Westridge Energy, LLC

Energy Efficiency & Submetering

"A Disabled Veteran Owned Company"

Why Submeter

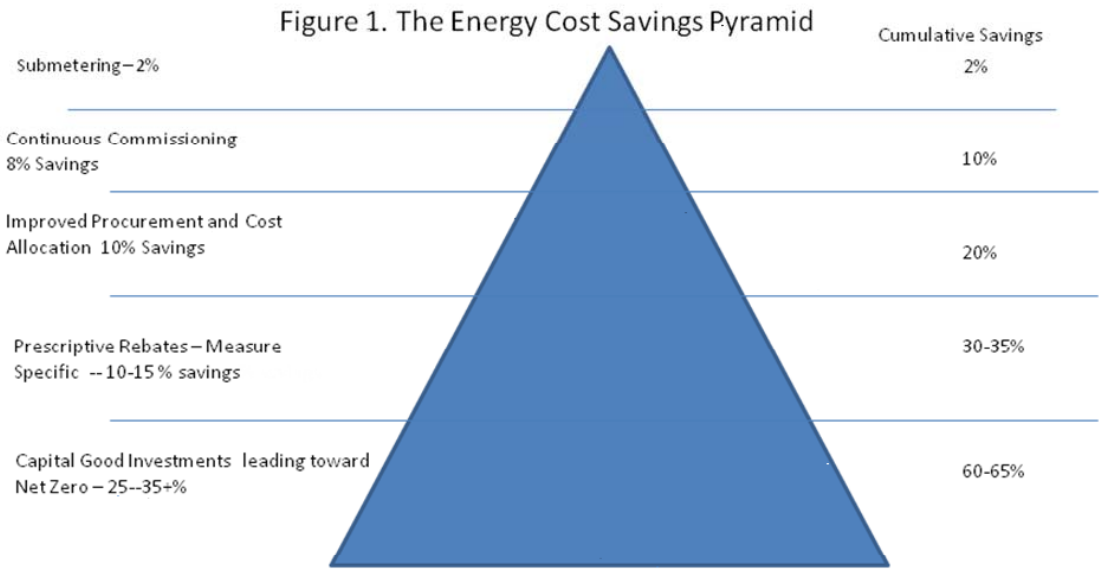
- Identify & Eliminate waste without large capital expenditures
- Fundamental starting point for better management & sustainability
- Verify utility charges are correct
- Participate in utility & PJM Demand Response Programs
- Reduce maintenance costs
- Early warning of operating issues that effect energy use/cost
- Employee Awareness - Kiosks

Organizations with active programs:

- GSA
- Veterans Administration
- DOD
- Walmart
- Virginia – DGS
- Va Tech
- Washington Lee University

Submetering

Figure 1. The Energy Cost Savings Pyramid



Submetering – Part of EMS or Separate System

- In EMS focused more on load control & some profiling analysis

- Separate

  Rate Analysis
  Forecasting
  M&V
  Continuous Commissioning

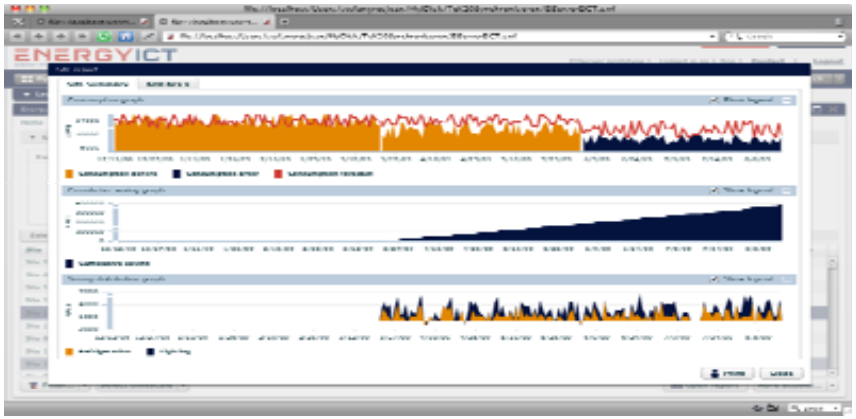
Project Tracking (M&V)

Report Project Results (%) [07/01/2005 00:00 - 03/10/2006 00:00]

Project Tracking Summary

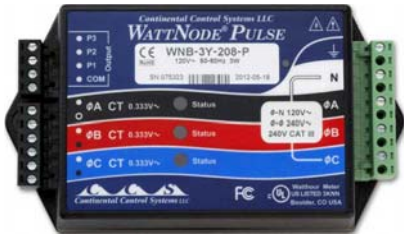
Please double click on the green or red cells to open a more detailed report on the individual stores project results.

Member	Percentage Savings (%)	Cumulative Savings (kWh)	Project Date	Description
Shawnee, OK	-3.844	-21376.961	11/05/2005	Stepper valves already installed/floated suction
Evansville, IN	-1.687	-6411.218	12/08/2005	ER valves & floating suction
Lawrenceville, GA	-8.215	-22611.447	11/17/2005	Stepper valves/floating suction Racks A, B, C & D
Plano, TX	-6.301	-17998.862	12/29/2005	Floated suction and head pressures
Lewisville, TX	-4.785	-23774.076	11/15/2005	Stepper valves already installed/floated suction
Plano, TX	-1.425	-9687.685	11/14/2005	Re-commissioning
Irving, TX	-1.383	-9140.037	11/16/2005	Re-commissioning
Total		-111000.287		
Average	-3.949	-15857.184		
Minimum	-8.215	-23774.076		
Maximum	-1.383	-6411.218		



