



# Earth Rangers Centre

For Sustainable Technology



**Energy Management Information  
System**

# Overview

- About Earth Rangers
- Systems
- Performance to date
- EMIS Demo
- Questions

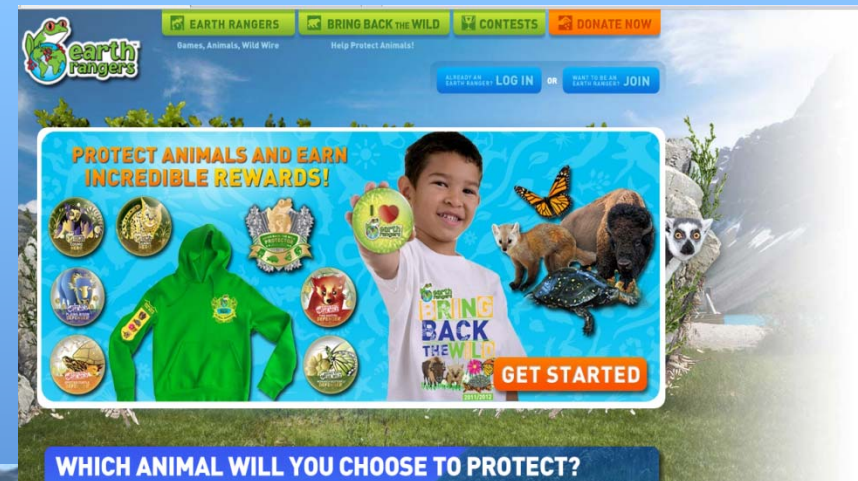


# About Earth Rangers

Earth Rangers' award winning live shows and interactive programs motivate hundreds of thousands of children each year to take action to help protect the planet.

## Our mission: *Bring Back the Wild*

- Educate children about the importance of biodiversity and the threats facing animals and their habitats
- Inspire children to adopt more sustainable behaviours
- Engage children and their families to take action to protect animals



# Why a Green Building?

Earth Rangers values

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40% of energy consumed is in buildings  
75% of a building's life cycle cost is in operations  
Lower operating costs and impacts

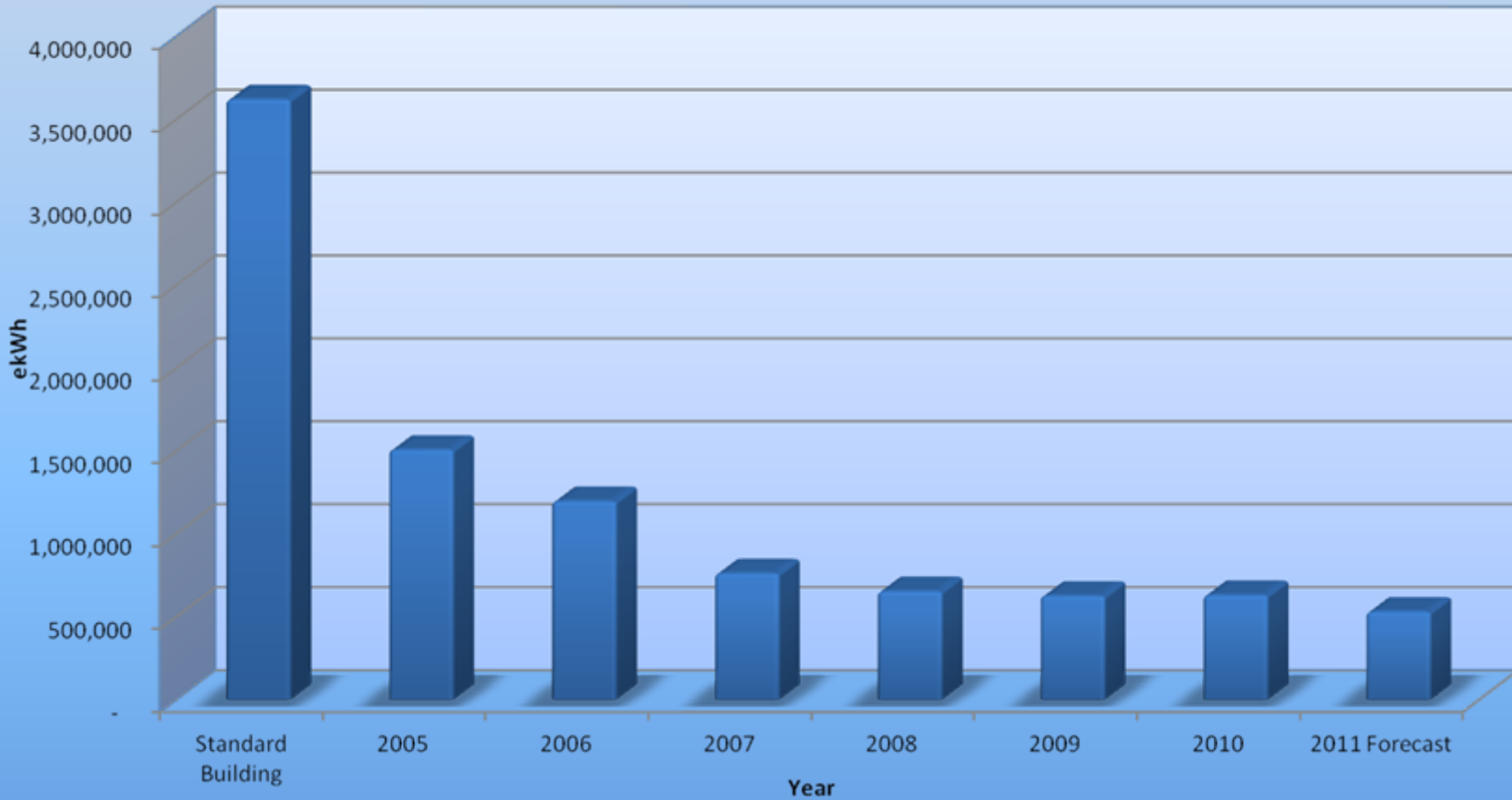
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# Performance

