PerkinElmer
For the Better

HUMAN HEALTH | ENVIRONMENTAL HEALTH

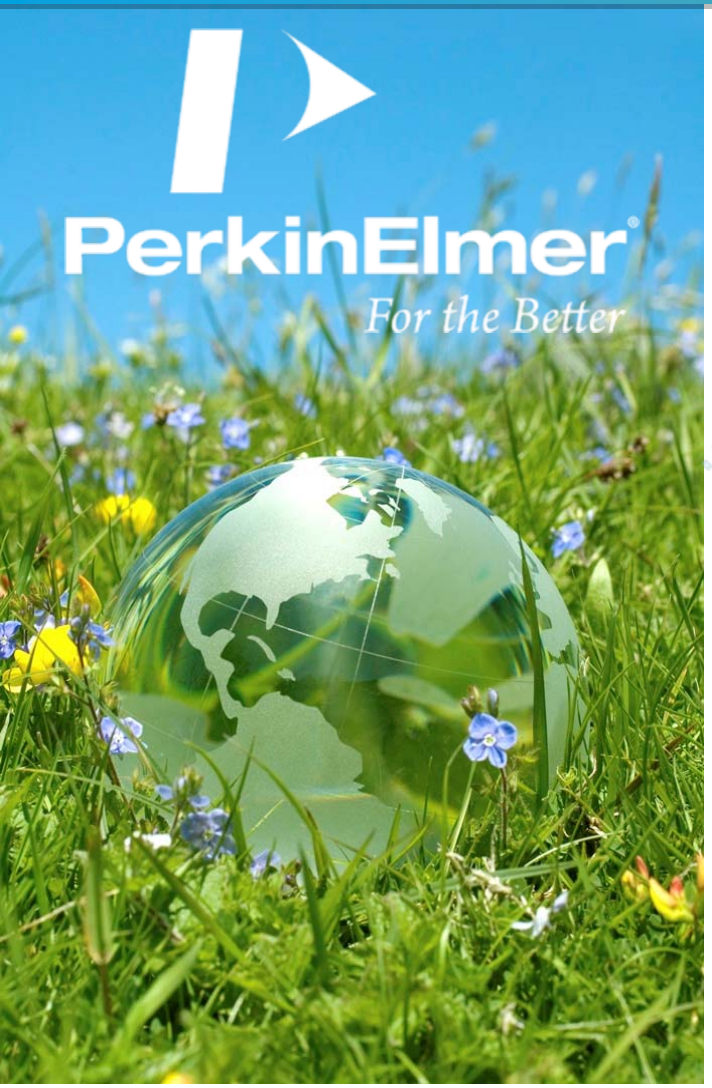
Energy Management Conservation

PerkinElmer Salem

Nov 3, 2010

Enabling the prevention and detection …

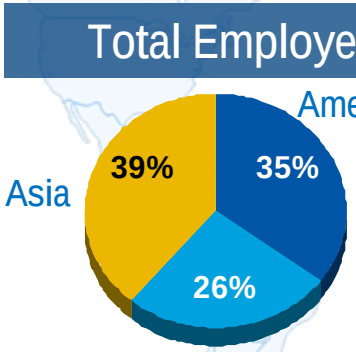
HUMAN HEALTH | ENVIRONMENTAL HEALTH

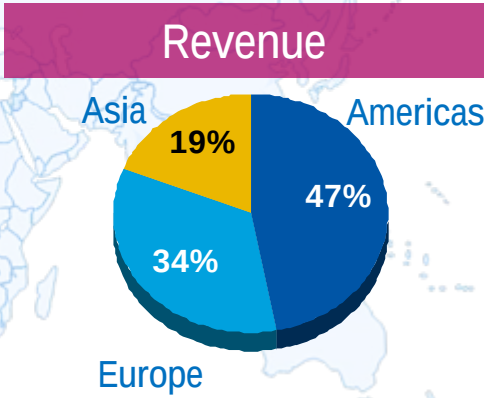


$1.8B in Revenue

8,500 employees

Operations in 150 Countries



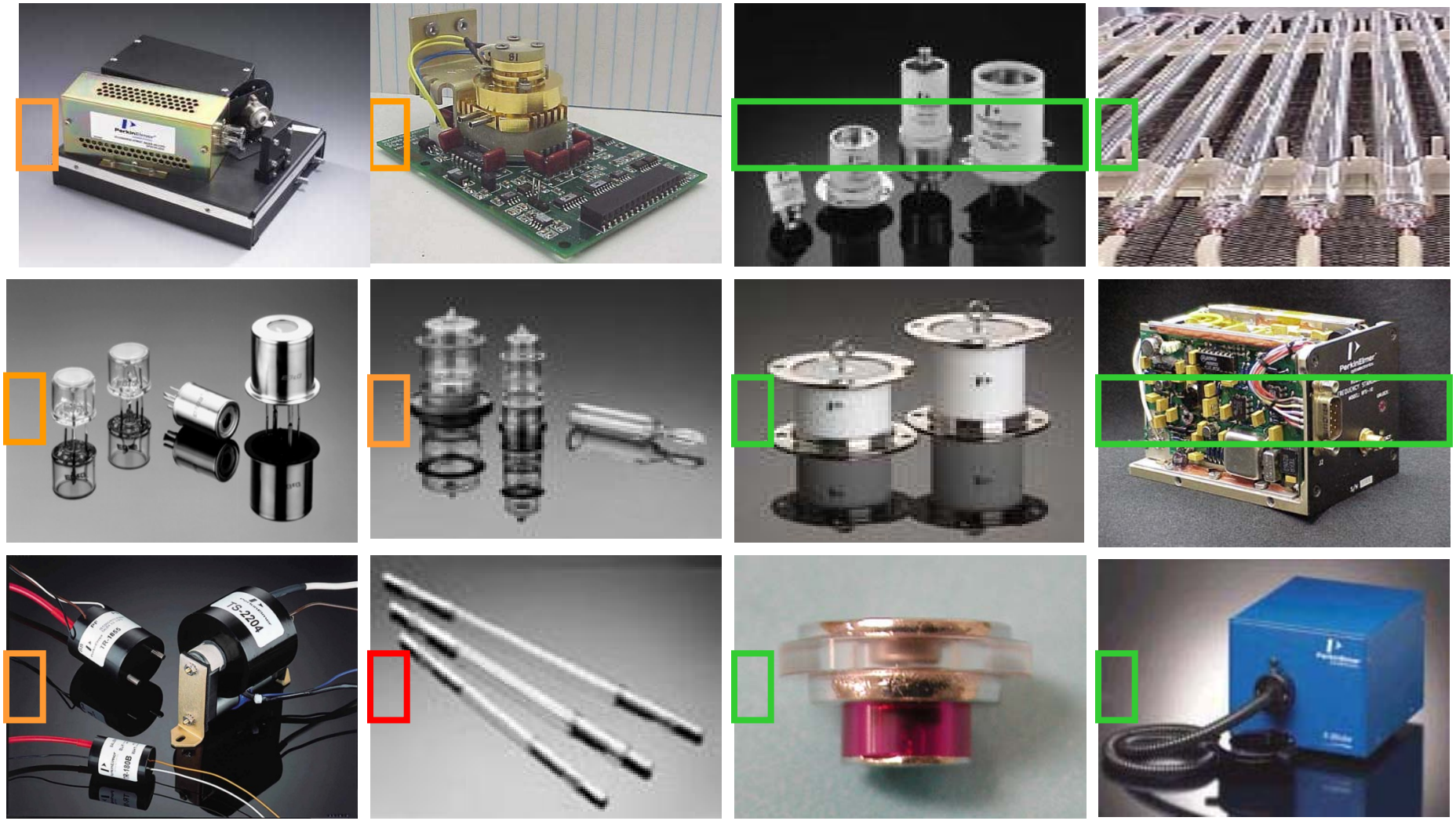


… of disease and harmful contaminants

Salem site summary

- Originally known as EG&G
- Facility established in 1961
