Total utility expenditures for the main campus increased by 9.4% in fiscal year 2017-18 as compared with the prior year, but were 9.8% lower than the peak year 2010-11.

Grid-purchased electricity and natural gas consumption decreased compared to the prior year, but expenditures increased for electricity. Total water consumption and expenditures increased as compared to 2017-18.

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1Peak electrical demand recorded on October 24th at 6:30PM.

2The cost and consumption figures presented in this report account for total use of and total dollar amount spent on grid-supplied electricity, solar electricity, natural gas, potable water and municipally-supplied reclaimed water received by main UCSB campus utility services and distributed through University-owned infrastructure. These figures do not include housing and auxiliary facilities that are not served by the main campus utility distribution systems.
Grid Purchased Electricity Cost

The UCSB main campus electrical account was on a bundled service, time-of-use (TOU) rate for the entirety of the 2017-18 fiscal year. Southern California Edison’s TOU-8-B 50KV+ tariff (applied as a blended rate at UCSB’s 66kV substation service account) increased by 11% in 2017-18 as compared to the prior year and the campus’s grid-purchased electrical expenditures rose by 6.6% as compared with the prior year. In order to mitigate these cost increases, Utility & Energy Services has prioritized energy efficiency measures that reduce demand during on-peak demand pricing periods, including a comprehensive campus chilled water loop optimization effort and the addition of 4.8 megawatts of onsite solar photovoltaic generating capacity in 2017, a tenfold increase in the campus’s onsite power generation capacity.

10 Year Trend: Monthly Blended Grid Electricity Rate ($/kWh)

10 Year Trend: Annual Electricity Cost
**CONSUMPTION:** Total campus grid-purchased electricity use during 2017-18 decreased by 3.9% as compared with the year prior, primarily due to the expansion of the campus’s onsite solar generating capacity.

**INTENSITY:** Grid-purchased electricity use per square foot has decreased by 25% over the past 10-year timeframe, due primarily to energy efficiency measures implemented under the UC/CSU/IOU Statewide Energy Partnership.
Total natural gas expenditures have been on a downward trend over the previous ten years. The reduction in natural gas use and continued low historical rates contributed significantly to the decreased expenditures on natural gas, when the campus’ consumption increased.

The commodity cost for natural gas is anticipated to remain consistent through 2020.

California Cap and Trade compliance cost was one factor in UCSB’s decision to opt in to Cap and Trade beginning in January, 2015. The trend in UCSB’s greenhouse gas emissions from natural gas combustion between 2015 and 2020 in combination with the market price for carbon allowances in the State will dictate AB32 compliance costs. Current energy efficiency and renewable energy projects at UCSB have targeted natural gas savings despite low commodity prices in order to mitigate this added cost to the extent possible. UCSB received an allowance allocation beginning in 2015 based on historical emissions. The campus will be responsible for the purchase of allowances for any difference between the allocation and actual emissions and is on track to maintain cost neutrality through the third compliance period (2018-2020).
**CONSUMPTION:** Total campus natural gas use during 2017-18 decreased by 1.5% as compared with the year prior.

**INTENSITY:** Natural gas use per square foot has decreased by 16% over the past 10-year timeframe, due primarily to energy efficiency measures implemented under the UC/CSU/IOU Statewide Energy Partnership.
UCSB’s average potable water rate increased by approximately 4% in 2017-18 as compared to the year prior. In order to meet requirements for system capacity and operations, the Goleta Water District introduced additional rate changes this year, which increased potable water commodity and metering rates. Drought charges continued to be in effect for the third year running. Water use reduction is and will continue to be a high priority for UCSB in light of ongoing drought conditions.
**CONSUMPTION:** Total campus potable water use during 2017-18 increased by 6% as compared with the year prior.

**INTENSITY:** Potable water use per square foot increased proportionally in 2017-18 as compared with the year prior. Over the longer term, water use intensity has been reduced by 26% over the past 10-year timeframe, due to a number of conservation measures, including the extension of municipally-supplied reclaimed water infrastructure, campus-wide installation of low-flow end use water fixtures, and the campus chilled water loop optimization project, which has significantly reduced the amount of evaporative heat rejection per unit of cooling produced.
Reclaimed water use decreased by 5.7% compared to the prior year, and now accounts for approximately 90 percent of irrigation water applied on the main campus and 26% of total annual campus water use in 2017-18. Replacement of major turf athletic fields with synthetic materials will further reduce the demand for irrigation water.

The campus will continue to investigate opportunities for substitution of reclaimed water for potable water in irrigation, flushing and process applications. A major opportunity for savings may be the use of municipally-supplied reclaimed water for evaporative cooling, however, some degree of treatment and/or filtration will be necessary to pursue the use of reclaimed water for this application.
Summary

A reliable and robust utility infrastructure is critical to meeting the varied requirements of the campus population, and UCSB Utility & Energy Services remains committed to maintaining the highest quality service and ensuring the success of UCSB’s advanced research academic programs.

UCSB will continue to implement energy conservation projects under the Strategic Energy Partnership through the current program cycle; an increasing emphasis will be placed on reduction of onsite natural gas combustion in order to mitigate Cap and Trade compliance costs and local air quality compliance risk.

The campus’s Automated Demand Response project was implemented in order to provide our Electric Utility Company the ability to dispatch over one megawatt of load reduction on campus. This is a collaborative effort between Southern California Edison and the campus to mitigate supply constraints on our regional electrical grid.

Utility & Energy Services completed a 4.8 MW solar photovoltaic installation in 2017. Electricity consumption and costs are expected to decrease significantly as a result beginning in 2017/18.

UCSB’s culture of environmental sustainability remains a driving force for continuous improvement, and Utility & Energy 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.

Water rates will continue to increase for the next one to two years. The campus will continue to expand the use of reclaimed water as a substitute for potable water in new buildings and existing process water applications.

In addition to demand management and efficiency measures, Utility & Energy Services will continue to increase renewable energy capacity on campus where feasible, and will continue to work 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.

The Utility & Energy Services website includes an abundance of information and tools to users on campus and beyond, 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
This Annual Utility & Energy Report is published each Fall for informational purposes only. Please visit http://energy.ucsb.edu for additional information or contact staff below with questions or comments.

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