Data Collection

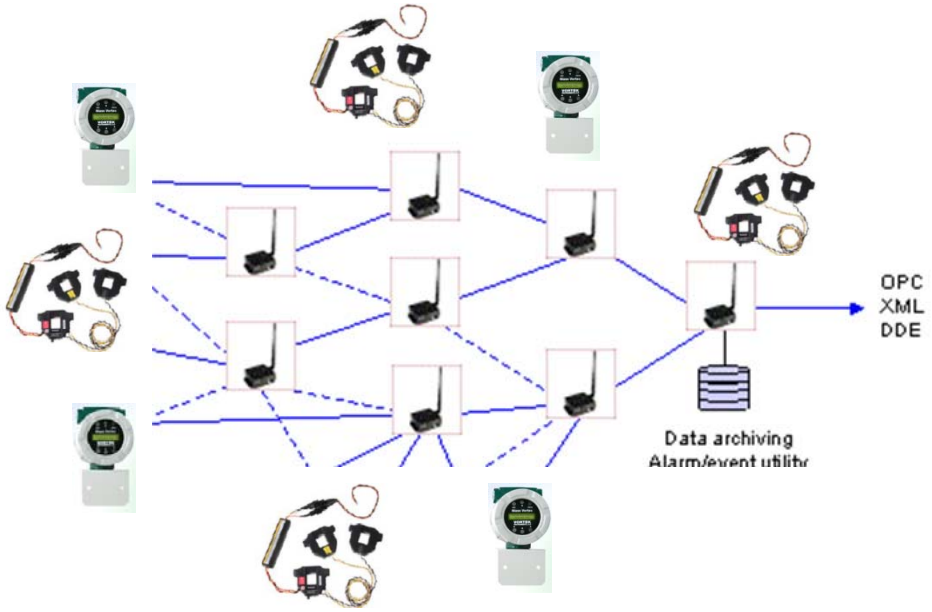
Electric Metering



Mechanical Meters

Monitoring System Communications

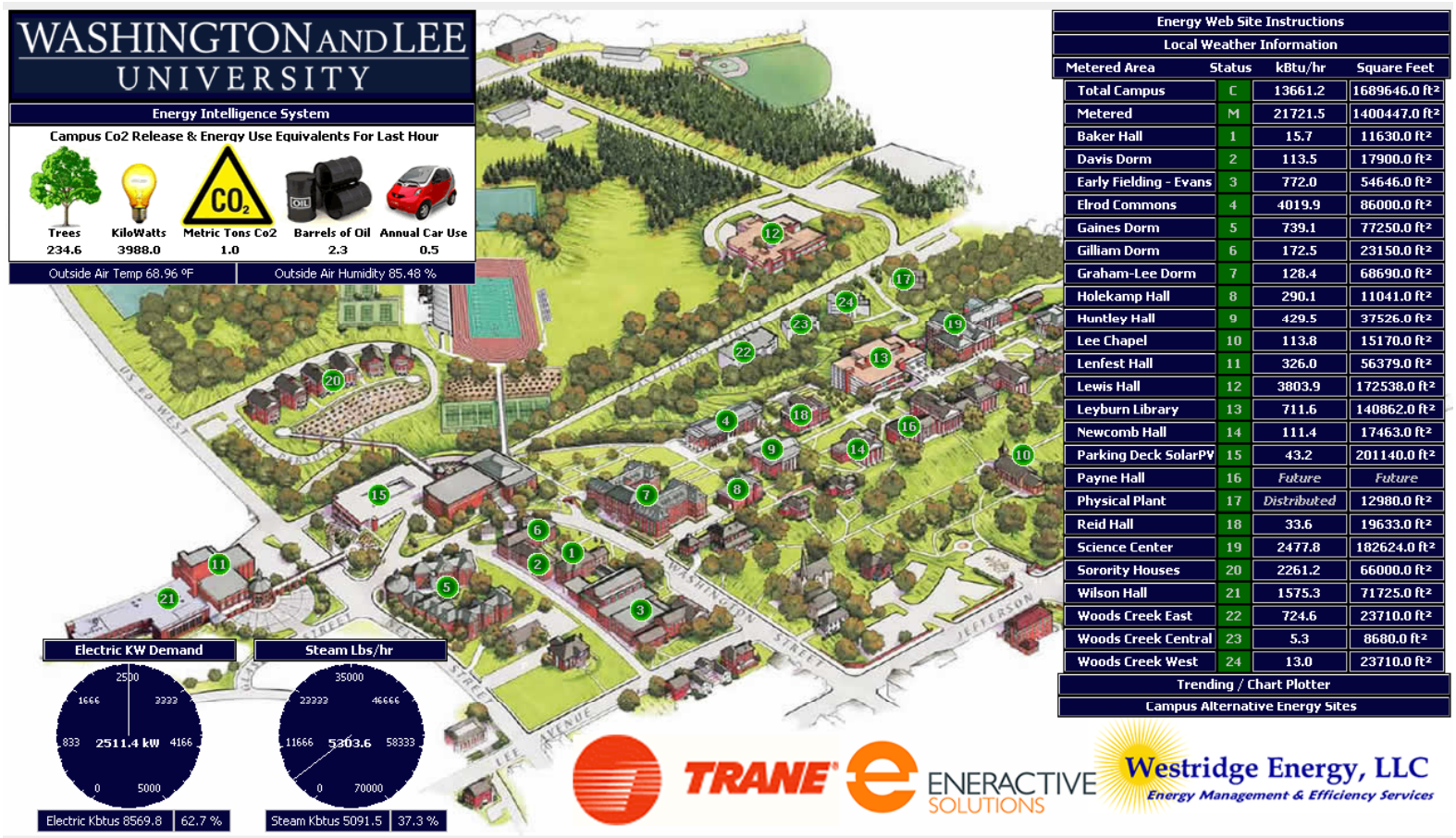
Mesh Network – 900MHz



Note: Wireless digital output modules available future integration with EMS

Energy Monitoring Software

- Service Based
- Server/PC Based



Metered Area	Status	kBtu/hr	Square Feet
Total Campus	C	13661.2	1689646.0 ft²
Metered	M	21721.5	1400447.0 ft²
Baker Hall	1	15.7	11630.0 ft²
Davis Dorm	2	113.5	17900.0 ft²
Early Fielding - Evans	3	772.0	54646.0 ft²
Elrod Commons	4	4019.9	86000.0 ft²
Gaines Dorm	5	739.1	77250.0 ft²
Gilliam Dorm	6	172.5	23150.0 ft²
Graham-Lee Dorm	7	128.4	68690.0 ft²
Holekamp Hall	8	290.1	11041.0 ft²
Huntley Hall	9	429.5	37526.0 ft²
Lee Chapel	10	113.8	15170.0 ft²
Lenfest Hall	11	326.0	56379.0 ft²
Lewis Hall	12	3803.9	172538.0 ft²
Leyburn Library	13	711.6	140862.0 ft²
Newcomb Hall	14	111.4	17463.0 ft²
Parking Deck SolarPV	15	43.2	201140.0 ft²
Payne Hall	16	*Future*	*Future*
Physical Plant	17	*Distributed*	12980.0 ft²
Reid Hall	18	33.6	19633.0 ft²
Science Center	19	2477.8	182624.0 ft²
Sorority Houses	20	2261.2	66000.0 ft²
Wilson Hall	21	1575.3	71725.0 ft²
Woods Creek East	22	724.6	23710.0 ft²
Woods Creek Central	23	5.3	8680.0 ft²
Woods Creek West	24	13.0	23710.0 ft²