- 1999 changed name to PerkinElmer
- Facility approx. 112,000 ft^2
- 160 Employees
  - Operations, Design Engineering
  - Sales/Marketing and Product Mgmt
  - Finance, HR, IT
- Certifications
  - ISO 14001:2004
  - ISO 9001:2008
  - OHSAS 18001:2007
- EPA Green Power Partner
- Energy Demand Response Participant

Diverse portfolio of 12 product lines

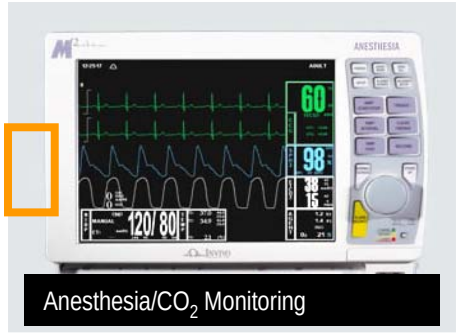


Biotech
Mil/Aero
Industrial Flash

… all with different business needs and solutions

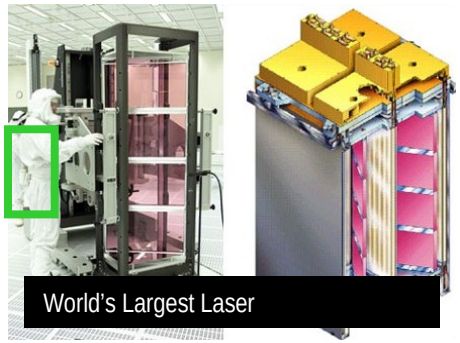
Each product supports various applications …