## Total ERC Energy Consumption



# Systems

## Andover Continuum BAS

### HEAT PUMP

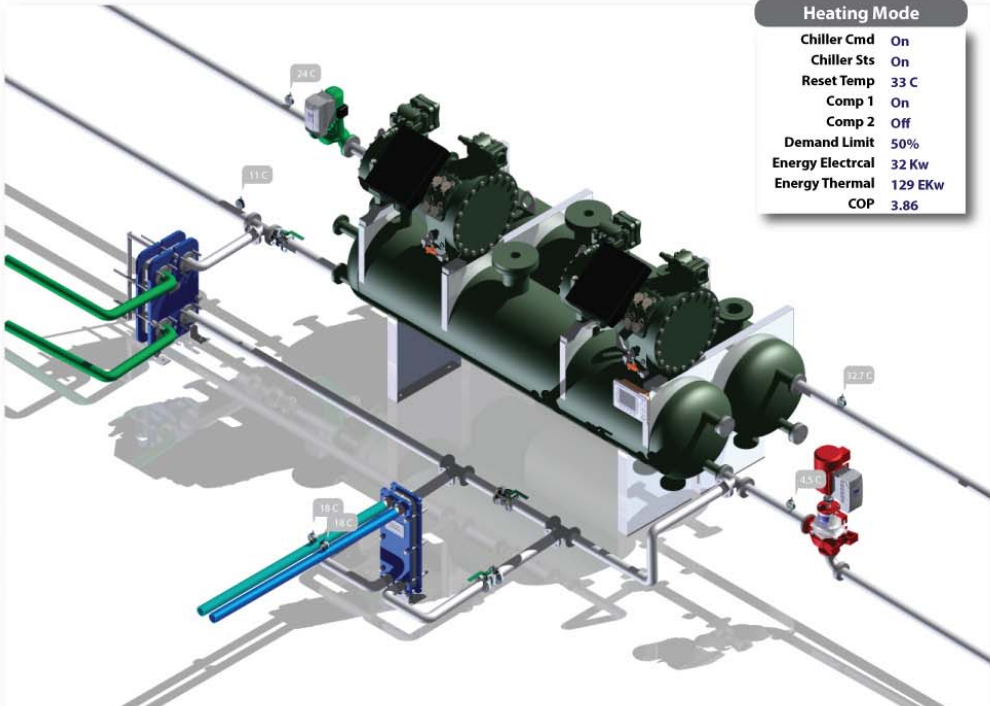
-5 C

52 %

436 ppm

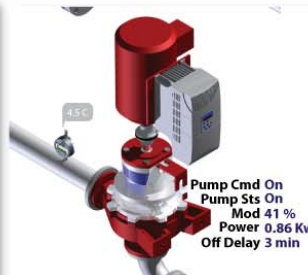
Weather Alert - Snow Storm for GTA
Weather Alert - Snow Storm for GTA
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- Floor Plan
- Geo Thermal
- Solar DHW
- Heat Pump
- Cooling Tower
- AHU
- Boiler
- Closed Loop
- Manifolds
- Backup Power
- UPS
- Fire System
- Waste Water
- Potable Water
- Security
- Schedules
- Personnel




