




## Efficiency Retrofit Case Study: The St. Charles Apartments, Seattle

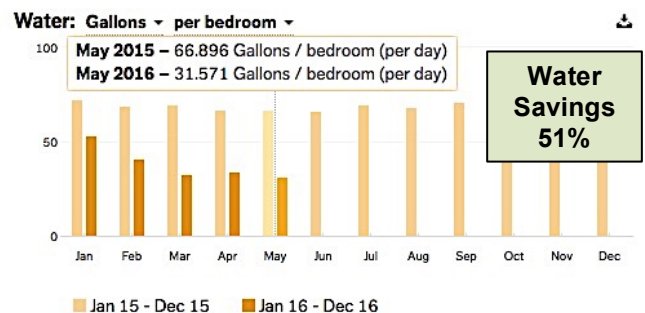
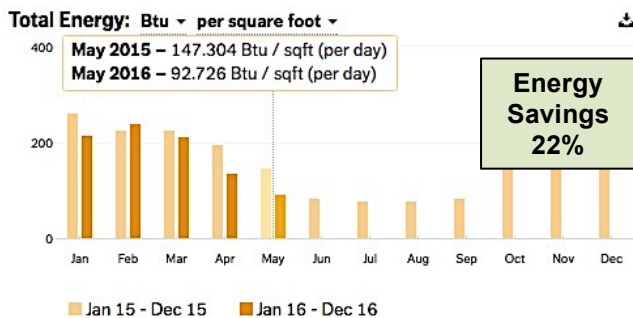
Plymouth Housing Group transforms lives by providing permanent, supportive homes to homeless people with few other options for housing. Once a hotel, the historic St. Charles is located in Pioneer Square. The St. Charles features 64 single unit apartments for the formerly homeless with private and common bathrooms. It was renovated in 2004 but the integrity of the building was maintained and the former lobby entrance to the Seattle Opera House was preserved.



**Owner:** Plymouth Housing Group  
**Green Building Advisor:** O'Brien and Company  
**Contractor(s):** MacDonald Miller Facilities Solutions  
**Efficiency Retrofit completed:** February 2016

	Before:	After:
<b>Lighting</b> 	Compact Florescent Lamps (CFL) in hallways and stairwells, florescent exit signs.	Long-life LED light engines in hallways, LED fixtures with occupancy sensors in stairwells, LED exit signs.
<b>Water Fixtures</b> 	2.5 gallon per minute (gpm) on kitchen/bath sinks, 1.5-2.25 gpm showerheads and 1.6 gallons per flush (gpf) toilets, hot water re-circulated 24 hours per day.	Installed 1.5 gpm kitchen/bath sink aerators, 1.5 showerheads with showerstart® technology, .8 gpf Niagara Stealth Watersense® toilet, installed thermostatic recirculation control for domestic hot water.
<b>Heating &amp; Air Flow</b> 	Boiler controls including outdoor reset malfunctioning, residential units and halls over ventilated, common area thermostats not set correctly	Boiler controls retro-commissioned, residential units and halls ventilation tested and balanced, installed cages and reset common area thermostats, tenant and staff educated on use of thermostats and ventilation

### Results March-May 2016:



**Carbon Reduction: 20%** | **Utility Cost Savings: 45%** | **Return on Investment: 151%**