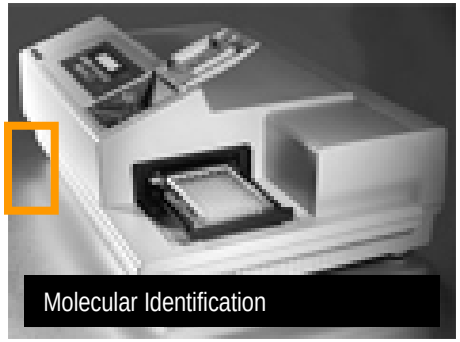

Clinical Diagnostics



Anesthesia/CO_2 Monitoring

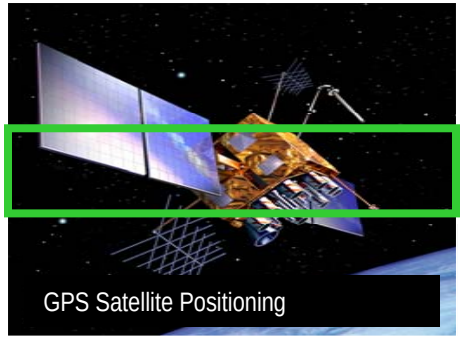
Laser Vision Correction


World's Largest Laser


Molecular Identification

Industrial Gas Detection


Rocket Stage Separation


GPS Satellite Positioning


Power Grid Protection


Laser Designation/Targeting

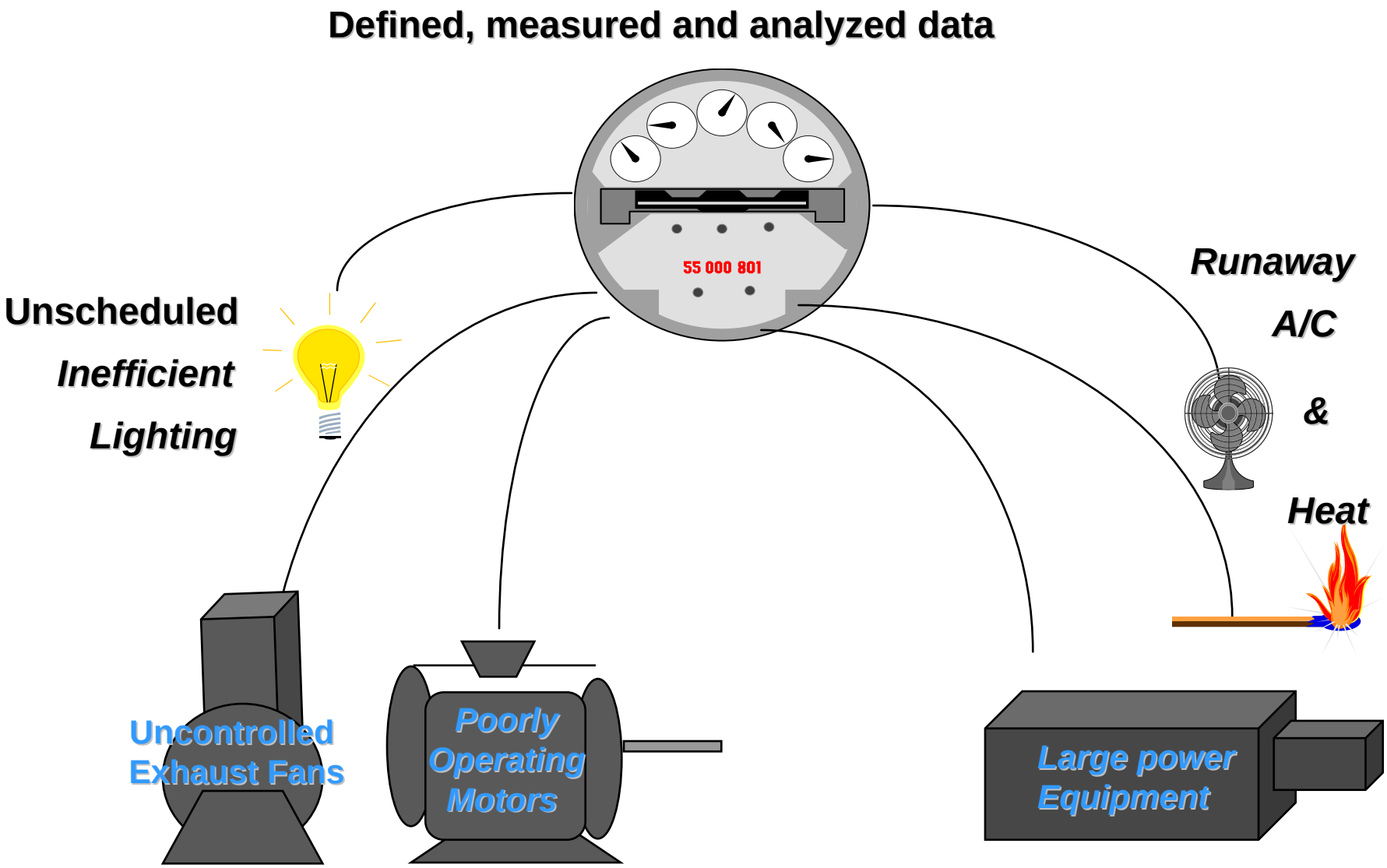

Weapon Detonation


Hi-Speed On-line Inspection

Biotech
Mil/Aero
Industrial Flash

… biomedical, medical, industrial, research, and

Electrical conservation – low hanging fruit

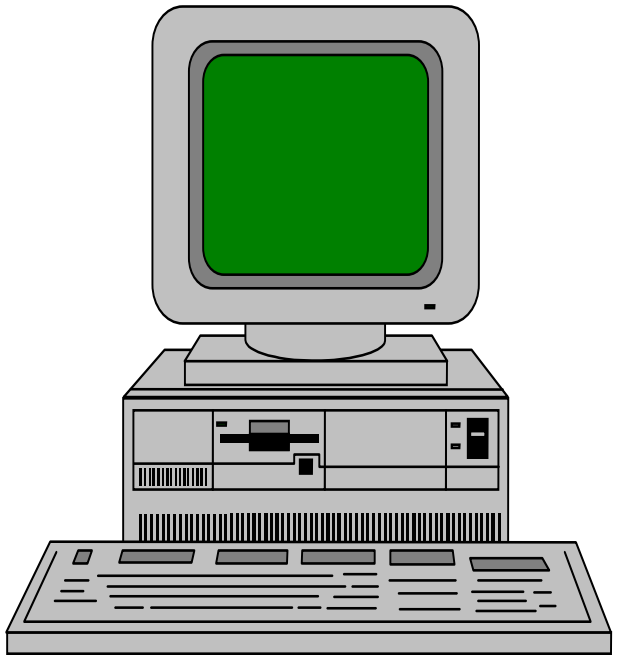


Electrical conservation – low hanging fruit

- Lighting
  - Installed motion sensing light switches
  - Replaced/retrofitted 1500 light fixtures
    - Replaced T12 fixtures with T8 fixtures
    - Improved lighting quality
- Motors and drives
  - Replaced 31 motors (220 hp) with premium efficiency motors throughout the building
  - Installed variable frequency drives in chem. lab exhaust and make-up air systems
  - Installed 16 test kits with premium efficiency exhaust fans - which were interlocked with tube under test control circuit
    - Replaced 36 inefficient motors
    - Pulled 100,000 cfm 24 hrs/day, 365 days a year
    - Reduced consumption 235, 995 kWh
- Converted to electric baseboard heat
  - Original fan forced electric duct heaters
    - Improved safety, comfort and noise level
    - Reduced consumption 140,000 kWh

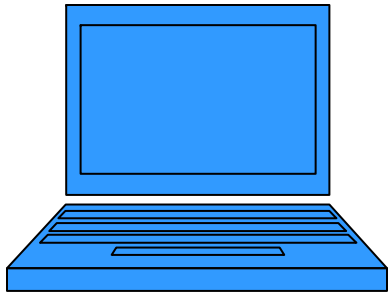
Electrical conservation – lighting control system

