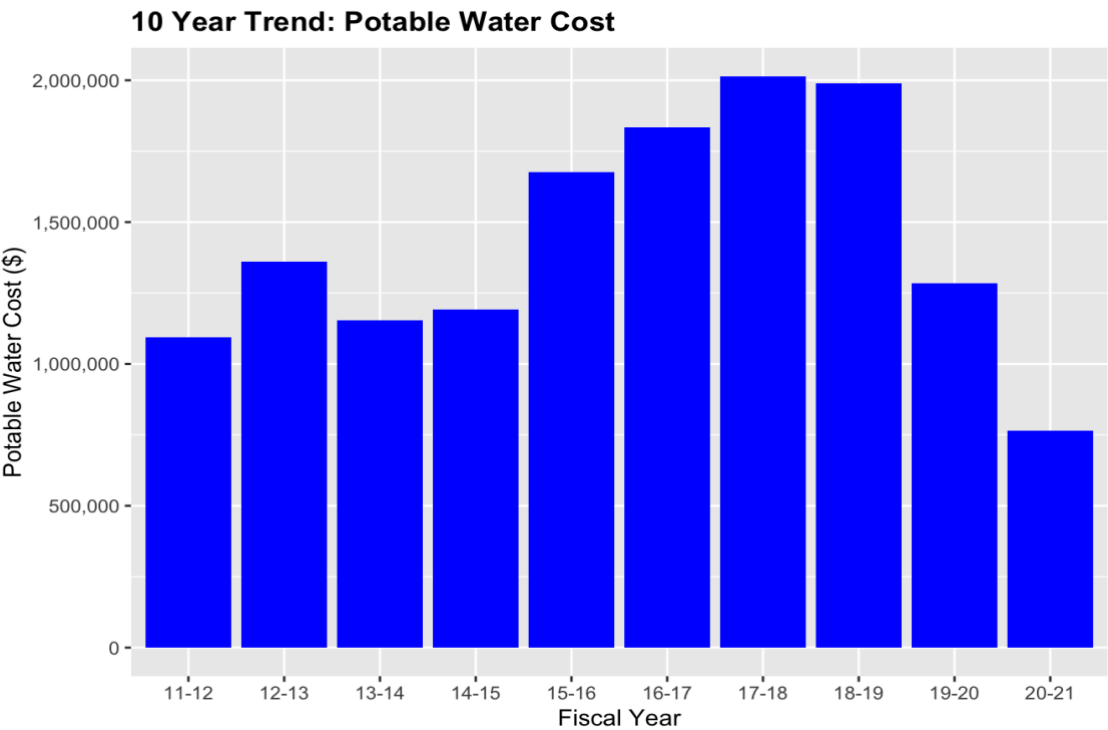


Intensity: Grid-purchased electricity use per square foot has decreased by 15.6% as compared to the previous year and by 33.2% as compared to ten years ago, due primarily to the campus closure during the COVID-19 pandemic.