Baker Building

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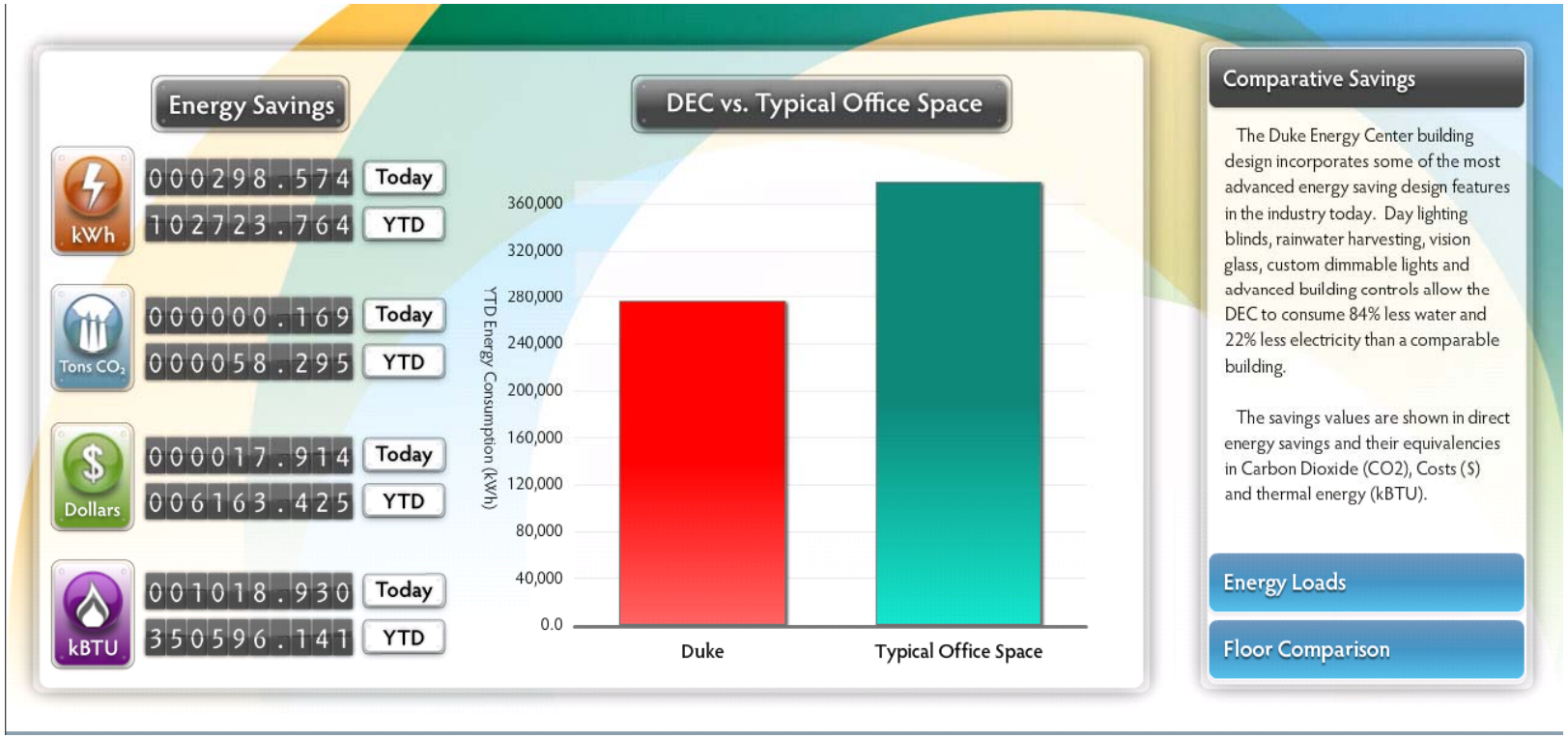
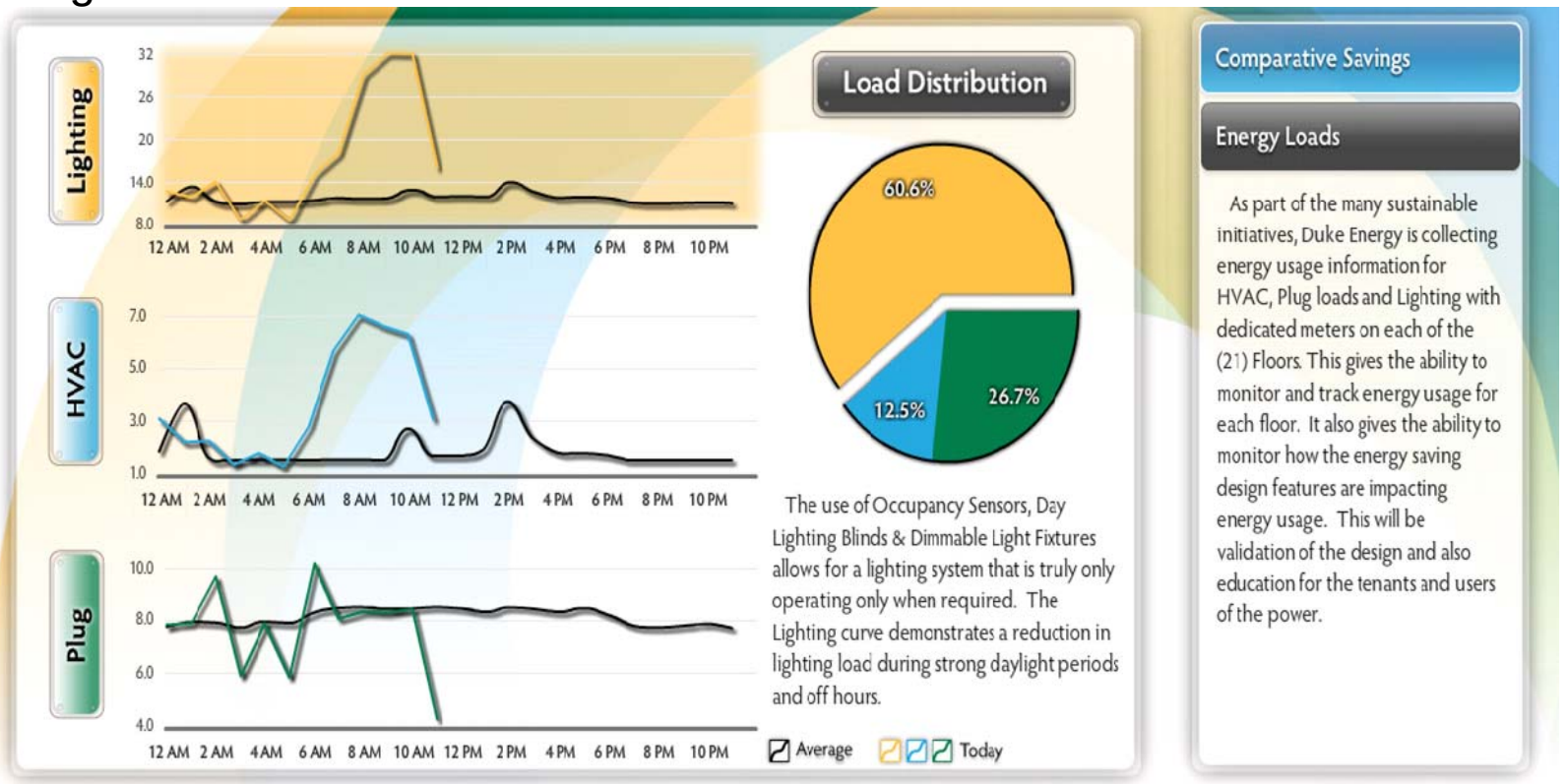
Typical Overview


Energy Savings
kWh
000298.574 Today
102723.764 YTD
Tons CO_2
000000.169 Today
000058.295 YTD
Dollars
000017.914 Today
006163.425 YTD
kBTU
001018.930 Today
350596.141 YTD
DEC vs. Typical Office Space
YTD Energy Consumption (kWh)
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0.0
Duke
Typical Office Space
Comparative Savings
The Duke Energy Center building design incorporates some of the most advanced energy saving design features in the industry today. Day lighting blinds, rainwater harvesting, vision glass, custom dimmable lights and advanced building controls allow the DEC to consume 84% less water and 22% less electricity than a comparable building.
The savings values are shown in direct energy savings and their equivalencies in Carbon Dioxide (CO2), Costs ($) and thermal energy (kBTU).
Energy Loads
Floor Comparison

