Better Buildings CHALLENGE
U.S. DEPARTMENT OF ENERGY
LOS ANGELES

CASE STUDY

Los Angeles World Airports

2018
Walk the Walk Project of the Year

Los Angeles World Airports™

> **"The Central Utility Plant is a unique part not only of LAX, but of the sustainability landscape of the City of Los Angeles, so we're thrilled and honored that the LABBC recognizes it as an example to follow. The CUP is one of many initiatives that helps LAWA maintain its leadership role in sustainable aviation, and is an important piece in achieving the goals set forth by the City of Los Angeles in its 'Sustainable City pLAn.'"**
>
> **Michael Christensen**
> **Deputy Executive Director, Facilities Maintenance and Utilities Group**

Property Description

Los Angeles World Airports (LAWA) is the City of Los Angeles department that owns and operates Los Angeles International and Van Nuys general aviation airports. Both play an integral role in helping to meet the Southern California regional demand for passenger, cargo and general aviation service. Both airports make a distinct contribution to the strength of the system as it provides a high level of safety, security and service.

Sustainability Goals

Los Angeles World Airports (LAWA) is committed to balancing environmental stewardship, economic growth and social responsibilities in its operations and development. In September 2017, LAWA became the third U.S. airport to attain Airport Carbon Accreditation, level 3 (Optimisation) reflecting LAWA's commitment to decreasing greenhouse gas emissions to 80 percent below 1990 levels by 2050.

9.2%
Energy Reduction since 2013

14.1%
Water Reduction since 2013

Property Specifications

Address: 275 Center Way, Los Angeles, CA 90045

Square Feet: 108,080

LAWA.org

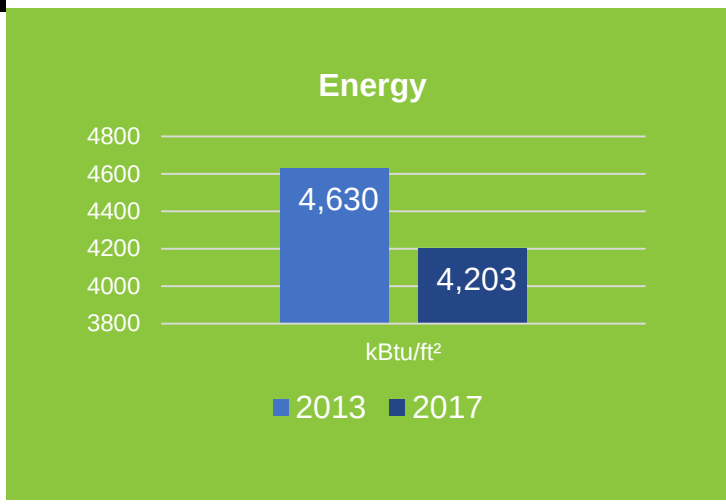
Project Background

The new Central Utility Plant (CUP) at LAX has led to a 20% increase in HVAC efficiency, saving approximately 5 million kWh annually. High-efficiency motors and variable frequency drives further reduce electricity use, saving another 1.6 million kWh annually, while the new turbines and boilers use state-of-the-art pollution control equipment to avoid nearly 4,900 tons of CO_2 emissions annually.

> **"Projects like LAWA are crucial examples of what's possible – they serve as a model for others to follow. Airports throughout the country should be looking to LAWA as they plan to modernize their infrastructure."**
>
> **David Hodgins**
> **Executive Director**
> **Los Angeles Better Buildings Challenge**

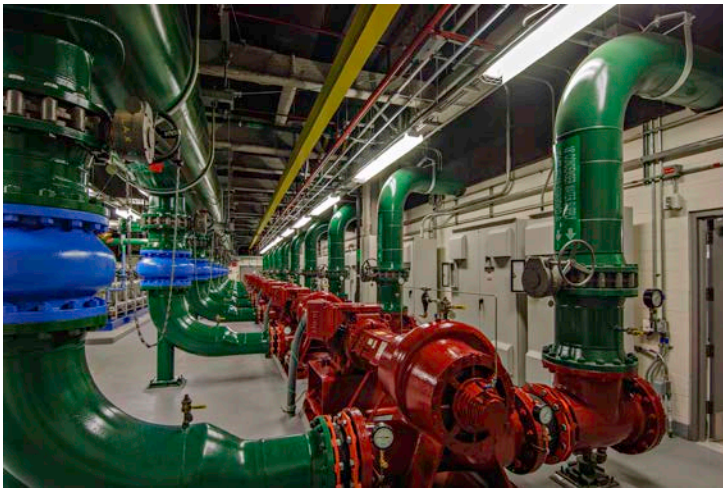
2017 Project Highlights

- Implemented condenser water temperature reset-- set as low as possible for maximum chilled water performance.
- Implemented condenser water flow reset-- reduces condenser water flow rates to chillers when conditions permit.
- Chiller staging-- planning to stage electric chillers up and down to meet chilled water flow and load while minimizing energy cost.
- TES Flow Optimization-- planning to better align the Thermal Energy Storage (TES) operation with the requirements of the LADWP Incentive Program.



Projects Completed Prior to 2017

- Replaced 50-year old Central Utility Plant with new $438 million, state-of-the-art computerized plant to provide efficient heating and cooling for the entire Central Terminal Area (CTA).
- Replaced existing chillers with new, electric chillers that are 20 percent more efficient.
- Replaced old, natural gas turbines with new, efficient turbines that use a regenerative cycle, generating the same amount of energy using less fuel.
- Replaced constant flow pumps with variable flow pumps for chilled and hot water systems.
- Installed building automation and facility monitoring control systems, allowing for efficiencies in monitoring and adjustment to the operating system.
- Installed a 1.6 million gallon Thermal Energy Storage (TES) tank that holds chilled water, produced at night when electrical costs are low, and stored until the hottest hours of the next day to provide cooling to the CTA.



Stakeholder Engagement

Conducted meetings with stakeholders to understand:

- The focus on energy efficiency, space efficiency, and plant optimization.
- Current energy and water demands from the old CUP.
- Design/construction requirements for new CUP which will accommodate expanded terminals while being more operationally efficient, overall.
- What equipment and technologies were available for an efficient state-of-the-art CUP facility.
- Requirements of the LADWP incentive program.

Met with project teammates for construction updates, problems, punch list, resolution, results of start-up, and continued discussions on optimizing plant efficiencies

Project Innovation

- Designed and built a state-of-the-art CUP, meeting the heating and cooling demands of the increasingly modernized LAX terminals.
- The CUP is a computer-managed operation.
- State-of-the-art, pollution-controlled equipment reduces carbon-dioxide emissions equivalent to removing 1,000 cars from road.
- All involved teams worked to carefully calculate the scheduling and sequencing of work activities to avoid interrupting airport operations.
- Service lines had to remain live at all times, requiring that commissioned plumbing, power and life safety systems operate from the new facility before demolition of the existing plant.