DASHBOARDING

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Comprehensive Dashboard

- Real-Time Monitoring Versus Savings
- Not Just Energy
- Realities of Implementing a System
- System Demonstration

Real-Time Monitoring Vs Savings

- Use Smart Grid Technology to Promote Energy Efficiency and Conservation in Student Housing

Main Idea:

- Control and test groups
- Measure power usage of both groups
- Compare power usage

Control

- Electricity Monitors
- Data Analyzed
- Ten – 2 BDR Units

Test

- Electricity Monitors
- Data Analyzed
- Ten – 2 BDR Units

Results

- 32,000+ data points recorded
- Statistical and time-series modeled electrical consumption patterns
- Preliminary results indicate *electricity consumption* can be *decreased with real-time feedback*

What Does this Tell Us?

Key Results

- **20** power monitors, **20** data logging devices and **10** displays installed in **20** student apartments units

- Load profiles generated for student apartments for Fall and Winter; results indicate a **20** percent reduction in electricity usage from feedback of real-time usage, cost and carbon dioxide emissions

What can we do with this information?

- Reduce Energy Usage through knowledge
- Insight into System Needs When Implementing an Enterprise System

Campus Dashboard

Comprehensive Dashboard

- Energy Usage
- All other utilities
  - Water
  - Gas
  - Steam
  - Electricity
- Operations Metrics
  - Work Orders Processed
  - Number of Sales in the Cafeteria
  - People on Campus
  - Average Daily Set Point

Dashboard - Graphical User Interface

- A technical user interface that operates from the dashboard concept.
- Combines easy interpretable information with instant control.
- Custom alarm panes.
- Custom report panes.

Seattle University Added Criteria:

- Easily configurable by me.
- Reporting from various systems.
- Ability to respond from the pane.

Primary Challenges

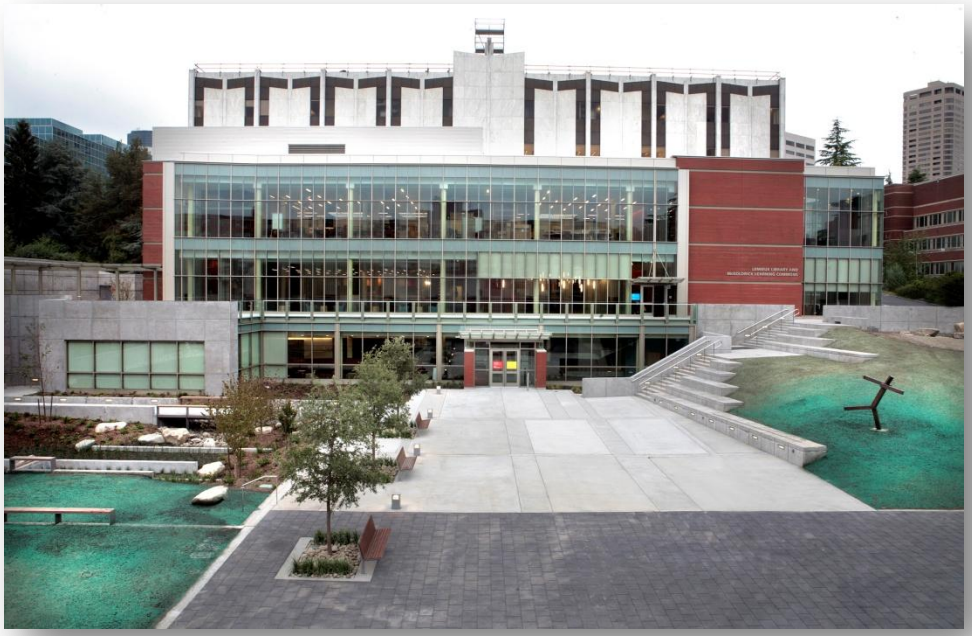
- Campion Hall
  - How can you roll this out to multiple floors?
- Central Boiler Plants
  - How do you measure at each individual building.
    - Utility Grade Metering?