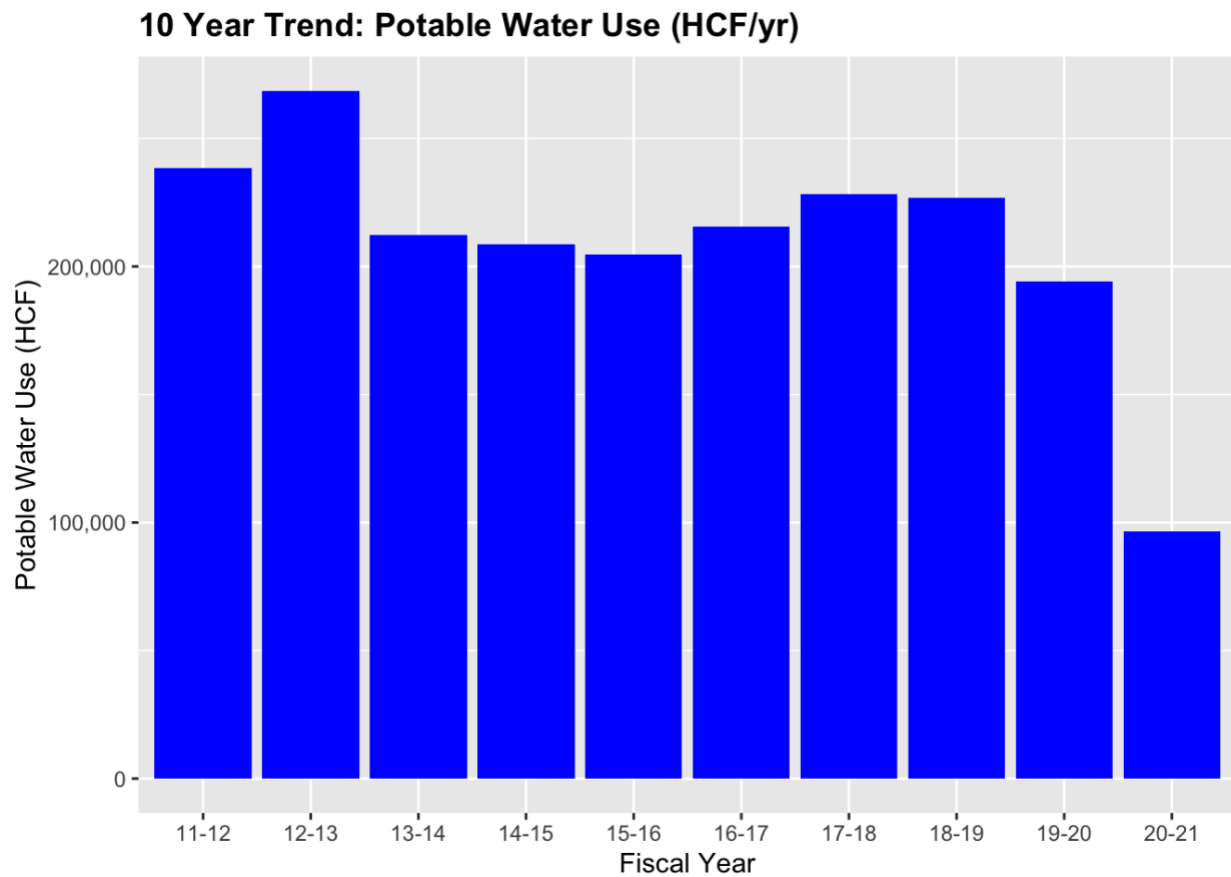
Potable Water Cost

Cost: The average cost of potable water for UCSB decreased by 40.5% in fiscal year 2021 compared to the year prior. This decrease was a result of the campus closure during the COVID-19 pandemic.

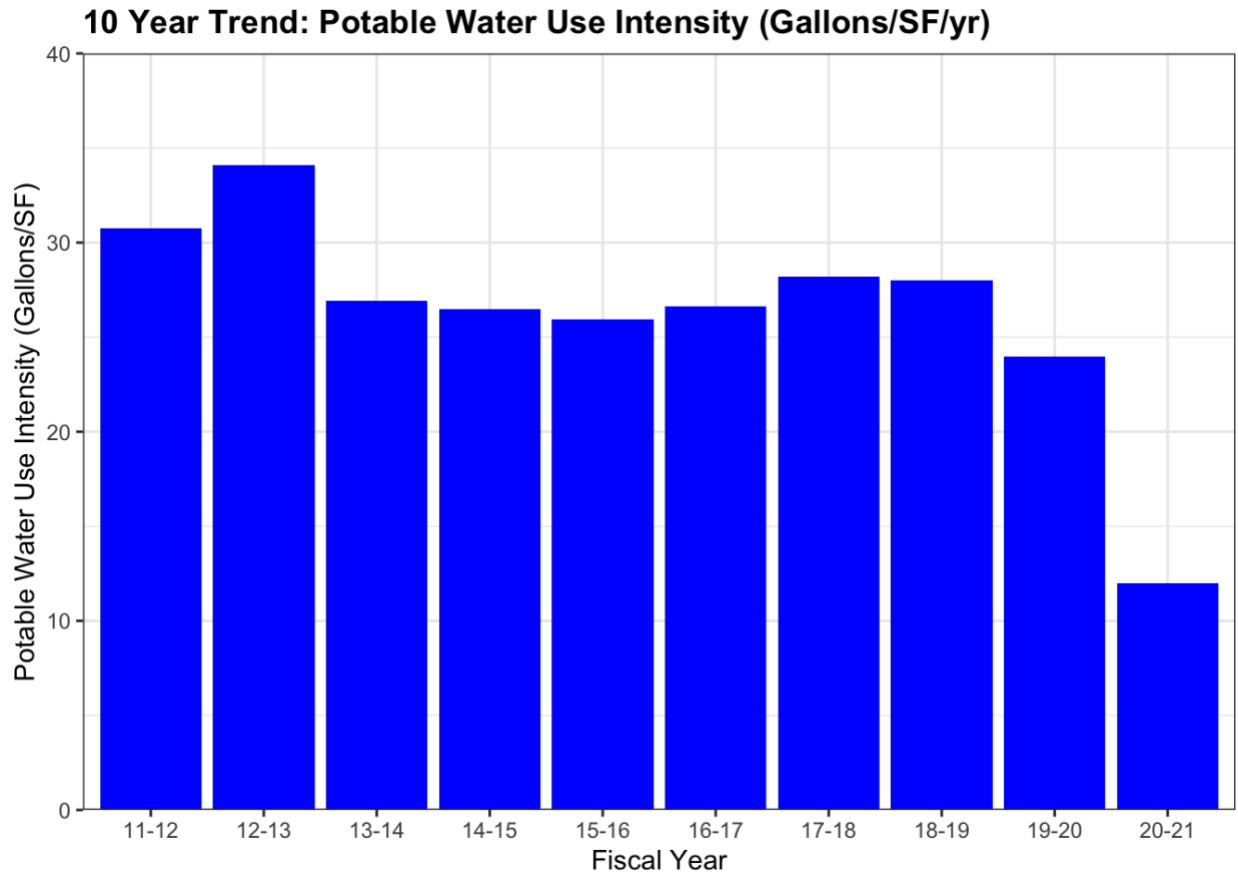


Potable Water Use

Consumption: Potable water use at UCSB decreased by 50.3% in fiscal year 2021 compared to the year prior.