- Researched lighting control system
- Reduced lighting loads allowed for the installation of G.E. lighting control system
  - 3 lighting control panels
  - 60 scheduled lighting zones
  - Reduced electrical consumption 258,000kWh
- Developed and scheduled lighting
- Remote operation
- Savings: $23,000 per year



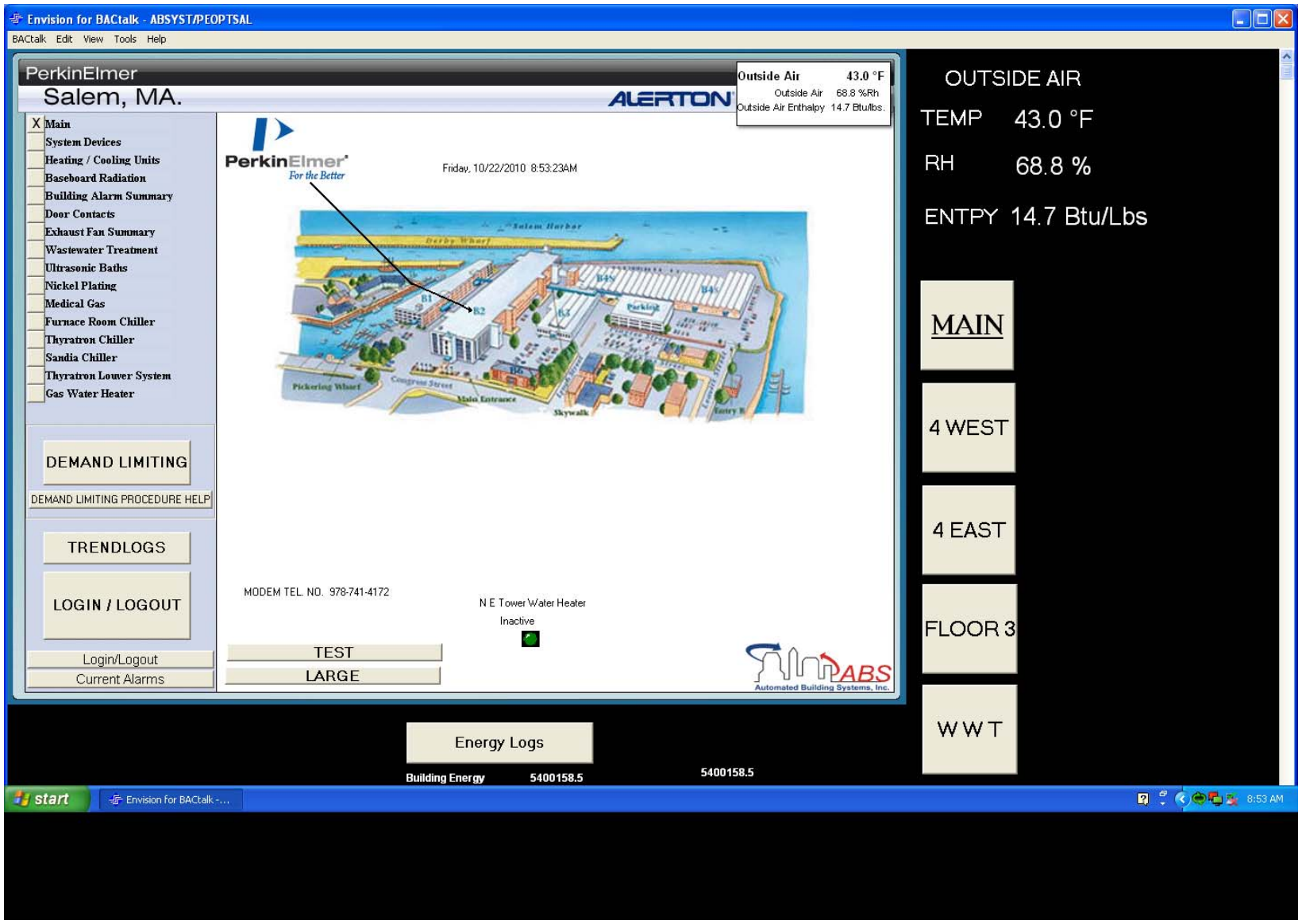
Electrical conservation – EMS

- Energy Management System (EMS)
  - Installed initial system 1993 , upgraded to state of the art system 2009
  - Can't manage what isn't measured
- Enables real-time overview and complete control of facility and processes from anywhere (on-site or remotely)
  - Diagnostic and trend log analysis
  - In-situ continuous system monitoring
  - Parameters setting and individual points scheduling
  - Program alarm parameters with notification
  - Electrical peak demand control and monitoring
  - Free and nocturnal cooling