Design Considerations

- Sub Metering
  - Legacy design of existing buildings
  - Department relocations
- What utilities to track?
  - Gas, Water, Steam & Electricity
- Cost
  - Many variables, including number of points, level of existing BAS integration

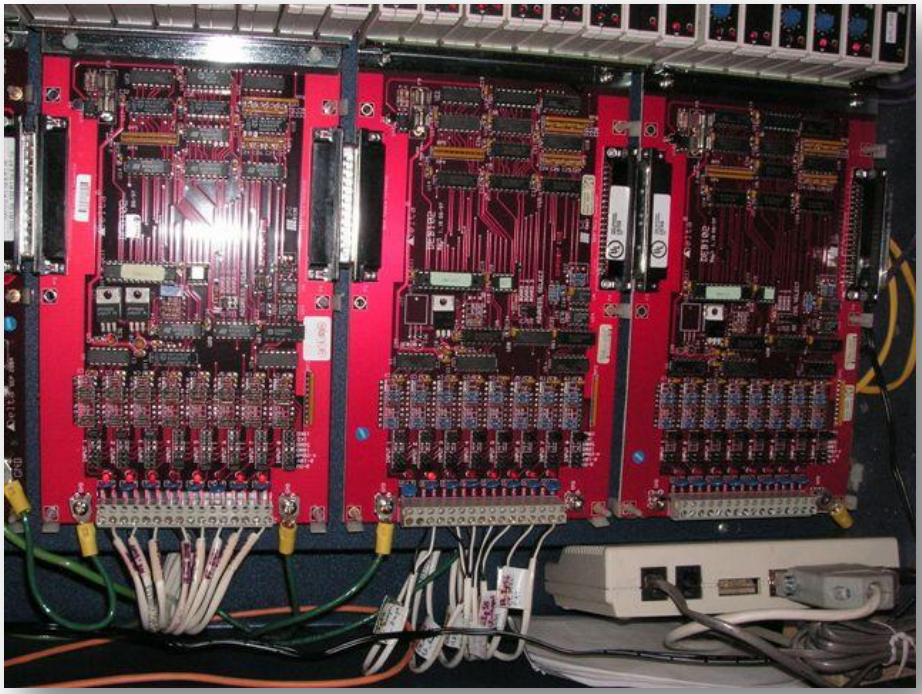
Solution

- Campion Hall
  - One boiler serving all utilities
  - All meters were easily converted to digital
  - All fed into the BAS
- New Library
  - Submetered
  - Central Boiler



Solution

- Existing fully integrated BACnet –
  - Our entire campus is on Delta Controls
    - Fully Integrated, all on one front end



