



## SHOWCASE PROJECT: THE VENETIAN AND THE PALAZZO

### SOLUTION OVERVIEW

Las Vegas Sands Corp.'s Las Vegas resorts, which include The Venetian and The Palazzo, make up the world's largest hotel under one roof, with over 7,000 guest rooms and 17 million square feet. The combined property features a 120,000-square-foot casino floor, the 2 million-square-foot Sands Expo Convention Center, 12 pools, and more than 40 restaurants and bars. The Venetian Resort and Sands Expo received LEED Gold certification in 2010 and The Palazzo Resort received LEED Silver certification in 2008. The Venetian Congress Center and Sands Expo also received LEED Gold recertification in 2016.

The work at The Venetian, The Palazzo, and Sands Expo demonstrates Las Vegas Sands' portfolio-wide commitment to sustainable resort operations outlined in its Sands ECO360 environmental strategy. The Sands ECO360° strategy is a comprehensive effort to ensure that every aspect of hotel operations – from the building systems to supply chains – is both energy and resource conscious. Even during building remodel and renovations, Las Vegas Sands incorporates its comprehensive Sustainable Development Standards. The standards consider everything from energy-efficient bulbs and appliances, to eco-friendly paints and carpets, low-low water fixtures, etc. Las Vegas Sands constantly studies new technologies for pilots as it seeks out ways to fine-tune existing operations.

The in-house Sustainability team at Las Vegas Sands measures and manages the properties' environmental performance by recording and analyzing utility data to improve operations. The team seeks to optimize performance in the green buildings and ongoing day-to-day operations. The Sustainability team manages energy and water conservation through several tools, including the Eco Tracker platform, an internally-developed tool that helps them implement sustainability projects. Property-level sustainability teams are instrumental in developing solutions, encouraging action, and building awareness.

### SECTOR TYPE

Commercial

### LOCATION

Las Vegas, Nevada

### PROJECT SIZE

17,300,000 Square Feet

## SOLUTIONS

The Venetian, The Palazzo, and Sands Expo are a combined property and metered as a single campus, making this site an ideal target for energy efficiency upgrades and improvements. Las Vegas Sands Corp. identified a number of energy and water efficiency upgrades for its large Las Vegas campus; these have been underway since 2014, and are expected to be completed in 2017. The renovations and improvements were managed by the in-house Sustainability, Development, and Facilities teams.

In 2015, Las Vegas Sands Corp. renovated 3,000 rooms at The Venetian Resort; 100 percent of these suites are now equipped with LED lighting, energy-efficient appliances, and low-flow fixtures. Renovation materials from carpeting to paints were purchased in line with LEED standards. A similar renovation is presently underway at The Palazzo. Las Vegas Sands Corp. incorporated energy-saving best practices into the department standard operating procedures (SOPs), including the Housekeeping, Meeting Services, Catering & Conference Management, Public Area, and Food & Beverage departments. Housekeeping SOPs include behavioral changes such as closing drapes, turning off lights, and adjusting temperatures in unoccupied rooms after cleaning. The housekeeping staff also implements many water-saving behaviors such as flushing toilets only once after cleaning, turning off the faucet while cleaning, and adhering to the resort's eco-linen program. The Venetian and The Palazzo guest room renovations have saved an estimated 8 million kWh and 30 million gallons of water annually.

Lighting and controls upgrades were also implemented in the Sands Expo and The Venetian Congress Center exhibit halls. A wireless lighting control system was installed to allow automatic operation and dimming of fixtures to various lighting levels by areas and individual zones.

Las Vegas Sands Corp. took a comprehensive approach to its 2014-2015 chiller plant optimization project to allow the central plants to reach and sustain high-performance, high-efficiency potential. The effort included hardware and equipment replacement, software upgrades, and programming. Las Vegas Sands Corp. upgraded plant controls and instrumentation along with the implementation of variable condenser water flow, which conserves pumping energy and minimizes tower supply temperature. The central plant optimization netted 8.2 million kWh in annual electricity savings.

Upgrades to filtration systems have helped cut water use significantly at Las Vegas Sands properties in Las Vegas. The Palazzo has a Nano-filtration system located 48 feet below the parking garage that converts groundwater flowing below the Las Vegas Strip into irrigation water. Originally implemented in 2008, an expansion to the Nano-filtration system is planned for 2017. Nano-filtration system upgrades have saved 12 million gallons of water annually for irrigation to date and will save another 8 million gallons for cooling towers. Recycled water is also used for exterior cleaning.

Finally, in 2017 Sands replaced sand filtration with glass filtration for 12 swimming pools and 12 spas at The Venetian and The Palazzo resorts. Glass filtration will reduce backwash water demand by 70 percent, and provide clearer, cleaner, healthier water, in addition to saving upwards of 5 million gallons per year. The Venetian and The Palazzo resorts also use solar thermal energy to provide hot water to the 12 swimming pools, 12 spas, and the first 10 stories of the Palazzo Hotel Tower.

## **OTHER BENEFITS**

As previously mentioned, 12 million gallons of water are filtered annually through the Nano-filtration systems for irrigation; this allows the resort's horticulture to be "off the water grid." The glass filtration upgrade for the pools and spas is expected to result in lower usage of chlorine, avoided waste of costly chemicals and heated water, and a lower maintenance burden.

In addition to The Venetian Congress Center and Sands Expo Convention Center being recertified LEED Gold in 2016, the resorts have won a number of other industry-acclaimed green accolades including the Sustainability Leading Company award from the Nevada Hotel and Lodging Association in 2016 and the Water Hero award from the Southern Nevada Water Authority in 2014. The Venetian renovation project was recognized by the Las Vegas Business Press and awarded with the Green Leader Award for "Large-Scale Green Renovation."

## Annual Energy Use

(Source EUI)

Baseline(2011)

177 kBtu/sq. ft.

Actual(2016)

139 kBtu/sq. ft.

## Energy Savings

22%

## Annual Energy Cost

## Cost Savings



The Venetian, The Palazzo, and the Sands Expo Center



Nano-filtration water system



Sands Expo Convention Center



Pool at The Venetian



Guest Suite at The Venetian