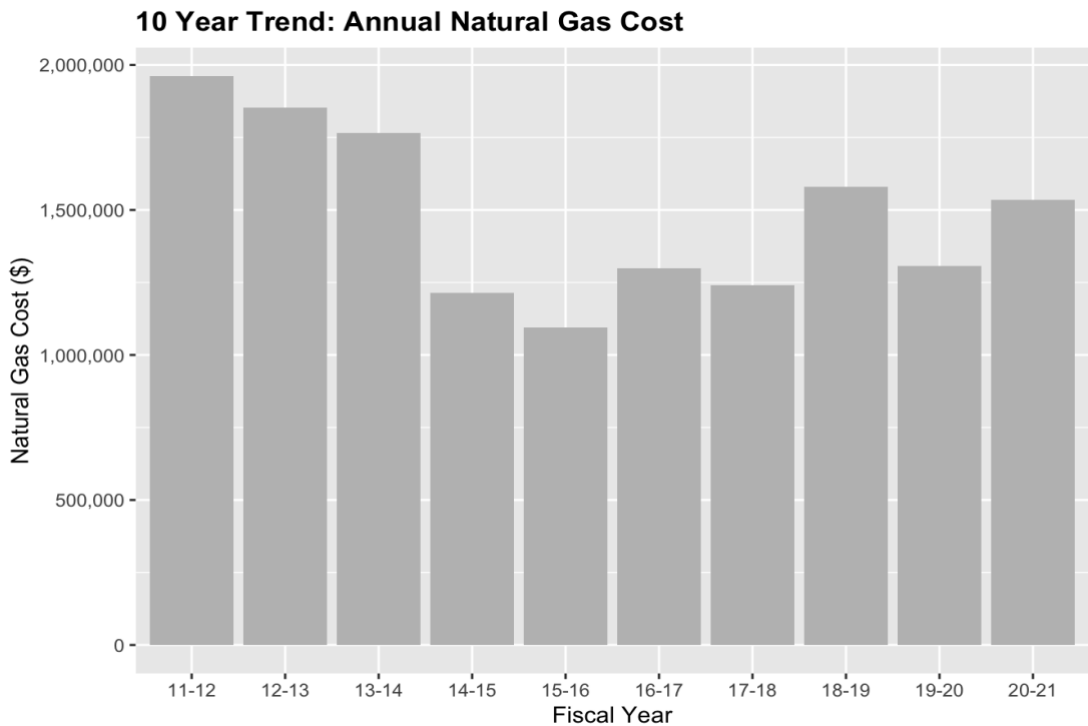


Intensity: Potable water use intensity in fiscal year 2021 decreased proportionately with the water use at 49.9% less than the year prior. However, over the past 10 years the water use intensity decreased by 60.9%. UCSB implemented outreach and education campaigns to encourage water use changes, converted remaining potable-watered landscapes over to recycled water irrigation, and installed water-saving technologies in labs to reduce waste. However, the sharp 2021 decrease is primarily due to the campus closure during the COVID-19 pandemic.

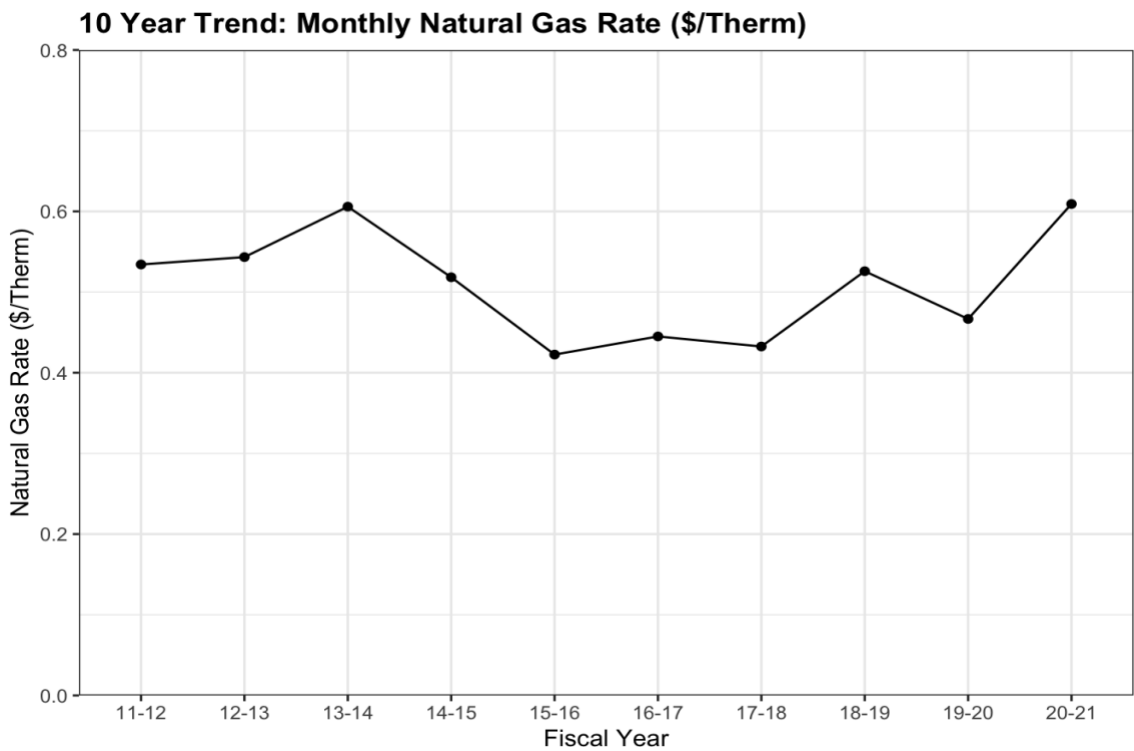


Natural Gas Cost

Cost: Expenditures for natural gas are up 17.5% from last year. These costs are highly correlated with natural gas rates.

