

# InterContinental Hotels Group



## Hotels counter rising electricity costs with Stem's learning software and energy storage system

After exhausting more traditional energy efficiency measures and manual load shifting, InterContinental Hotels Group turned to Stem to reduce energy costs without affecting guest comfort. Stem's proprietary combination of real-time data analytics, energy storage, and actionable insights had an immediate impact, helping the hotels halt rising energy costs. The modestly sized systems store and deploy automatically to deliver bill reductions every month, and powerful software tools have helped the hotels' engineering teams to more than double the savings.

IHG is one of the world's leading hotel companies, with 4,700 hotels and almost 700,000 rooms in 100 countries around the world. Located in the heart of San Francisco, the InterContinental San Francisco (ICSF) and InterContinental Mark Hopkins are celebrated luxury hotels that prioritize sustainability and efficiency.

The ICSF is a 550-room, 32-story translucent tower that was completed in 2008. As California's largest LEED Gold-certified building, the facility uses highly efficient equipment to minimize energy waste and enhance guest comfort.

The smaller Mark Hopkins is a 19-story building that opened in 1928. While the Mark Hopkins is equally as rooted in luxury and operational efficiency as its modern counterpart, savings opportunities from traditional energy upgrades are limited by its age and status as a historic landmark.

### Location

San Francisco, California

### Facility Type

Hotels

### Applications

Energy Cost Reduction,  
Demand Charge Management,  
Time-of-Use Mitigation

### Commercial Operation Dates

- 1.) March 2014
- 2.) January 2014

### Energy Storage System Sizes

- 1.) 54 kW
- 2.) 54 kW

### 10 Year Automated Savings

- 1.) \$84,000
- 2.) \$62,000

"I love the batteries, but I love the software even more, I've increased my ROI by about 300% using the data. I like doing something that's good for the grid, but this is good economics too. It's the real-time data that is the real differentiator here. Most systems use the utility meter data, which is collected on a 15-minute basis. But that's too late. By then, I may have a major peak that could dictate my demand charges for the entire month."

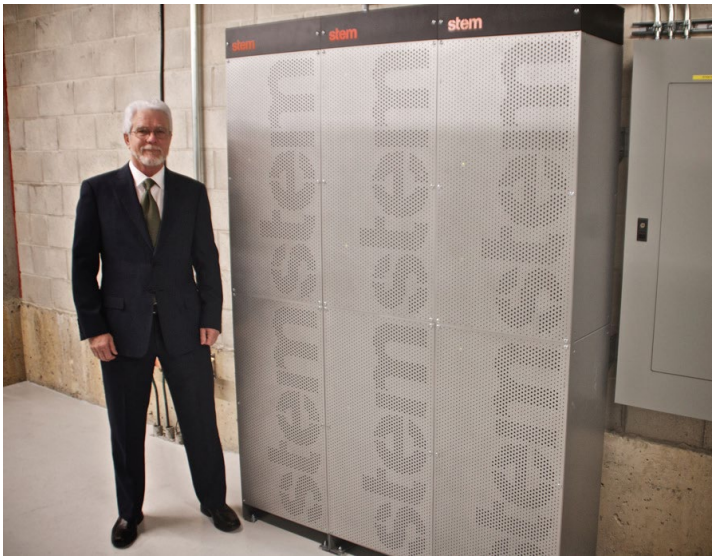
### Harry Hobbs

Area Director of Engineering  
at IHG

## Challenge

Both hotels run a variety of energy-intensive systems to meet their guests' needs, including HVAC, elevators, and laundry equipment. When running simultaneously, these systems produce large energy spikes that can dramatically increase monthly utility bills. Although short and infrequent, these spikes contribute to a little-known part of the utility bill called peak demand, which is calculated based on the highest 15-minute period of energy use each month.

Prior to installing Stem's system, demand charges amounted to between 30 and 40 percent of electricity costs at the two hotels. Both had already implemented energy efficiency measures such as equipment retrofits, linen reuse programs and temperature and lighting controls to reduce total consumption—but none of these measures addressed rising peak demand charges.



## Solution

From Day 1, Stem's energy storage system began providing automated savings at both locations. Real-time energy use displayed through Stem's PowerScope software revealed multiple systems deploying simultaneously at especially costly times at ICSF. In one such case, the facilities team was unknowingly starting the hotel's two 90 kW fire pumps while the steam for the spa was being generated and the elevators were in high demand. Stem's fast-acting energy storage automatically deployed to decrease this expensive spike, and the ICSF engineering team leveraged PowerScope software to know precisely when to stagger the start-up of the pump and the generators for further savings. With the combined efforts they were able to reduce the hotel's highest energy peak without affecting guest comfort. The Director of Engineering estimates that operational changes enabled by Stem's software have reduced peak demand at ICSF by 75 kW over time, which more than doubles the impact of the storage system's automated response.

At the Mark Hopkins, Stem's software uncovered a previously undetectable anomaly in the building management system that was interfering with cost reduction efforts. "The precision of Stem's PowerScope software identified a mathematical error in our building management system that was causing incorrect data to be displayed from our chiller," commented Mark Nichols, the hotel's Director of Engineering. The error would have continued undetected were it not for the increased visibility provided by Stem.



## Results

Managing energy costs requires 24x7 vigilance. To keep control of energy costs while away from his desk, Nichols set custom alerts with Stem that he receives on his iPad when the hotel's load exceeds a pre-set usage amount. Unlike many systems, Stem uses real-time 1-second data to identify impending peaks and quantify costs, delivering alerts in time to save.

While at home one morning, he received an alert and checked with his team to learn that the chiller had unexpectedly turned on. Fortunately, the Stem storage system automatically kicked in to limit the resulting demand peak but knowing what happened helped Nichols take steps to prevent recurrence. Nichols now has a screen running Stem's PowerScope software around the clock in his engineering control room in addition to sending alerts to himself and his engineering team. When notified of unexpected spikes, the facilities team at ICSF sometimes allows the building's temperature to fluctuate slightly or will take select elevators out of service momentarily in order to reduce load.

Since adopting the Stem system, the InterContinental San Francisco and Mark Hopkins hotels have seen more than \$15,000 in annual savings from the automated storage component alone. Nichols estimates that the operational changes he has implemented using the software are worth at least twice as much. The InterContinental San Francisco has reduced its demand volatility by more than 3.5 times year-over-year—not only lowering costs, but also making them easier to predict. After 10 years, Stem's savings for these two hotels will amount to more than \$140,000. InterContinental plans to implement the Stem system at several hotels in its California portfolio in 2015.