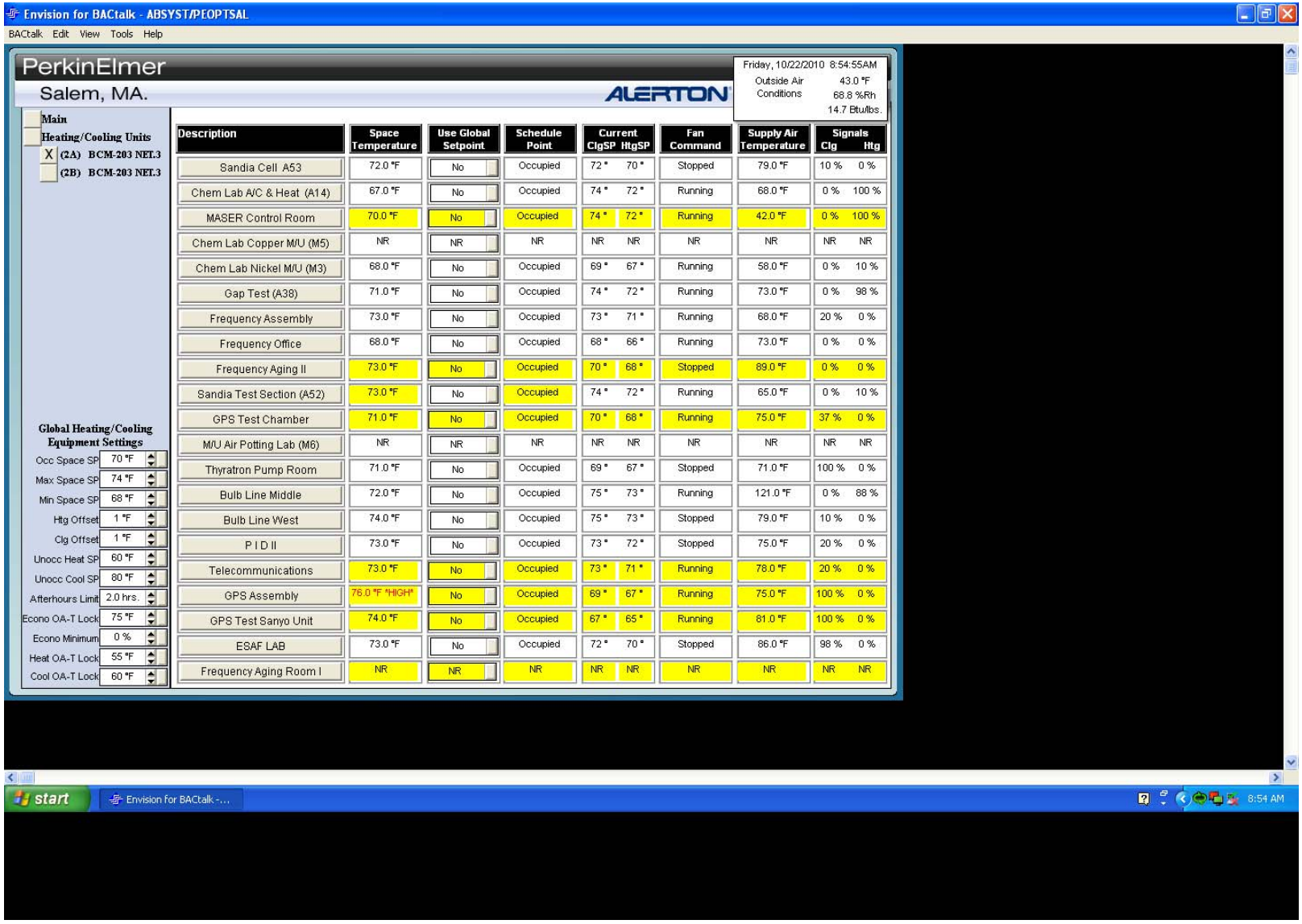


- Capable of expanding to a building monitoring system
  - Lighting control
  - Calibration
  - Security systems
  - Fire