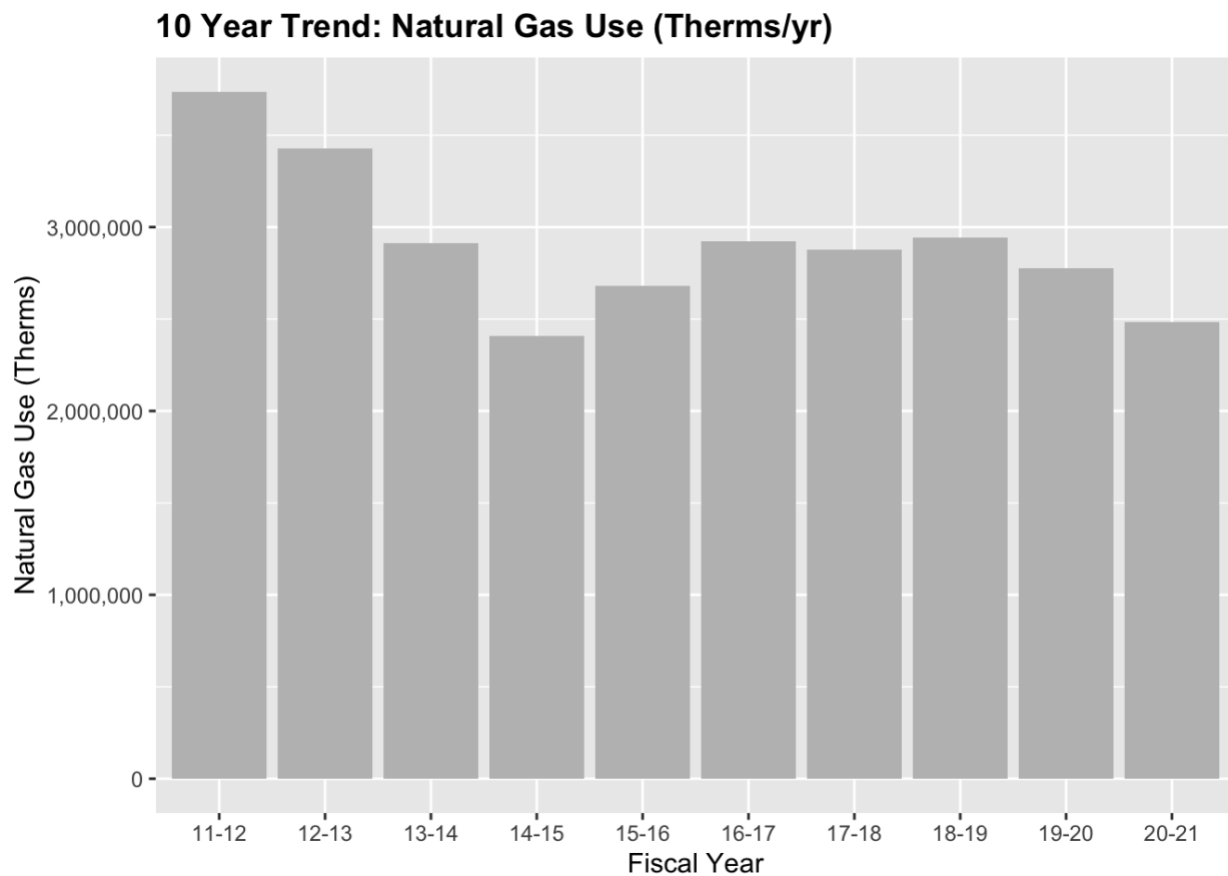


Rate: Since last year, natural gas rates have increased by 30.5%. Total natural gas total expenditure increased in 2021 despite a reduction in usage.