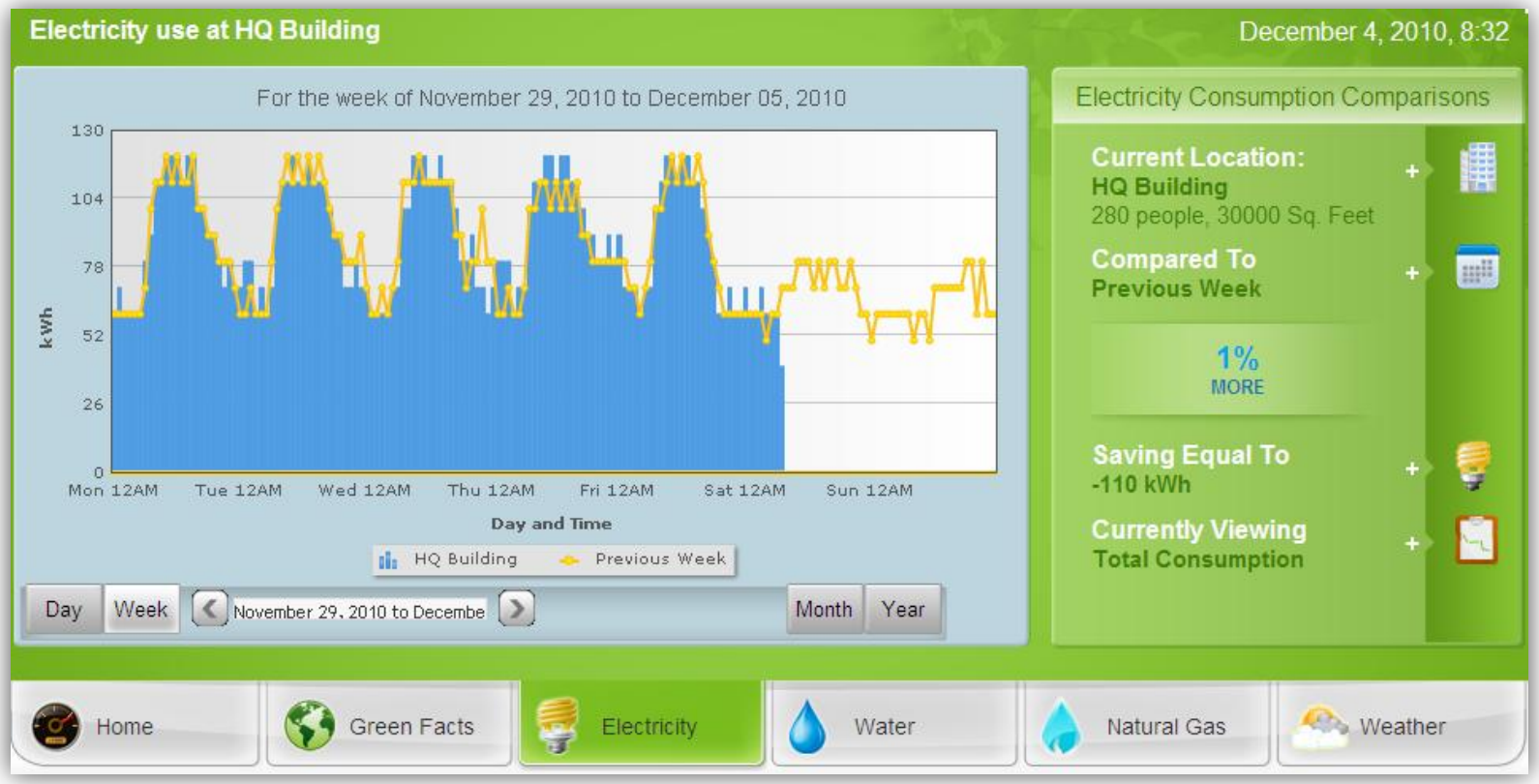
Solution

- Inteliweb
  - Internal Operations Tool with direct access to the system.
  - Even a caveman can set it up.
- Earthright™
  - Integrated Facilities Information.
  - Publically accessible from anywhere.