Electrical conservation – EMS main screen view

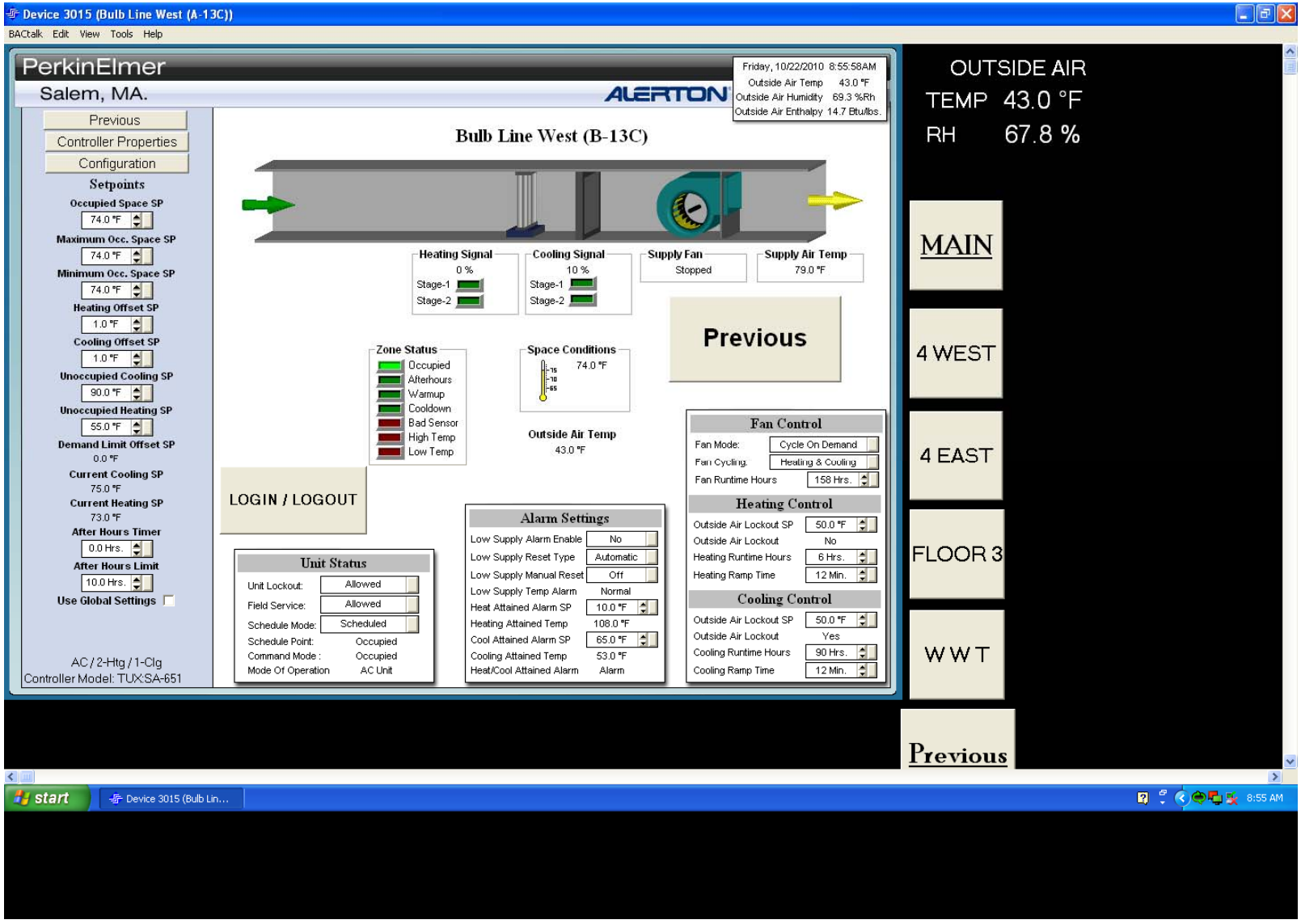


Electrical conservation – trunk overview screen

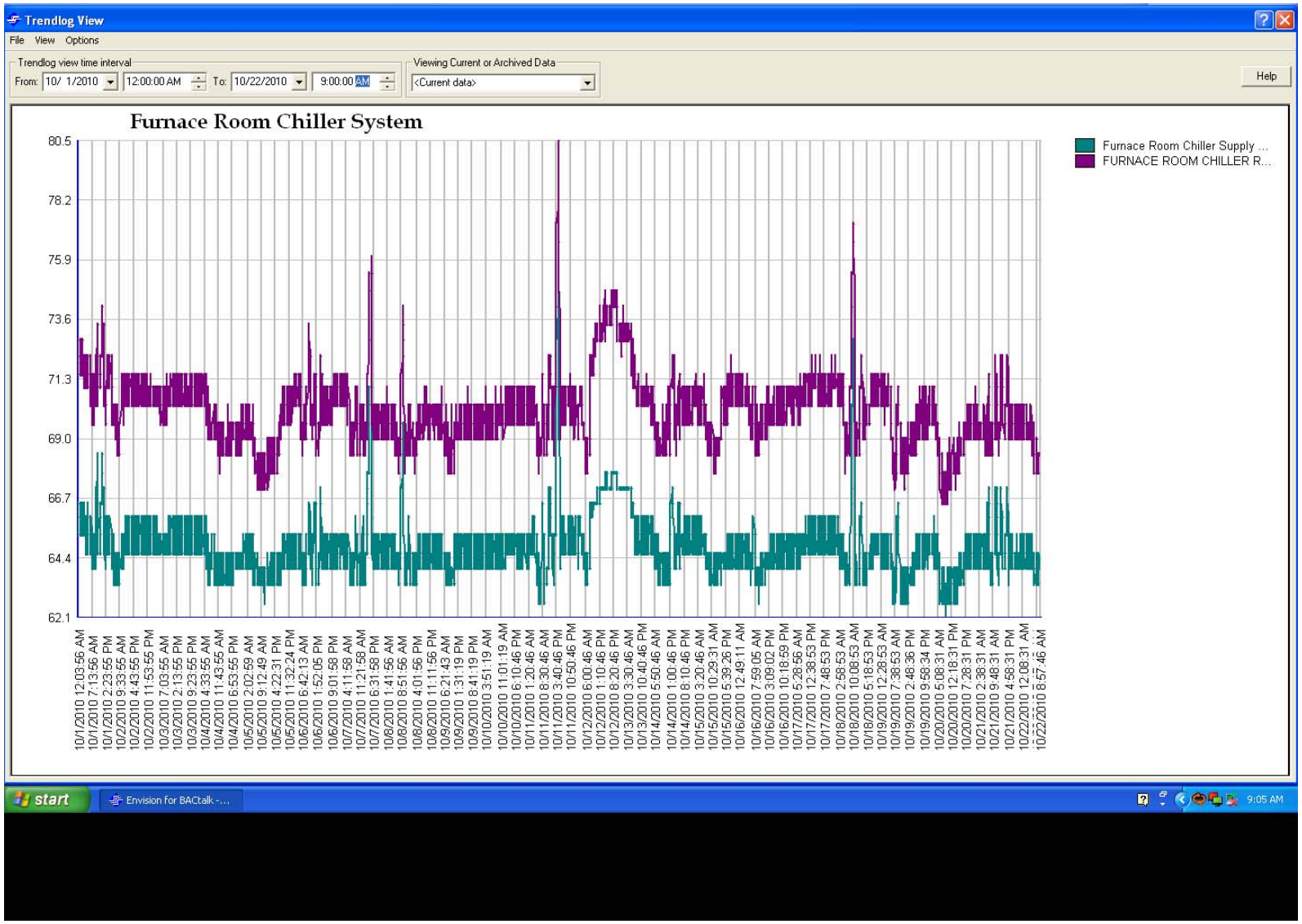


Description	Space Temperature	Use Global Setpoint	Schedule Point	Current ClgSP	Current HtgSP	Fan Command	Supply Air Temperature	Signals Clg	Signals Htg
Sandia Cell A53	72.0 °F	No	Occupied	72 °	70 °	Stopped	79.0 °F	10 %	0 %
Chem Lab A/C & Heat (A14)	67.0 °F	No	Occupied	74 °	72 °	Running	68.0 °F	0 %	100 %
MASER Control Room	70.0 °F	No	Occupied	74 °	72 °	Running	42.0 °F	0 %	100 %
Chem Lab Copper M/U (M5)	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chem Lab Nickel M/U (M3)	68.0 °F	No	Occupied	69 °	67 °	Running	58.0 °F	0 %	10 %
Gap Test (A38)	71.0 °F	No	Occupied	74 °	72 °	Running	73.0 °F	0 %	98 %
Frequency Assembly	73.0 °F	No	Occupied	73 °	71 °	Running	68.0 °F	20 %	0 %
Frequency Office	68.0 °F	No	Occupied	68 °	66 °	Running	73.0 °F	0 %	0 %
Frequency Aging II	73.0 °F	No	Occupied	70 °	68 °	Stopped	89.0 °F	0 %	0 %
Sandia Test Section (A52)	73.0 °F	No	Occupied	74 °	72 °	Running	65.0 °F	0 %	10 %
GPS Test Chamber	71.0 °F	No	Occupied	70 °	68 °	Running	75.0 °F	37 %	0 %
M/U Air Potting Lab (M6)	NR	NR	NR	NR	NR	NR	NR	NR	NR