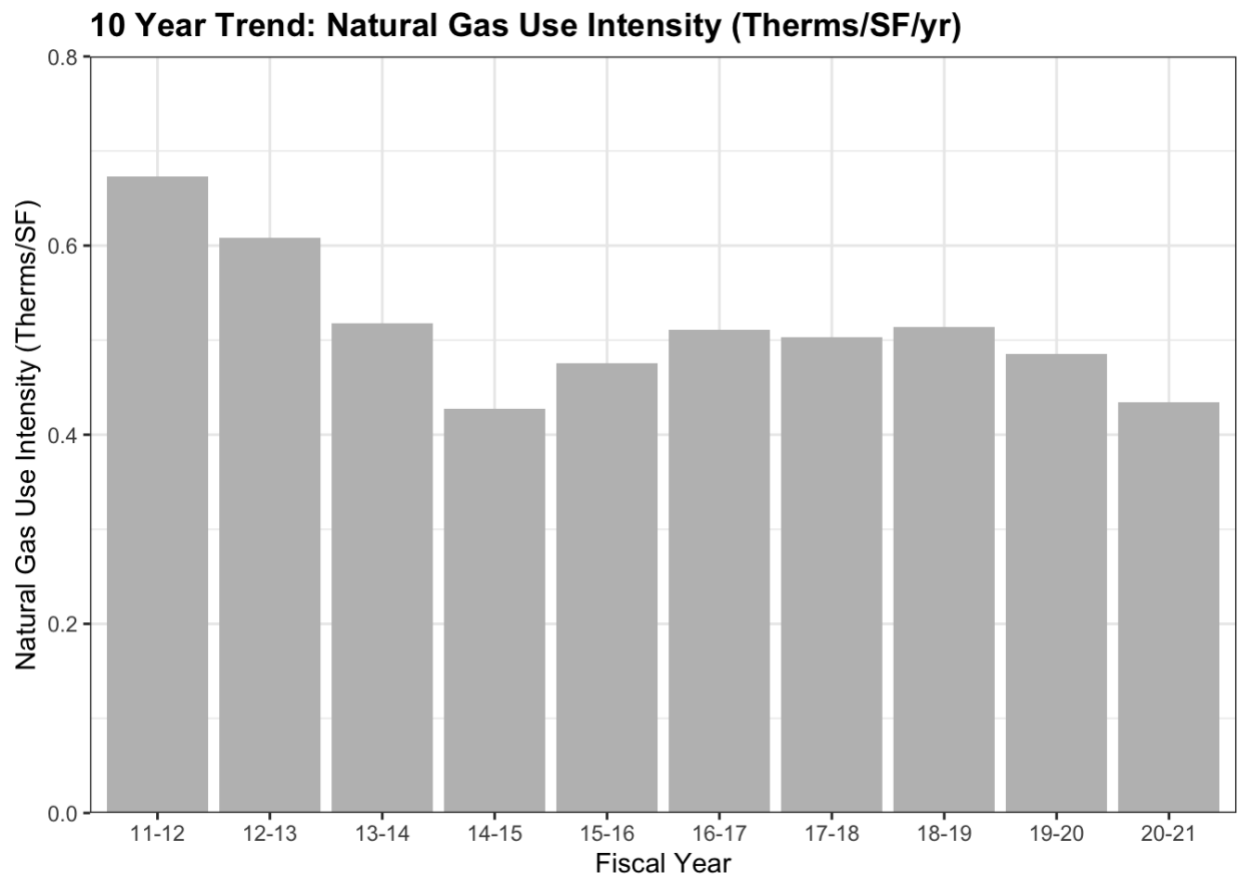


Natural Gas Use

Consumption: Overall, natural gas use has decreased by 10.6% since last year. Over the past 10 years, UCSB's energy management practices have cut natural gas consumption by 34%. In 2015, UCSB opted into the California Cap and Trade program and received allocations based on historical emissions profiles. The measure's compliance cost has increased the justification of energy efficiency improvements and the installation of new renewable energy projects to mitigate natural gas consumption.