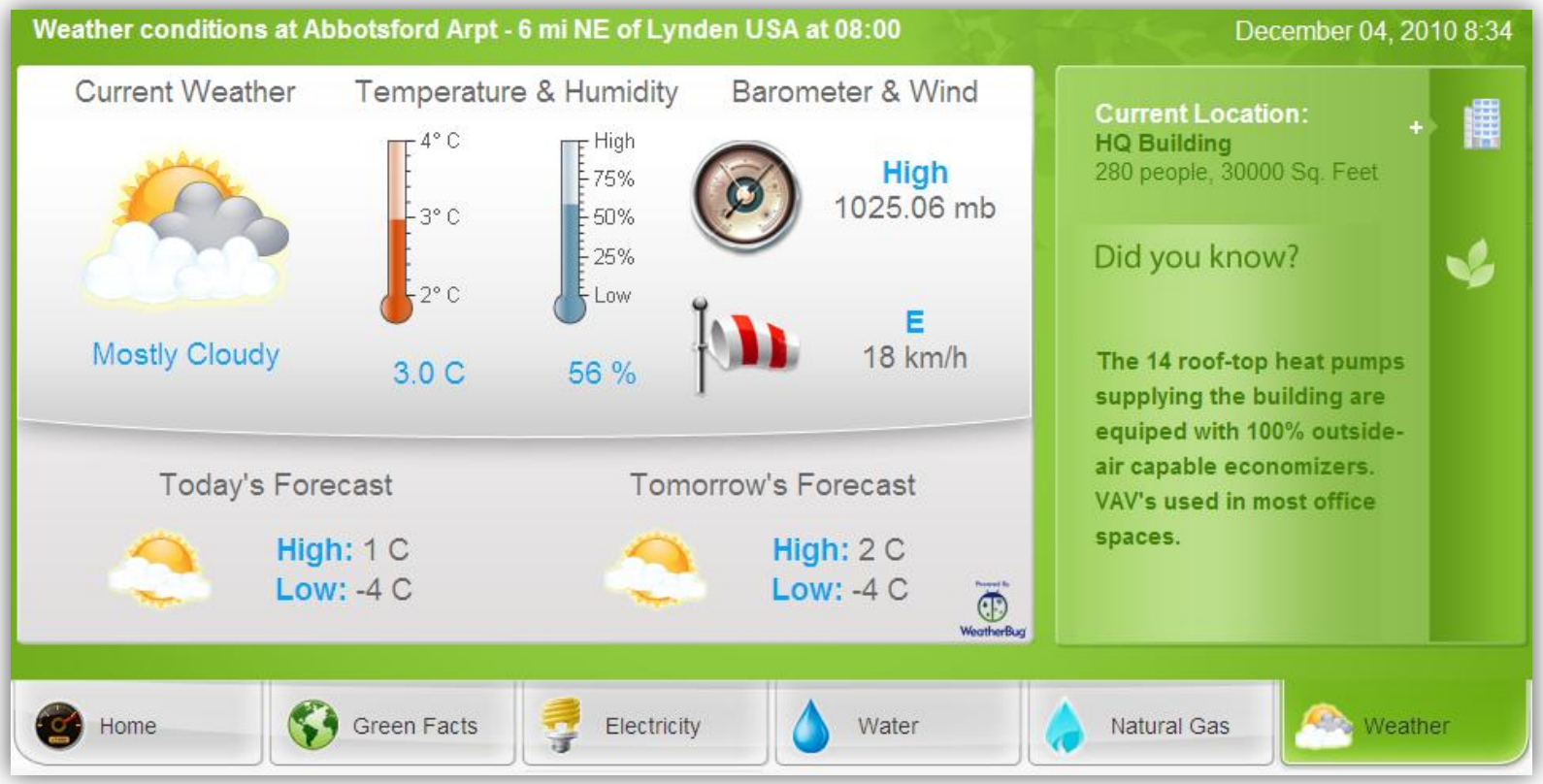
Earthright™


Current energy use at HQ Building
December 4, 2010, 8:29
Electricity
Water
Natural Gas
kW
000480
kWh
L/h
000019
L
MJ/h
000130
MJ
Today's use profile
6am Noon 6pm
Current Location:
HQ Building
280 people, 30000 Sq. Feet
Did you know?
We use compact fluorescent bulbs separately switched and dimmed. Photocells and motion sensors also control the lights to further reduces our energy consumption.
Home
Green Facts
Electricity
Water
Natural Gas
Weather