Single Floor



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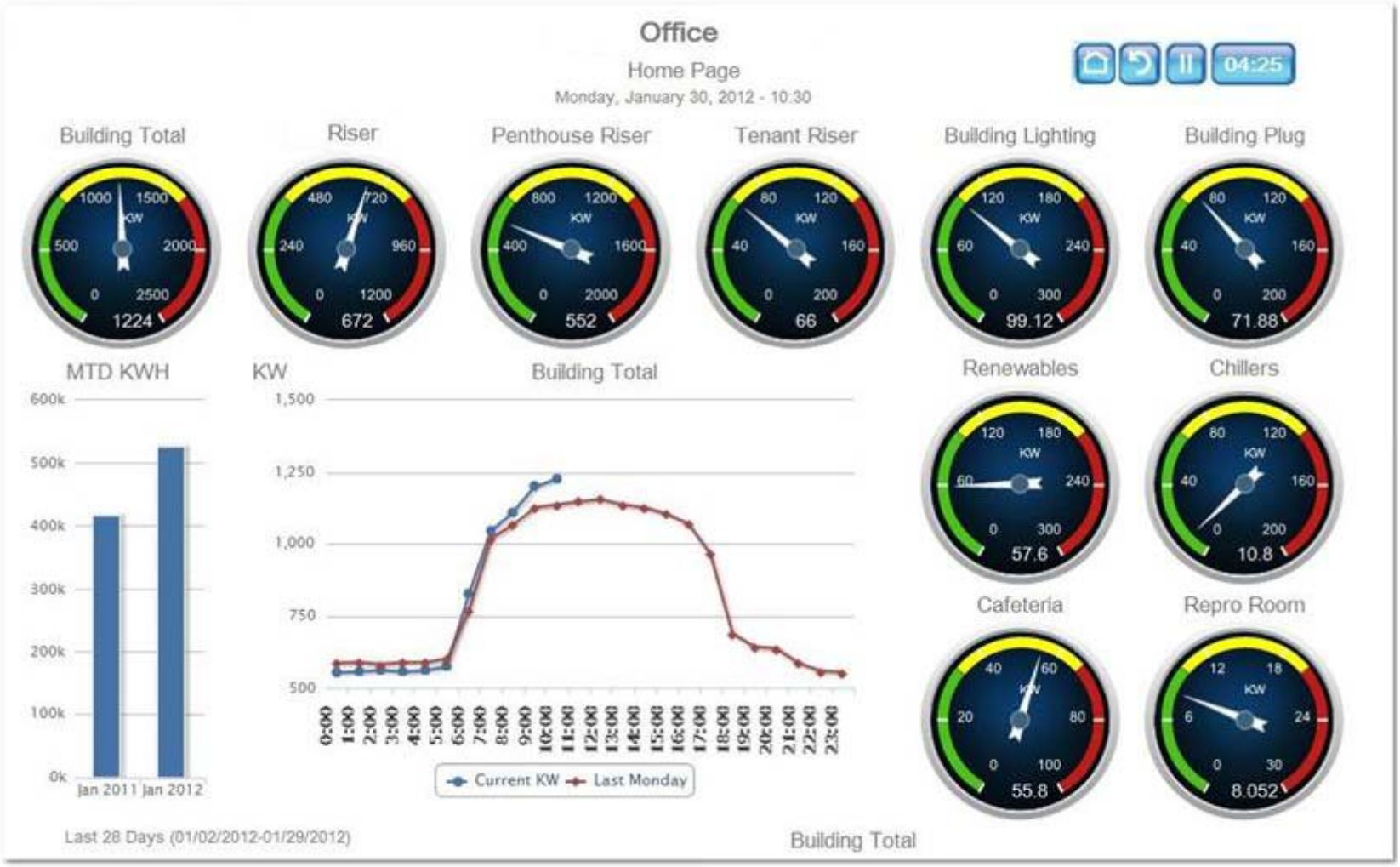
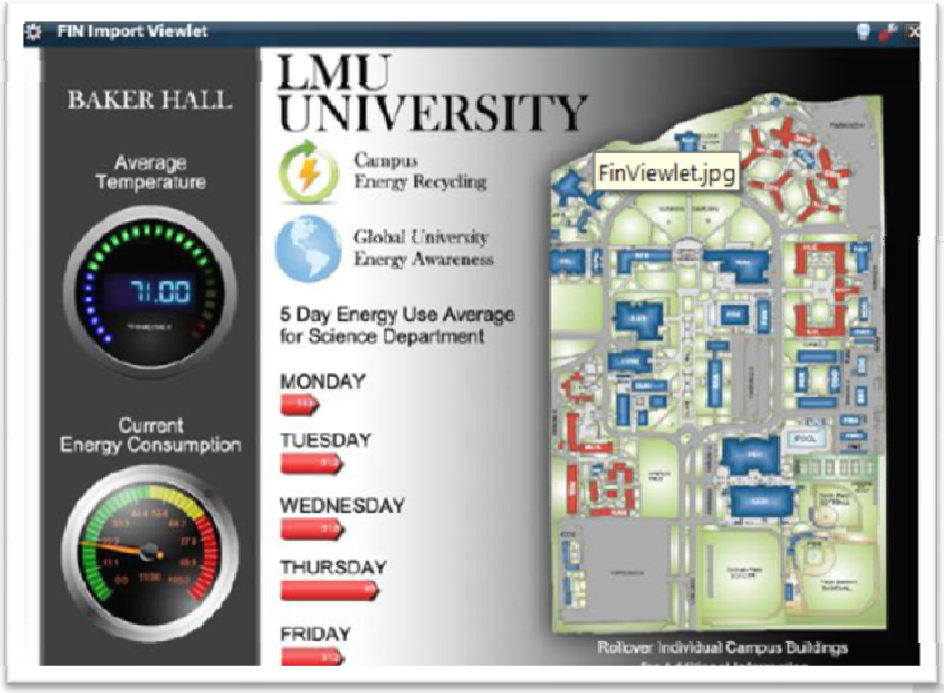
General Dashboard View