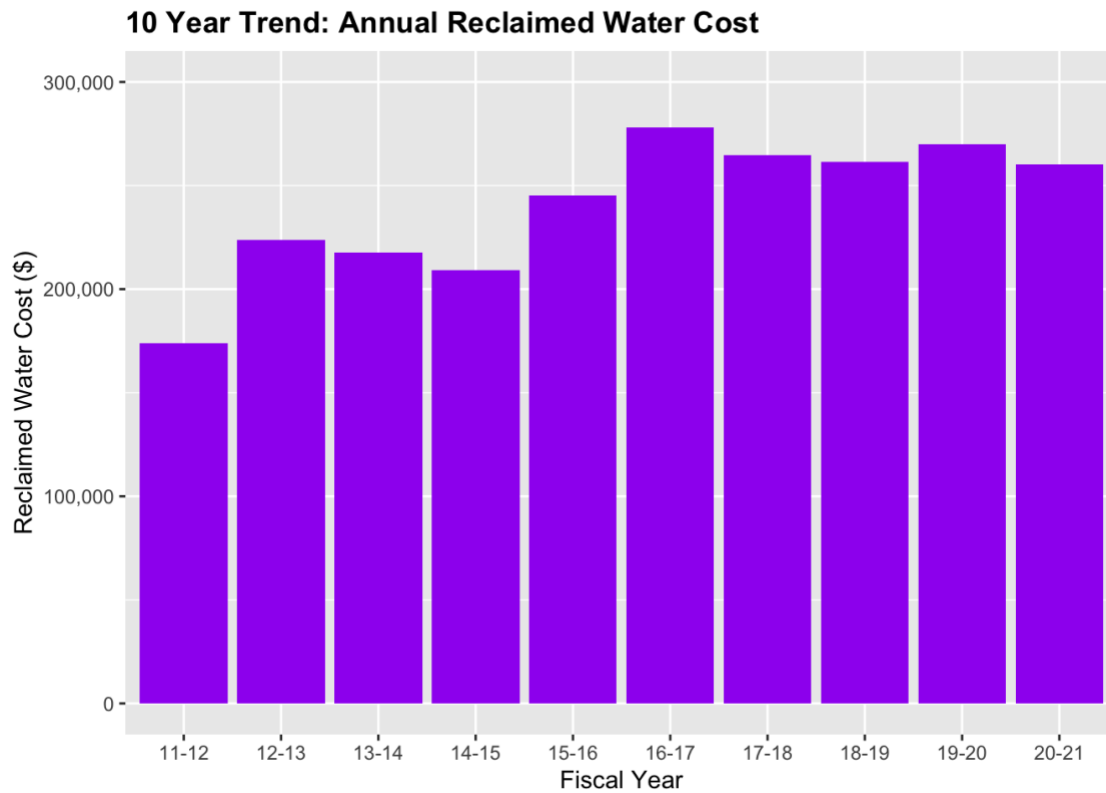


Intensity: Natural gas use intensity has decreased by 10.6% since last year and 35.6% over the last 10 years. The long term drop in natural gas use intensity can be attributed to UCSB's energy efficiency measures, while 2021's reduction is primarily the result of the campus closure during the COVID-19 pandemic.



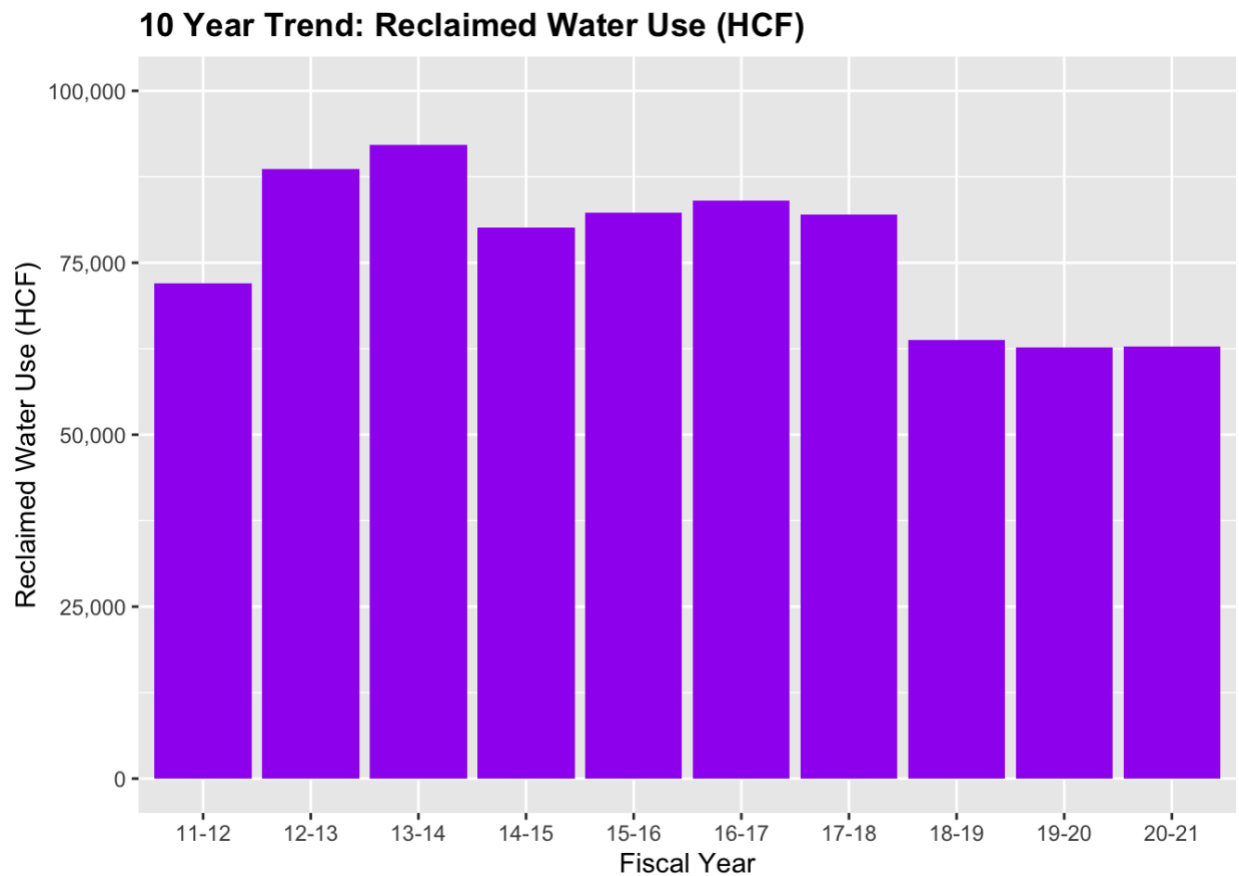
Reclaimed Water Cost

Cost: The cost of reclaimed water has decreased by 53% in the FY 2021 compared to last year. Over the past 10 years, the cost of reclaimed water has increased by 45.3%.