Thyratron Pump Room	71.0 °F	No	Occupied	69 °	67 °	Stopped	71.0 °F	100 %	0 %
Bulb Line Middle	72.0 °F	No	Occupied	75 °	73 °	Running	121.0 °F	0 %	88 %
Bulb Line West	74.0 °F	No	Occupied	75 °	73 °	Stopped	79.0 °F	10 %	0 %
P I D II	73.0 °F	No	Occupied	73 °	72 °	Stopped	75.0 °F	20 %	0 %
Telecommunications	73.0 °F	No	Occupied	73 °	71 °	Running	78.0 °F	20 %	0 %
GPS Assembly	76.0 °F *HIGH*	No	Occupied	69 °	67 °	Running	75.0 °F	100 %	0 %
GPS Test Sanyo Unit	74.0 °F	No	Occupied	67 °	65 °	Running	81.0 °F	100 %	0 %
ESAF LAB	73.0 °F	No	Occupied	72 °	70 °	Stopped	86.0 °F	98 %	0 %
Frequency Aging Room I	NR	NR	NR	NR	NR	NR	NR	NR	NR

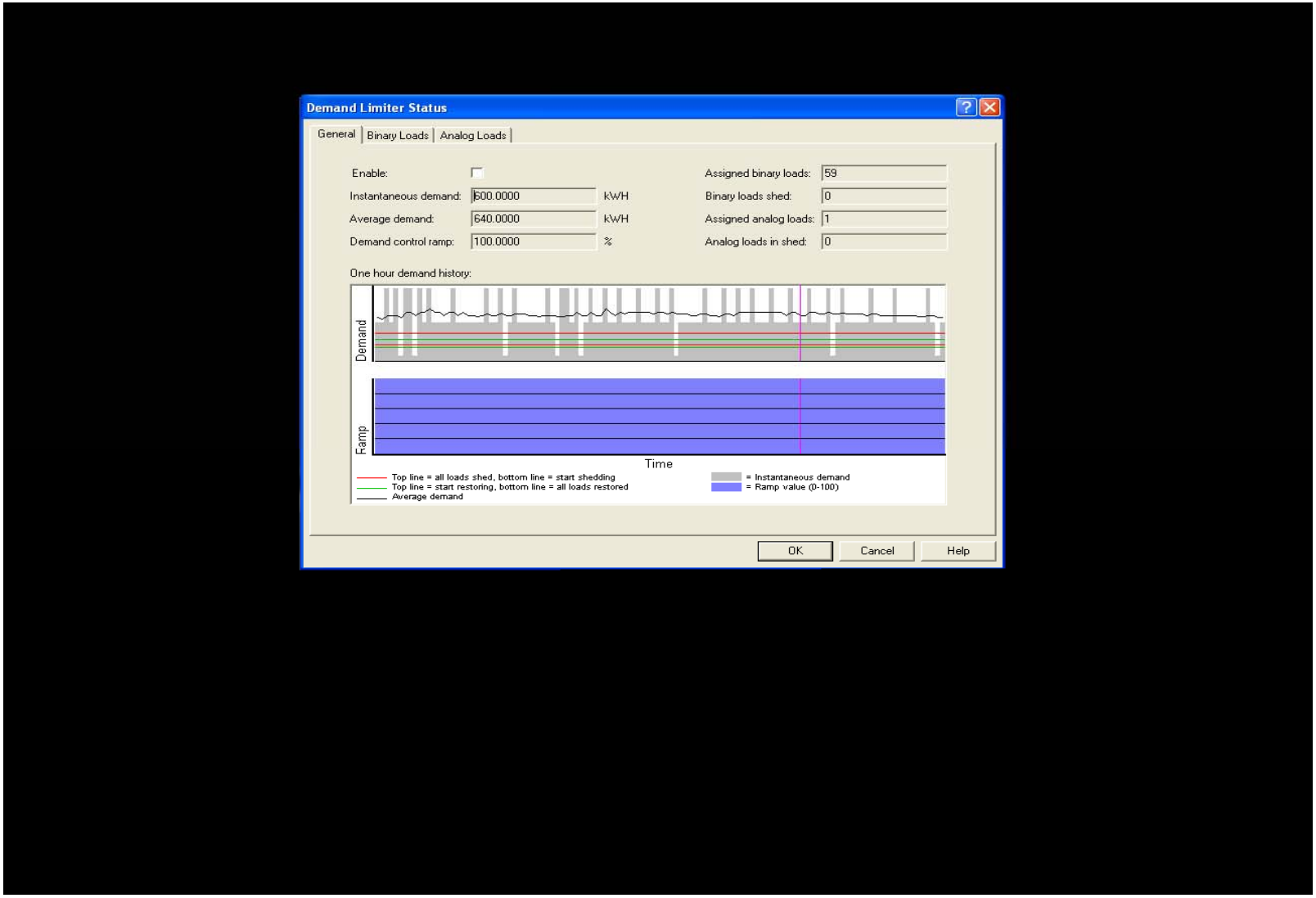
Electrical conservation – bulb operations



Electrical conservation – trend log



Electrical conservation – demand management



Electrical conservation – EMS benefits

- Enables easy participation in ISO New England Demand Response Program
  - Generates quarterly payments
  - Reduces stress on grid during times of increased demand

- Improves energy efficiency through a structured approach
  - Opportunities are identified
  - Objectives and targets can be tracked and trended
  - If an output is generated it can be measured