Office
Home Page
Monday, January 30, 2012 - 10:30
04:25
Building Total
1224
Riser
672
Penthouse Riser
552
Tenant Riser
66
Building Lighting
99.12
Building Plug
71.88
MTD KWH
600k
500k
400k
300k
200k
100k
0k
Jan 2011
Jan 2012
KW
Building Total
1,500
1,250
1,000
750
500
Current KW
Last Monday
Renewables
57.6
Chillers
10.8
Cafeteria
55.8
Repro Room
8.052
Last 28 Days (01/02/2012-01/29/2012)
Building Total


FIN Import Viewlet
BAKER HALL
Average Temperature
71.00
Current Energy Consumption
LMU UNIVERSITY
Campus Energy Recycling
Global University Energy Awareness
5 Day Energy Use Average for Science Department
MONDAY
TUESDAY
WEDNESDAY
THURSDAY
FRIDAY
FinViewlet.jpg
Rollover Individual Campus Buildings


Energy Dashboard
50.00
75.00

The Utility Accounting Viewlet

The Utility Accounting Viewlet allows the user to import their utility bills and display monthly electricity, gas, and water usage statistics. The numbers are shown in a chart which gives total resource consumption numbers for each utility, the cost per month, as well as the cost per unit of consumption. The viewlet also presents the figures in interactive pie and column charts to help the user visualize their respective energy usage over time.

Date	Electricity			Gas			Water			Trend
	kW-hr	$	$ / kW-hr	therm	$	$ / therm	gal	$	$ / gal	
Jan 2008	80,732	$4,100.00	0.05	849	$990.60	1.16	80,732	$4,100.00	0.05	☑
Feb 2008	75,559	$3,777.90	0.04	365	$487.70	1.33	75,559	$3,777.90	0.04	☑
Mar 2008	84,394	$4,300.00	0.05	103	$140.90	1.36	75,559	$4,300.00	0.05	☑
Apr 2008	75,202	$3,760.10	0.04	20	$42.20	2.11	75,202	$3,760.10	0.04	☑
May 2008	84,133	$4,206.60	0.04	6	$24.50	4.08	84,133	$4,206.60	0.04	☑
Jun 2008	82,456	$4,122.80	0.05	5	$24.00	4.80	82,456	$4,122.80	0.05	☑
Jul 2008	85,037	$4,251.90	0.05	7	$26.60	3.80	85,037	$4,251.90	0.05	☑

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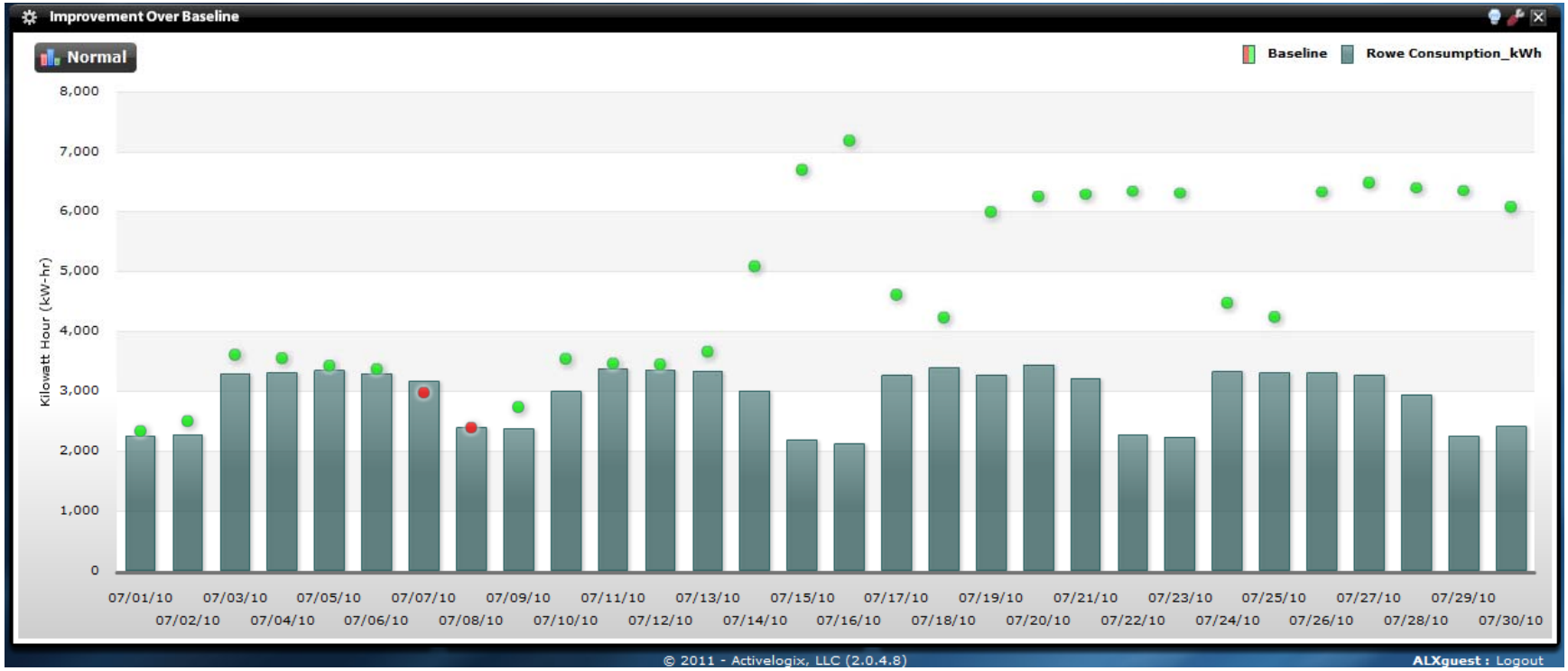
Baseline Comparison (Normal)