Heating Mode

Chiller Cmd	On
Chiller Sts	On
Reset Temp	33 C
Comp 1	On
Comp 2	Off
Demand Limit	50%
Energy Electrical	32 Kw
Energy Thermal	129 EKw
COP	3.86



Pump Cmd On  
Pump Sts On  
Mod 41 %  
Power 0.86 Kw  
Off Delay 3 min



Pump Cmd On  
Pump Sts On  
Mod 46 %  
Power 0.67 Kw  
Off Delay 3 min

Preventative Maintenance

Service Reports

Trends

Service Manuals

PM Checklist



# Systems

## ION Enterprise



### Energy Monitoring System

POWERED BY **Schneider Electric** PowerLogic TECHNOLOGY

Current Time : 9/19/2011  
11:20:46.612 AM



[Go to Systems Page](#)

#### ELECTRICITY

##### Main Board

Vll avg : 209.0 V  
Vin avg : 120.7 V  
I avg : 123.6 A  
KW tot : 40.6 kW  
PF lag tot : 91.7

[Main Board Datalog](#)

##### Emergency Panel

Vll avg : 209.1 V  
Vin avg : 120.7 V  
I avg : 44.9 A  
KW tot : 14.2 kW  
PF lag tot : 87.2

[Emergency Panel Datalog](#)

##### Solar Panel

Vll avg : 215.1 V  
Vin avg : 124.3 V  
I avg : 21.3 A  
KW tot : 7.9 kW  
PF sign tot : -99.7

[Solar Panel Datalog](#)

##### Parking Lot

Vll avg : 214.7 V  
Vin avg : 124.0 V  
I avg : 41.1 A  
KW tot : 14.7 kW  
PF sign tot : -96.0

[Parking Lot Datalog](#)

#### BTU METERS



	Thermal Power (kW)	VolumeRate (L/S)	Supply T (°C)	Return T (°C)	
M1 HW AHU-1,AHU-2, DH <sup>W</sup>	0.00	0.00	19.0	19.6	
M2 HW SLABS	0.00	0.00	18.2	18.2	
M3 HW AHU-2	0.00	0.00	20.8	20.9	
M4 HW DHWT-2	0.00	0.00	52.1	51.9	
M5 CHW SUPPLY	0.3	1.4	11.1	11.1	
M6 CHW SLABS	2.2	2.7	11.0	11.2	
M7 CHW AHU-2	0.0	0.0	17.8	11.5	
M8 Solar Preheat	0.0	0.0	21.6	51.1	

#### MULTI-CIRCUIT ELECTRICAL METERS



#### WATER METERS

	Total Consumption (L)	Flow Rate (L/Hr)
Potable Water	1,272,050.0	120.0
Non-potable Water	3,350,430.0	160.0
Non-potable Makeup Water	271,800.0	0.0
Cooling Tower	67,818.0	0.0
Soft Water	228,940.0	0.0
Waste Water	3,441,580.0	20.3

