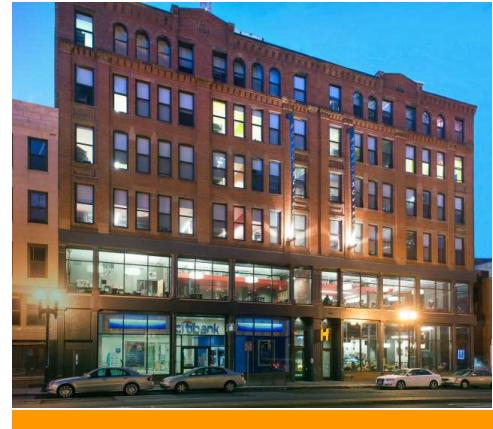


## Case Study

# LEED Silver Hotel in Boston Suffers from Comfort Complaints and \$100,000 in Lost Energy

## The Problem

Hostelling International Boston is a 485-bed hostel with over 2,000 heating and cooling complaints in the two years after receiving LEED Silver designation in 2012. The building uses nearly three times the energy of the DOE average for a small hotel in this region of the country.



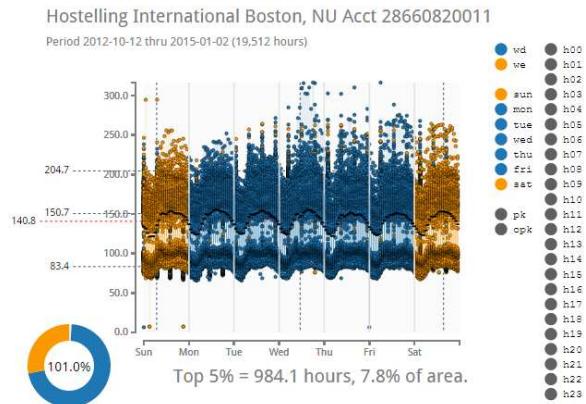
## Solutions

AEI obtained 5-minute utility interval data and applied its AEI SoftStart™ analytics to profile the hotel's energy use.

Combined with a physical tour of the facility, it was apparent from the data and a review of installed equipment that the building is essentially always in the occupied mode. LEED points were gained at the lowest possible cost. There is no appreciable energy reduction during nights and weekends due to the nature of this very active hotel; any setbacks appear to be limited to 15% or less. Also, given the lack of in-room controls with feedback, the building is essentially uncontrolled for weather with only four major systems on any form of EMS control.

The AEI review of the 2014 gas and electric consumption revealed an Energy Use Intensity (EUI) of 220 kBtu/ft<sup>2</sup>, compared to the DOE benchmark of 79 kBtu/ft<sup>2</sup> for small hotels in this region. A separate comparison of the electric and heating components of the EUI revealed the electric consumption was 22% higher than the benchmark and the heating consumption was almost 7 times higher than expected. At \$0.10 per kWh and \$1.00/therm, the utility bill is \$100,000 higher than expected for a facility of this size, building type and region.

AEI continues to engage with the facility and is working with the EMS vendor to set up trend files that will lead to a detailed set of action items, ultimately allowing the facility to take control of its energy use through energy data analytics.



## Building Energy Efficiency with AEI

### Take Back Control with AEI SoftStart™

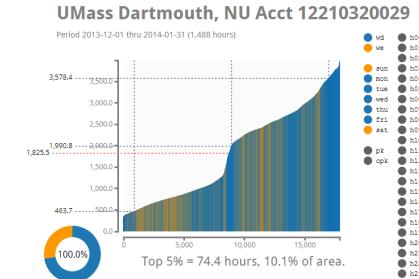
AEI energy data analytics help you take back control of your facility's energy use. The first step is an inexpensive main meter AEI SoftStart™ review using the data collected by your time-of-use (TOU) facility meters. Even with just the main meter, we can:

- Profile your facility's energy use by time of day, day of week, season/season, year/year, including weather normalization,
- Show dynamic demand visualizations that quickly identify your peak demands during the year,
- Calculate the Energy Use Intensity (EUI) of your buildings and compare them to each other and to the DOE national database.

From these analytics, we can start to understand how your buildings operate:

- Do your buildings set back appropriately during unoccupied hours?
- What are the base, heating and cooling loads of the buildings?
- What are the top peak demand moments in the billing period? How does your peak demand compare to the average load?
- How do your buildings perform relative to each other per square foot, and to the national averages for similar building types?

An AEI SoftStart review is the inexpensive way to answer these questions and others, pointing you in the right direction to choose the next best steps toward energy efficiency.



Period	Period Start Date/Time	Period End Date/Time	Over Usage	Demand Charge		P1 (%)	P2 (%)	P3 (%)	P4 (%)	P5 (%)	P6 (%)	P7 (%)	P8 (%)	P9 (%)	P10 (%)	P11 (%)	P12 (%)	P13 (%)	P14 (%)	P15 (%)	P16 (%)	P17 (%)	P18 (%)	P19 (%)	P20 (%)	P21 (%)	P22 (%)	P23 (%)	
				IC (Avg)	IC (Sum)																								
<b>Total Demand</b>																													
Dec 01	2014-12-01 00:00:00	2014-12-01 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 02	2014-12-02 00:00:00	2014-12-02 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 03	2014-12-03 00:00:00	2014-12-03 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 04	2014-12-04 00:00:00	2014-12-04 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 05	2014-12-05 00:00:00	2014-12-05 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 06	2014-12-06 00:00:00	2014-12-06 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 07	2014-12-07 00:00:00	2014-12-07 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 08	2014-12-08 00:00:00	2014-12-08 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 09	2014-12-09 00:00:00	2014-12-09 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 10	2014-12-10 00:00:00	2014-12-10 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 11	2014-12-11 00:00:00	2014-12-11 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 12	2014-12-12 00:00:00	2014-12-12 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 13	2014-12-13 00:00:00	2014-12-13 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 14	2014-12-14 00:00:00	2014-12-14 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 15	2014-12-15 00:00:00	2014-12-15 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 16	2014-12-16 00:00:00	2014-12-16 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 17	2014-12-17 00:00:00	2014-12-17 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 18	2014-12-18 00:00:00	2014-12-18 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 19	2014-12-19 00:00:00	2014-12-19 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 20	2014-12-20 00:00:00	2014-12-20 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 21	2014-12-21 00:00:00	2014-12-21 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 22	2014-12-22 00:00:00	2014-12-22 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0	18,000.0	19,000.0	20,000.0	21,000.0	22,000.0	23,000.0	24,000.0	25,000.0
Dec 23	2014-12-23 00:00:00	2014-12-23 23:59:59	0.00	324.67	80,111	463.7	1,990.8	3,578.4	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0	11,000.0	12,000.0	13,000.0	14,000.0	15,000.0	16,000.0	17,000.0								