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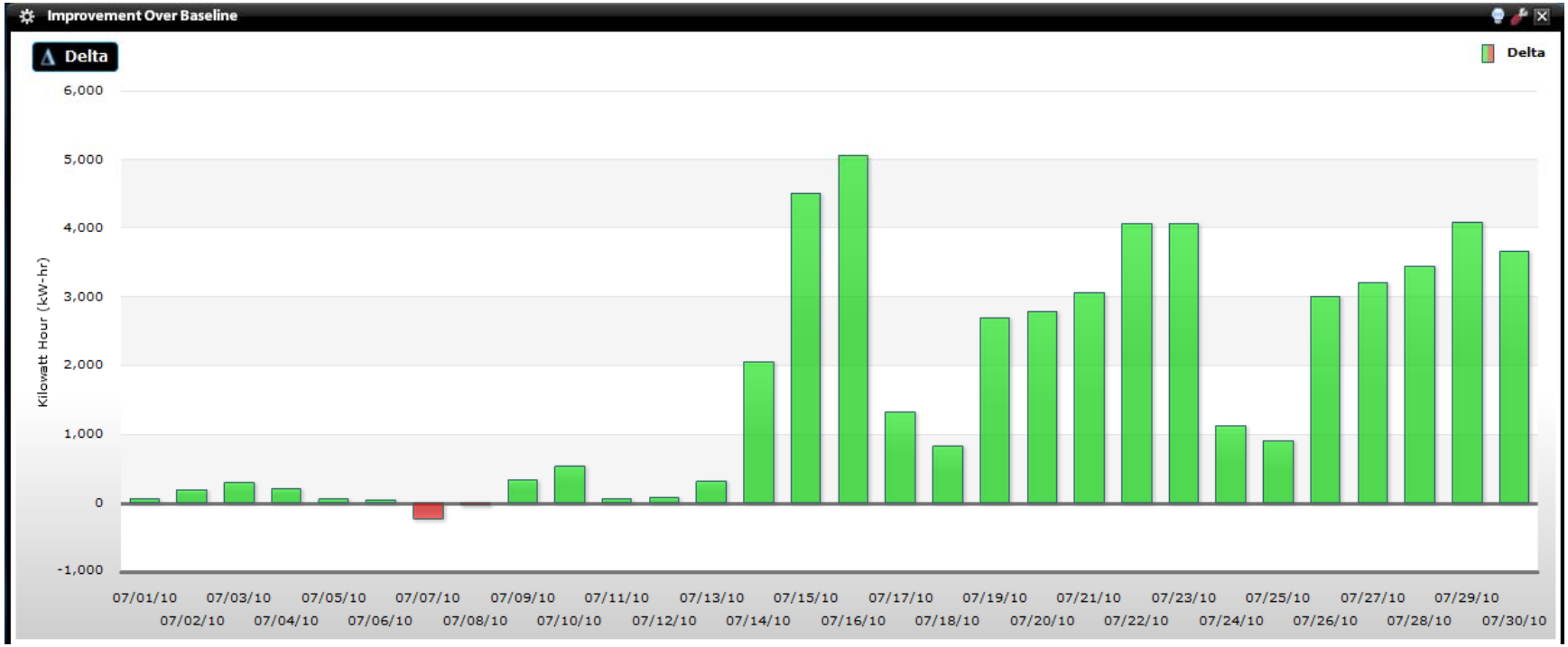
Baseline Comparison – Delta View



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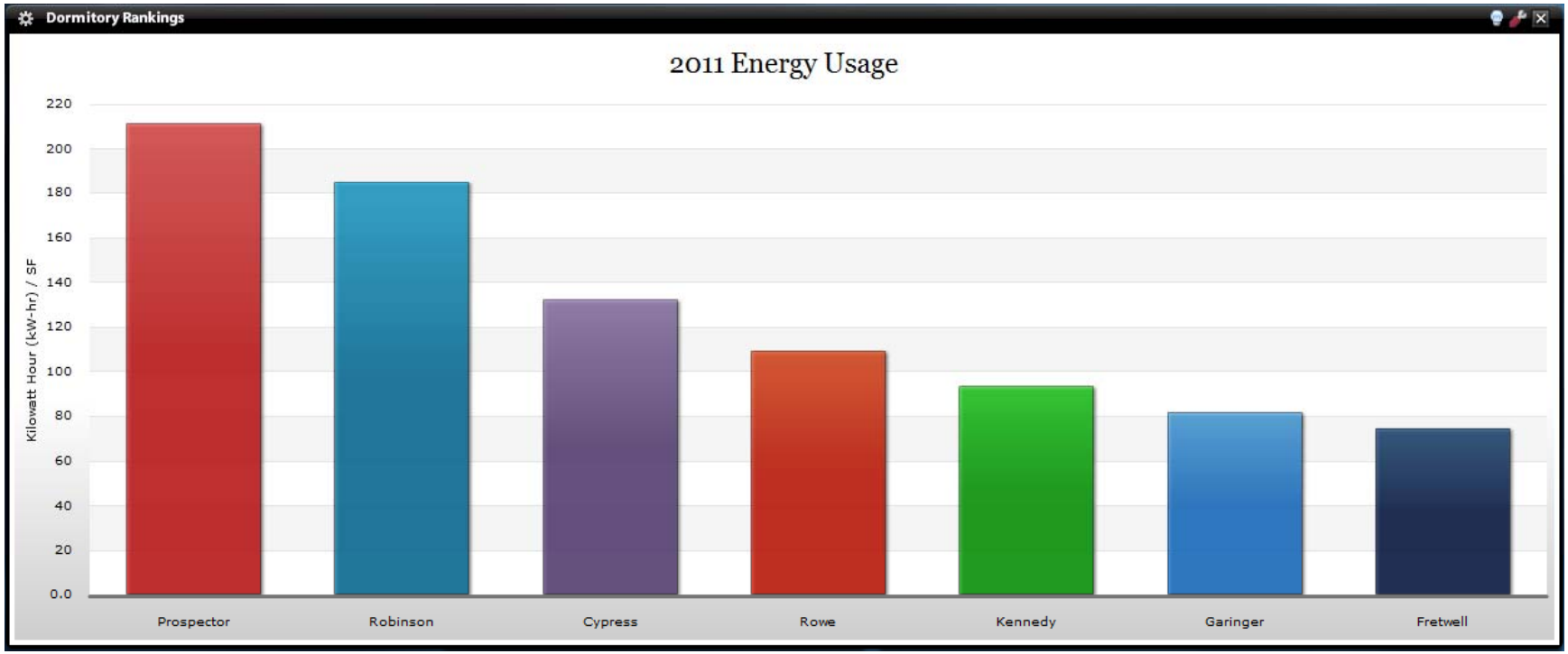
Ranking Viewlet