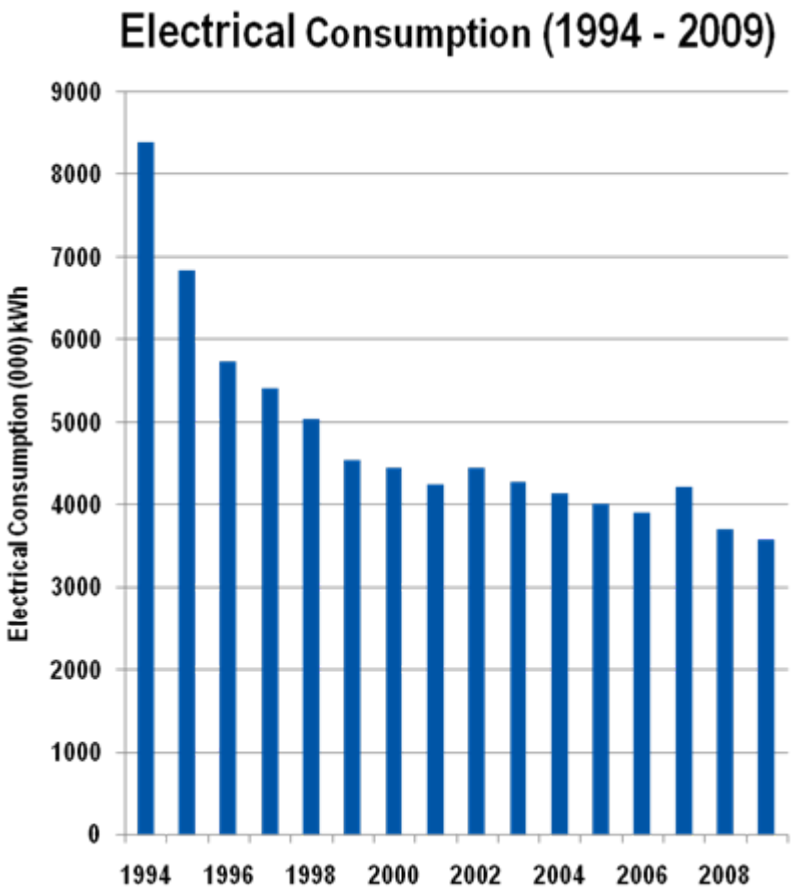
- Reduces environmental impact
  - Greenhouse gases reduced 47K metric tonnes

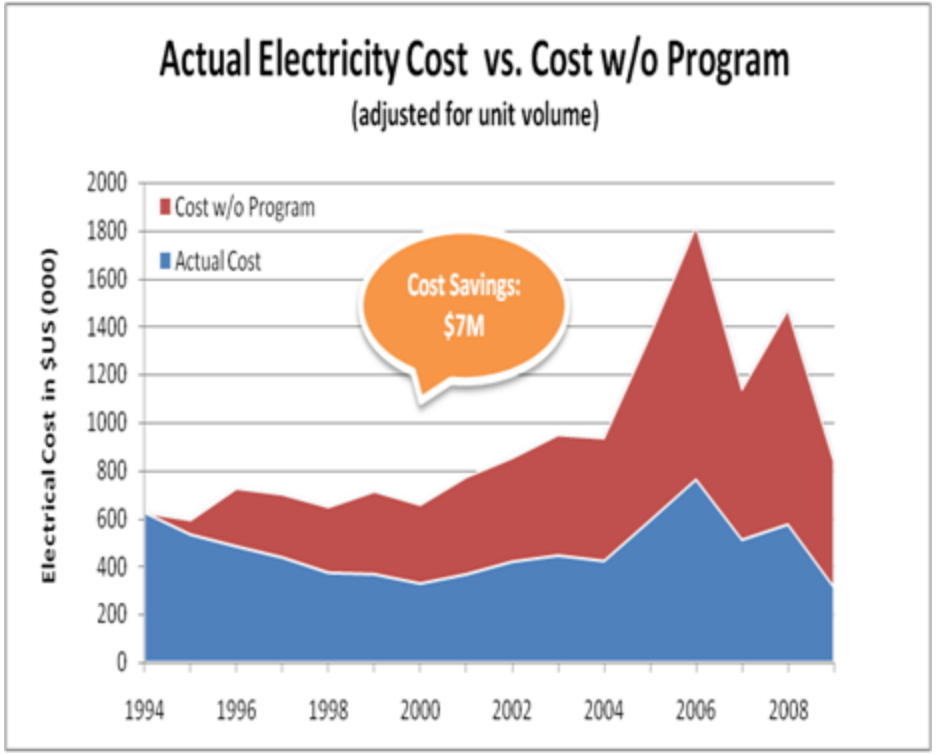
- Results in significant cost savings
  - Energy and natural resources
  - Rebate incentives
  - Cost effective plant operation

Electrical conservation – house air and humidifier systems

- Removed 55 HP continuously running reciprocating air compressors
  - Compressors dirty, noisy and operationally inefficient
- Installed (3) new15 HP screw type compressors and sequencer
  - Compressors clean, quiet, energy efficient
  - Savings $11,000 per year
- Replaced 11KW steam generating unit with (1) 1KW ultrasonic humidifier
  - Savings $2000 per year
- Continuously monitor cycle time usage (operational hours vs. off-hours)
  - Perform periodic line inspections
  - Scheduled preventive maintenance programs

Program benefits – electrical conservation





Electrical conservation – next steps

- Proceed with LED installations
  - Produces consistent light output
    - Currently quite costly – approx. $60 per T8 LED lamp
    - May qualify for custom lighting rebate incentives
  - Requires no ballasts
  - Reduces maintenance costs
  - Universal waste regulations do not apply
- Install new security system
  - Tie security system into EMS to control lighting and HVAC
    - ID badge swiping will activate
- Purchase new advanced lighting control system
  - Light harvesting capabilities

Program benefits – final conclusion

- Program has resulted in operations:
  - That have increased physical output with the use of fewer resources
  - Less impact on the environment
  - Provided safer environment for employees and community
  - Improved employee comfort level which improved productivity
  - Increased financial success of the business

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