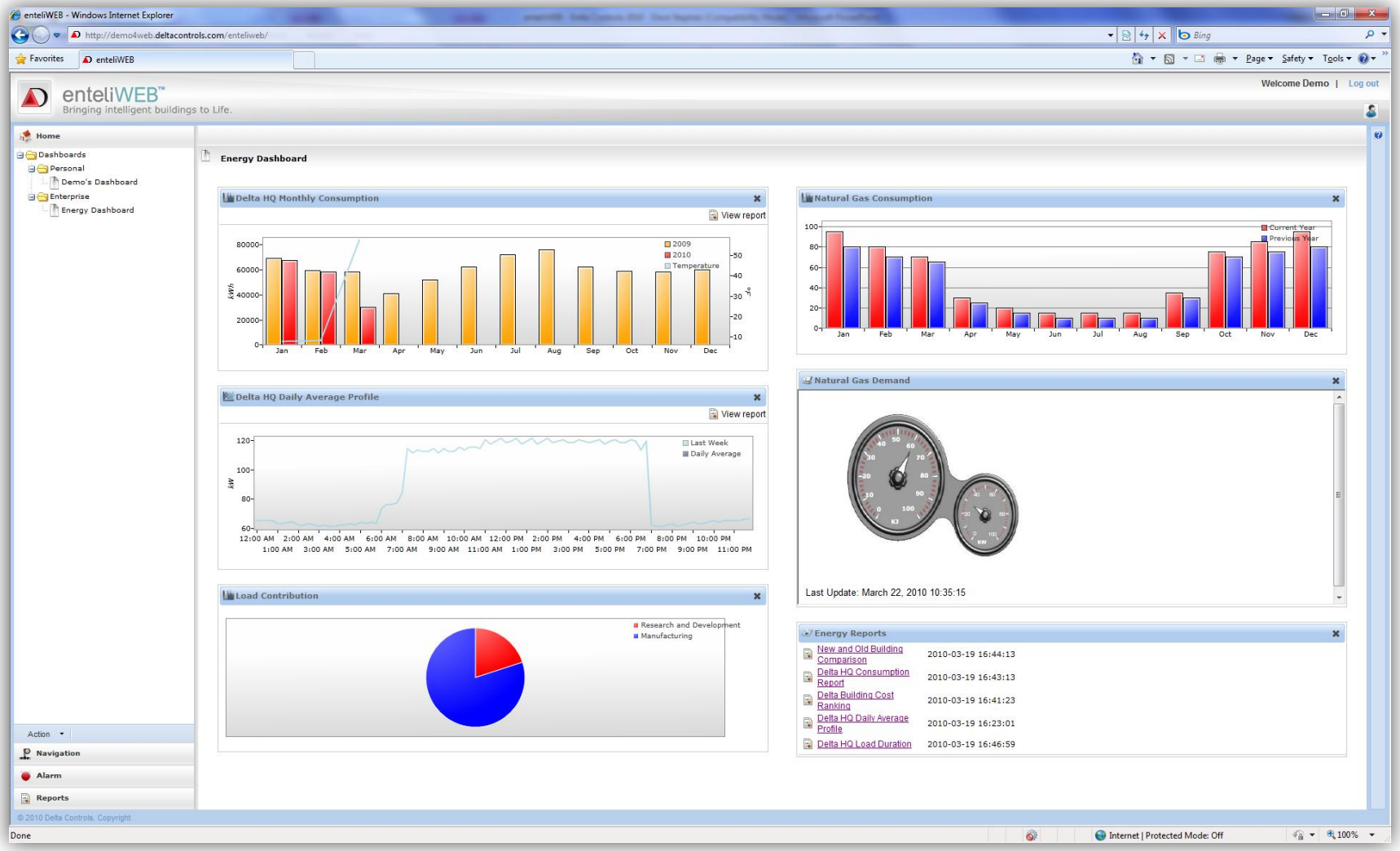
Earthright™


Electricity use at HQ Building
December 4, 2010, 8:32
For the week of November 29, 2010 to December 05, 2010
130
104
78
52
26
0
kWh
Mon 12AM
Tue 12AM
Wed 12AM
Thu 12AM
Fri 12AM
Sat 12AM
Sun 12AM
Day and Time
HQ Building
Previous Week
Day
Week
November 29, 2010 to Decembe
Month
Year
Electricity Consumption Comparisons
Current Location:
HQ Building
280 people, 30000 Sq. Feet
Compared To
Previous Week
1%
MORE
Saving Equal To
-110 kWh
Currently Viewing
Total Consumption
Home
Green Facts
Electricity
Water
Natural Gas
Weather

Earthright™


Weather conditions at Abbotsford Arpt - 6 mi NE of Lynden USA at 08:00
December 04, 2010 8:34
Current Weather
Temperature & Humidity
Barometer & Wind
4° C
3° C
2° C
High
75%
50%
25%
Low
High
1025.06 mb
Mostly Cloudy
3.0 C
56 %
E
18 km/h
Current Location:
HQ Building
280 people, 30000 Sq. Feet
Did you know?
The 14 roof-top heat pumps supplying the building are equiped with 100% outside-air capable economizers. VAV's used in most office spaces.
Today's Forecast
High: 1 C
Low: -4 C
Tomorrow's Forecast
High: 2 C
Low: -4 C
WeatherBug
Home
Green Facts
Electricity
Water
Natural Gas
Weather

enteliWEB™


enteliWEB - Windows Internet Explorer
http://demo4web.deltacontrols.com/enteliweb/
enteliWEB
Bringing intelligent buildings to Life.
Welcome Demo | Log out
Home
Dashboards
Personal
Demo's Dashboard
Enterprise
Energy Dashboard
Energy Dashboard
Delta HQ Monthly Consumption
View report
2009
2010
Temperature
kWh
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Natural Gas Consumption
Current Year
Previous Year
Delta HQ Daily Average Profile
View report
Last Week
Daily Average
kW
Natural Gas Demand
Last Update: March 22, 2010 10:35:15
Load Contribution
Research and Development
Manufacturing
Energy Reports
New and Old Building Comparison 2010-03-19 16:44:13
Delta HQ Consumption Report 2010-03-19 16:43:13
Delta Building Cost Ranking 2010-03-19 16:41:23
Delta HQ Daily Average Profile 2010-03-19 16:23:01
Delta HQ Load Duration 2010-03-19 16:46:59
Action
Navigation
Alarm
Reports
© 2010 Delta Controls. Copyright
Done
Internet | Protected Mode: Off
100%

Earthright™

Enteliweb Manager View

Enteliweb HVAC Tech Dash

Enteliweb Energy Reports