Reclaimed Water Use

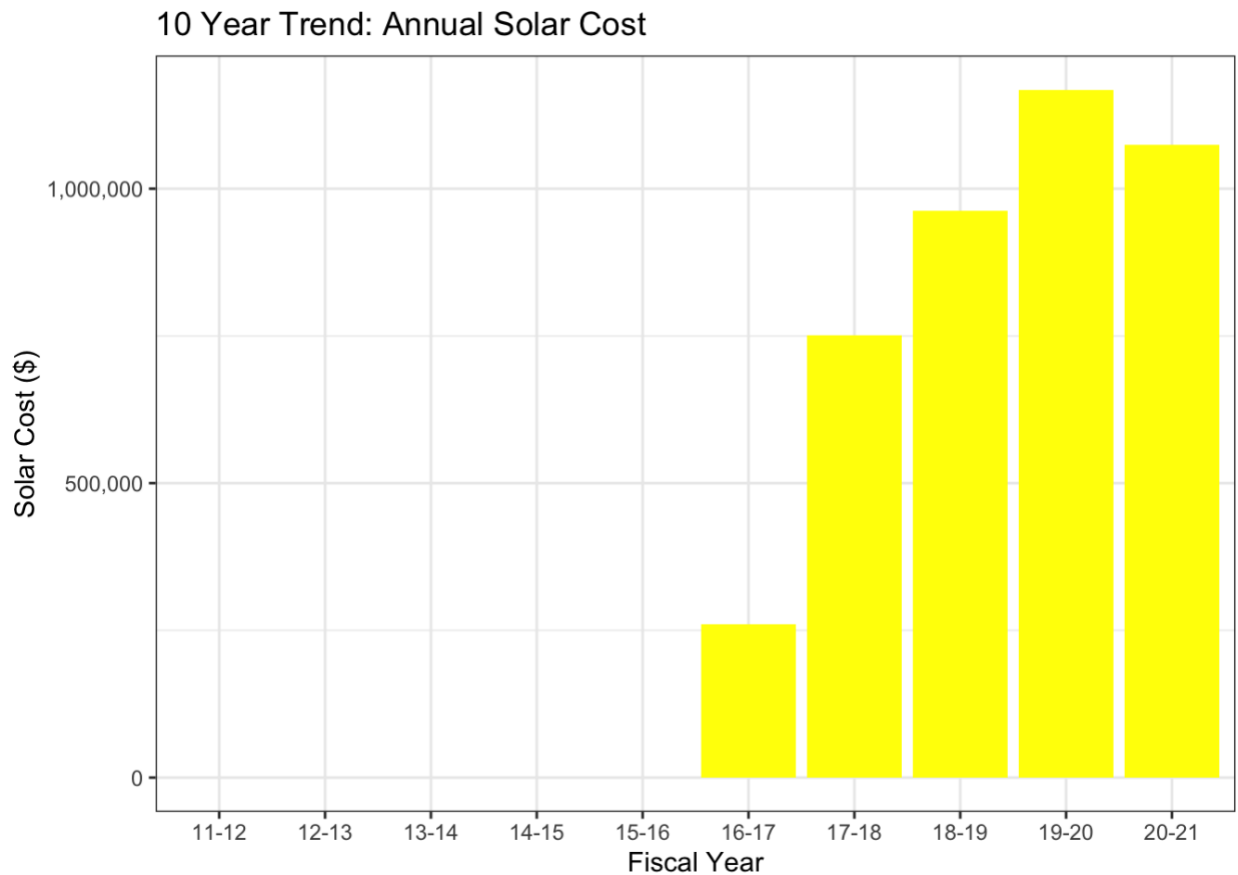
Consumption: Reclaimed water use decreased by 0.2% in fiscal year 2021 and accounted for 39.3% of total annual UCSB water use. UCSB utilized reclaimed water for landscape irrigation as well as in some areas on campus with dual-plumbed toilets. Only 3% of UCSB's potable water is used for landscape irrigation and this reduces the campus' potable water use greatly.