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Event History Timeline

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AHU Diagnostics

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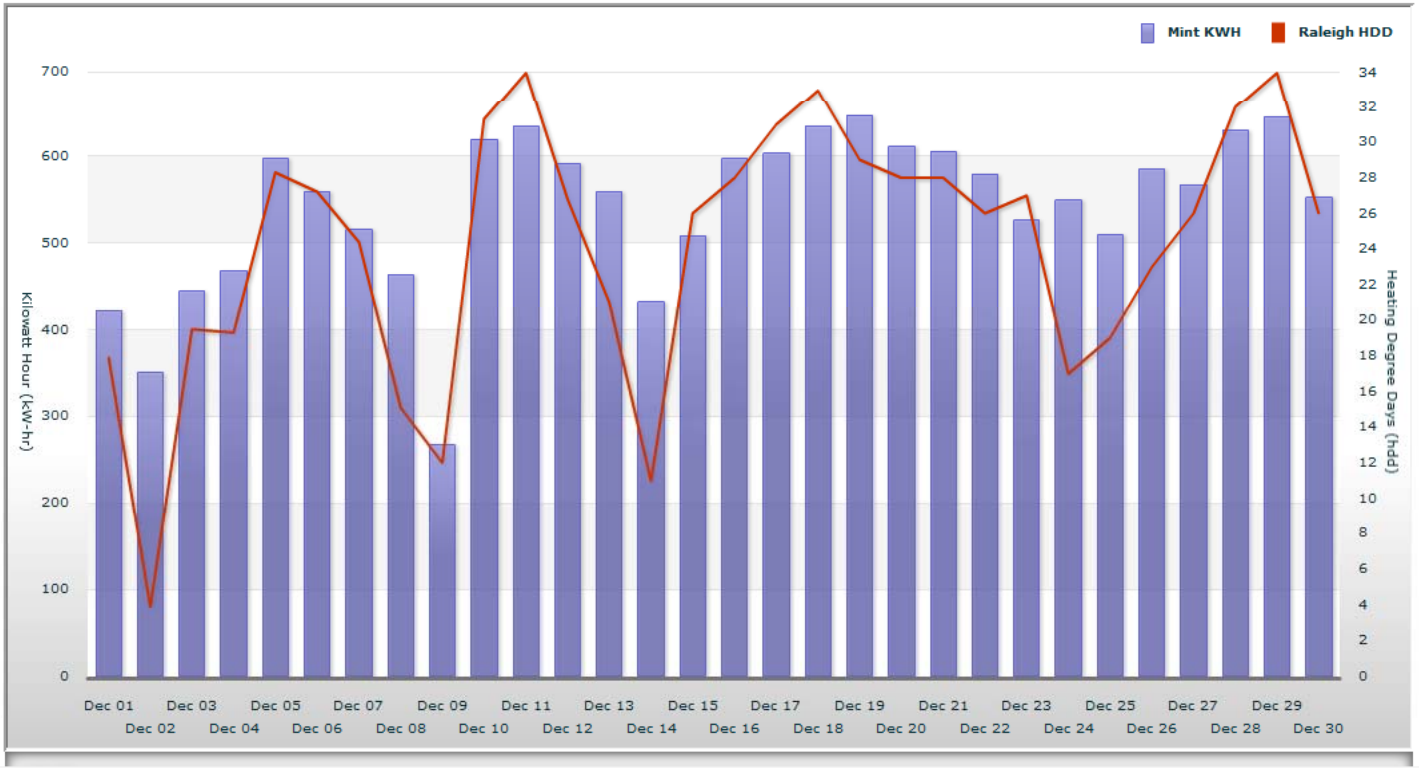
The Weather Correlation Viewlet (New for Verison 1.2)

The Weather Correlation Viewlet enables the ability for a user to visually evaluate the relationship between a location's historical outside temperature (OAT) and a chosen building variable, such as energy consumption (e.g. kWh). This feature can be used for ruling "in" or "out" weather as a likely contributor to a change in consumption over a user defined time range.



Solar Generation Viewlet - Home

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Solar Generation Viewlet - Savings

	kWh	kBTU	CO^2 (T)	Oil Barrels (bbl)
Today	326.94	1,115.80	0.21	0.19
Week	3,782.29	12,908.84	2.51	2.22
Month	326.85	1,115.56	0.21	0.19
Year	53,074.53	181,143.24	35.26	31.22
Lifetime	455,725.03	1,555,389.48	302.82	268.07

You can’t Save What You Don’t Measure !