



## Energy and Greenhouse Gas Emissions at San José State University

California State University (CSU) goals align with the State of California's AB32 to reduce current greenhouse gas (GHG) emissions to our 1990 levels by 2020. Continuous improvement in energy management has maintained a steady decrease in our energy intensity and GHG emissions. We successfully reduced GHG emissions to our 1990 levels in 2013 and in 2018 we reduced our levels to 12% below our 1990 levels. The campus energy intensity reduced by 20% from Fiscal Years 2009-2010, meaning despite an increase in campus square footage at the end of Fiscal Year 2017-2018. We continue to demonstrate our commitment to energy efficiency.

The SJSU Cogeneration Plant installation was completed in December of 1984. The Central Plant includes the Allison 501KH gas turbine, absorption and centrifugal chillers, backup boiler plant with water tube boilers, air emission systems, compressors, generators, water purifiers and other mechanical equipment. The 5.6 MW Cheng Cycle<sup>®</sup> plant provides steam for heating and cooling for campus buildings. About 80% electricity needed for the campus is provided by the cogeneration system. Power plants such as PG&E work at 15-20% efficiency, whereas SJSU's cogeneration plant's efficiency is around 40%. Read more about the plant [here](#).

The Utility Master Plan for SJSU specifies the approach to continue providing the campus with sustainable and reliable energy. Strategies include considering the conversion of all buildings to 12kV as well as renewable energy sources such as solar panels (PV), fuel cells, and other low/no-fossil-fuel technologies. New renewable energy sources are continually being reviewed, and we continue to implement MBCx of campus buildings.

## Solar Energy

PV Panels for South Campus and Main Campus Garages Rooftop solar on 10 main campus roofs, along with covered carport solar systems at south campus will be installed to provide renewable energy to the campus. Savings are estimated at \$4.6M through the warranty period of the panels, while lowering our carbon footprint by 511 metric tons CO<sub>2</sub>-eq. Design will begin in 2019, with installation to occur over the 2019/2020 fiscal year.

**Demand Side Management** has been implemented at the Central Plant since 2003 when the Central Plant installed a thermal energy storage tank that generates ice at night when electrical rates are lower and ambient temperatures cooler. The ice is then used to produce chilled water for pumping into buildings during the day when cooling is needed.

## Green Ninja and Climate Change Education

The Green Ninja project, run by Climate Science and Meteorology Professor Eugene Cordero, offers innovative middle school curricula designed to help students understand and tackle problems related to climate change. Its educational materials originated from SJSU research that focused on connecting middle school students to science subjects through personal engagement. Support from the National Science Foundation and NASA helped the program better understand student engagement and the powerful role that motivation plays in learning.

## Green Office Certifications

The Green Office Program is a partnership between the Office of Sustainability and the Environmental Resource Center that offers sustainability education to SJSU's faculty and staff. Once a month, University Personnel offers a Green Office Workshop that gives an overview of SJSU sustainability initiatives and ways to be sustainable that are easy to implement, cost effective and positively impact the environment. This monthly workshop is being developed into a Green Office certification process available to all campus offices and departments. The certification process had a soft launch in summer 2019 with the official program launch in the fall.

## Objectives for 2030

- The Office of Sustainability will draft a carbon neutrality plan that reflects the Second Nature Climate Commitment and maps out our greenhouse emission strategy for the next 25 years.
- Procure more renewable energy.
- Reduce energy usage on campus by retrofitting lighting, controls and implementing daylight harvesting, which uses daylight and lighting control systems to offset the amount of electric lighting needed.
- Cut greenhouse gas emissions by 40 percent.
- Carbon neutrality by 2045: Aim for a net zero carbon footprint, meaning that the campus will achieve net zero carbon dioxide emissions by balancing carbon emissions with carbon removal.

## CSU Executive Order 987

- Requires the California State University system to achieve a reduction in campus energy use (measured in BTU/Square Foot of building space) to be 15% below fiscal year 2003/04 consumption by fiscal year 2009/10.
- SJSU achieved this goal in 2008.

## California Assembly Bill 32, mandates:

- Reduction in Greenhouse Gas Emissions to 1990 levels by 2020
- Reduction to 80% below 1990 levels by 2050
- Consumption by fiscal year 2009/10.
- SJSU achieved this goal in 2008

## California Senate Bill 32, mandates:

- Greenhouse Gas Emissions Reductions must be executed in a manner that benefits the state's most disadvantaged communities in a transparent and accountable approach.
- Reduction in Greenhouse Gas Emissions to 40% below 1990 levels by 2030