#### Total Consumption (ft<sup>3</sup>)

#### Flow Rate (ft<sup>3</sup>/Hr)

Gas Meter	1,089,620.0	0.0
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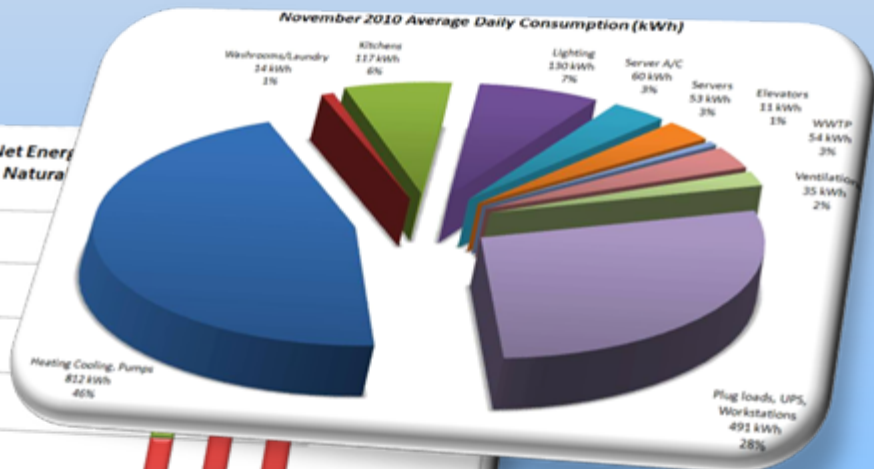
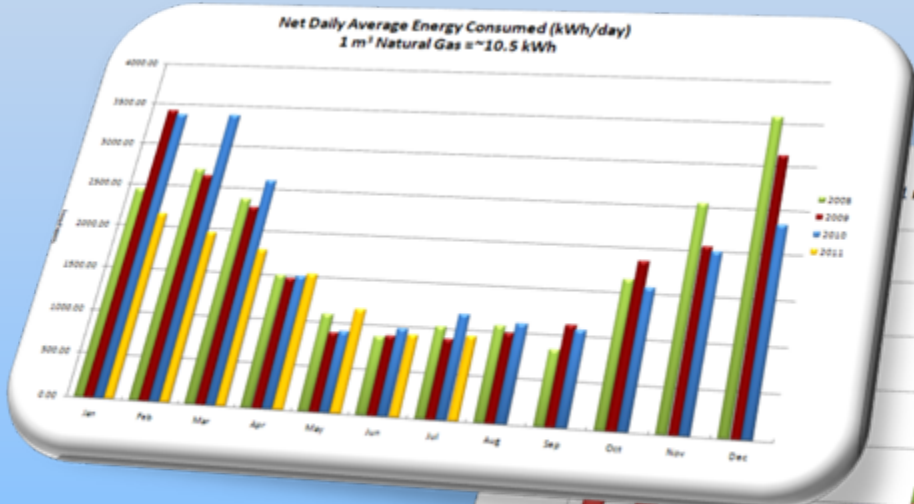


[Water Systems Consumption History](#)



[Gas Consumption History](#)

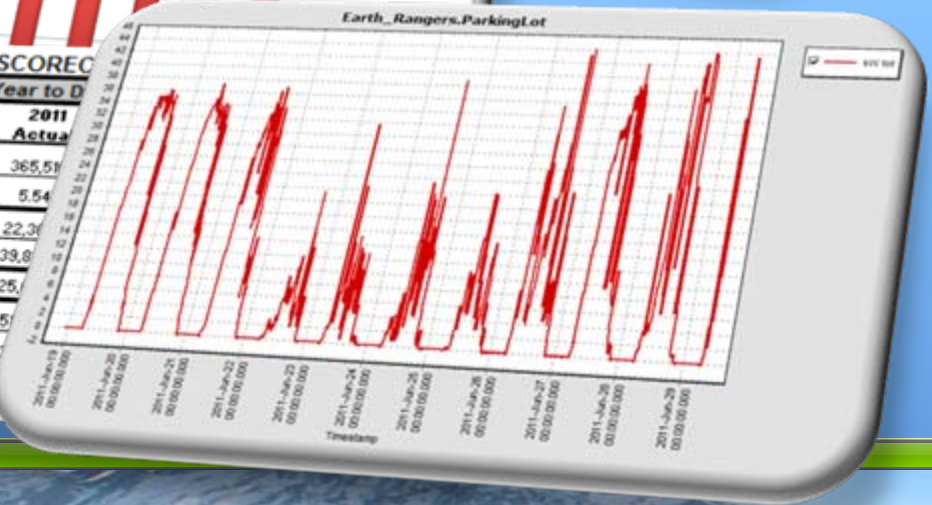
# Energy Management



**Total Energy = Gas + Electricity**

		August			Year to Date	
		2010 Actual	August 2011 Actual	2011 Budget	2010 Actual	2011 Actual
Consumed (kWh)	Total Energy (kWh)	34,005	27,326	30,000	451,000	365,510
	kWh/ft <sup>2</sup>	0.52	0.42	0.45	6.83	5.54
Produced (kWh)	Aviary PY (kWh)	3,791	4,225	4,000	25,752	22,300
	Parking Lot PY (kWh)	-	10,584	12,000	-	39,800
Net (kWh)	Net from Grid	34,005	17,342	18,000	451,000	325,000
	Consumption	\$4,897	\$3,909	\$4,200	\$36,901	\$5,000
Cost (\$)	Generation Revenue	\$531	\$7,701	\$8,168	\$3,605	\$3,000
	Net Cost	\$4,366	(\$3,732)	(\$3,968)	\$33,296	\$1,000

**FACILITIES SCORE**





# Energy Management

- Demo
  - Energy savings quantified and easily accessible
  - Energy awareness for all those that see the information
  - Showcase sustainability efforts and targets



# Integrated EMIS

- Better visualizations
- Instant, up to date reporting
- Uses information across systems
- Public display
- Operations uses
- Management use



# Questions?



Thank you!

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[www.ercshowcase.com](http://www.ercshowcase.com)

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