Onsite Solar Cost

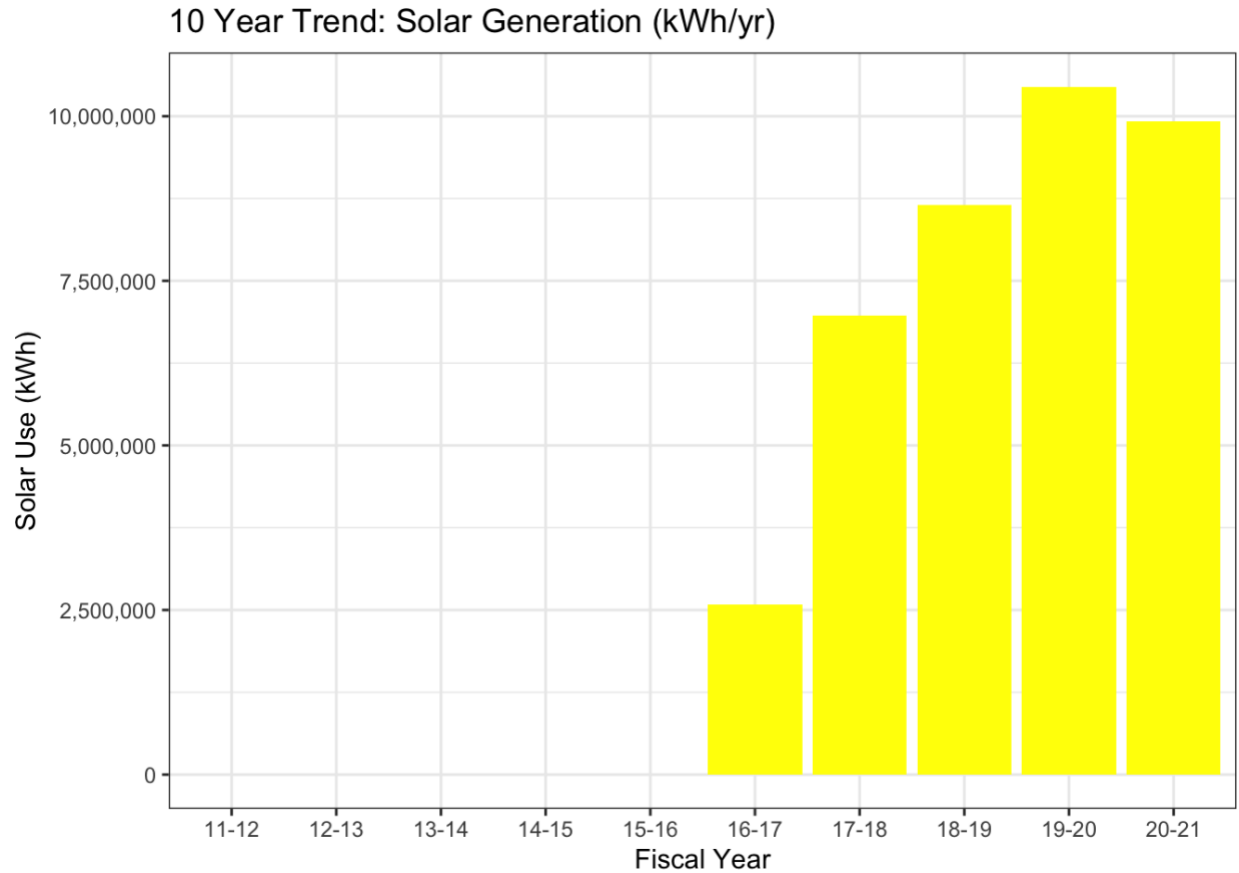
UCSB has 14 onsite solar systems that supply energy to the campus. Of the 14 onsite solar systems, UCSB owns 2 of them, one on Bren Hall and the other at Lot 22. For the onsite solar systems that UCSB does not own, UCSB pays per kWh generated from that solar system. All of the electricity generated from these onsite solar systems is used immediately for campus electricity needs as electricity generated is always lower than energy demand. As the first onsite solar system that UCSB used on campus became operational in December 2016, onsite solar generation and cost data only goes back through fiscal year 2017.

Cost: Total campus cost of solar increased by 21.4% from the previous year. This is consistent with the roughly 20% increase in onsite solar generation. One thing to note is that because UCSB owns the systems on Bren Hall and Lot 22 there is no cost to the electricity generated from those systems.



Onsite Solar Generation

Generation: Total onsite solar generation increased by 20.7% as compared with the prior year. This is due to the installation of the last phase of onsite solar system installations, which started generating power in September 2019.



Summary

A reliable and robust utility infrastructure is critical to meeting the varied requirements of the campus population, and UCSB Facilities Management (FM) is committed to maintaining the highest quality service and ensuring the success of UCSB's advanced research and academic programs.

UCSB will continue to implement energy conservation projects under the Clean Energy Optimization Pilot (CEOP) through the current pilot phase; an increasing emphasis will be placed on reduction of onsite natural gas combustion in order to reduce Scope I greenhouse gas emissions and mitigate Cap and Trade compliance costs.

The campus's Automated Demand Response project was implemented in order to provide Southern California Edison the ability to dispatch over one megawatt of load reduction on campus to mitigate supply constraints on our regional electrical grid.

FM Energy & Engineering Services completed a 6.2 megawatt solar photovoltaic installation in 2019 and joined the UC Wholesale Power Program in 2020. Main campus power supply is carbon-free as of the current fiscal year, and significant cost savings are expected to accrue from these initiatives.

UCSB's culture of environmental sustainability remains a driving force for continuous improvement, and FM Energy & Engineering Services seeks to build on the efforts of the campus population by providing accurate, real-time building energy and water monitoring to facilitate the next generation of conservation campaigns at UCSB.

In addition to demand management and efficiency measures, FM Energy & Engineering Services will continue increasing renewable energy capacity on campus where feasible, and continue working with Southern California Edison, the Southern California Gas Company, Goleta Water District, Goleta Sanitary District and the UC Office of the President to secure the most favorable utility rates possible.

FM Energy & Engineering Services website has an abundance of information and tools to users on campus and beyond, including the Energy Education Dashboard, a real-time interface that provides power demand and energy consumption data for all major buildings on campus. Visit the website for additional information:

<http://energy.ucsb.edu>

Contacts

This Annual Utility & Energy Report is published each year for informational purposes only. Please visit <http://energy.ucsb.edu> for additional information or email pf-utilities@ucsb.edu.

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