

## Energy Savings Performance Contract Overview



- Belknap Campus, Health Sciences Center, and Shelby Campus
- \$46.2 million of energy efficient facility improvements
- 88 buildings / 6.2 million square feet of space
- Will generate \$64 million of guaranteed savings over the 14+ year term
- Equivalent to \$4.4 million of annual savings, or \$12,086 per day
- If the guarantee is not met, Siemens will pay to cover the shortfall

## Reduced Carbon Footprint



### Annual Reduction in Greenhouse Gases

- 92,371,102 lbs. of carbon dioxide (CO<sub>2</sub>)
- 152,175 lbs. of nitrogen oxides (NO<sub>x</sub>)
- 463,175 lbs. of sulfur dioxide (SO<sub>2</sub>)

### Annual Equivalent Reduction

- 7,690 cars driven for a year, or
- 296 acres of forest preserved from deforestation, or
- 222 rail cars of coal

## Total Annual Guaranteed Savings

<b>Building Automation (Scheduling, Setbacks, &amp; Programming)</b>	<b>\$1,794,326</b>
<b>Building Automation (Fan and Pump Controls)</b>	<b>\$370,500</b>
<b>Lighting and Lighting Controls</b>	<b>\$1,041,689</b>
<b>Boiler Replacements and System Upgrades</b>	<b>\$703,033</b>
<b>Water Conservation Upgrades</b>	<b>\$338,554</b>
<b>Power Factor Correction</b>	<b>\$163,306</b>
<b>Total</b>	<b>\$4,411,408</b>

# Scope of Work

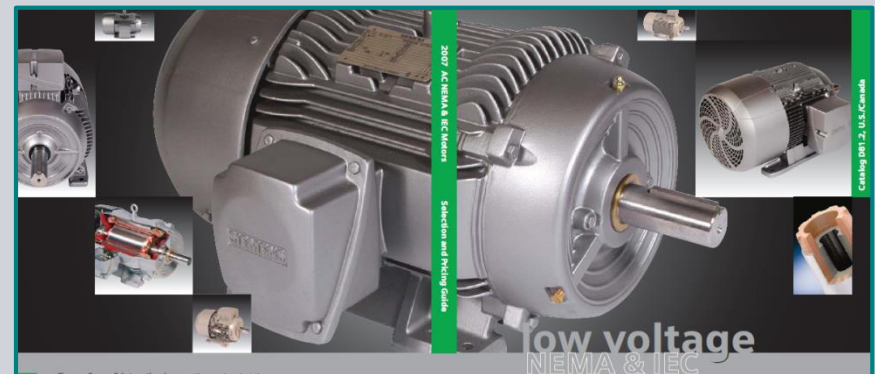
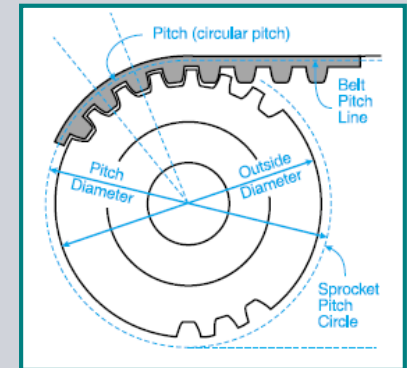
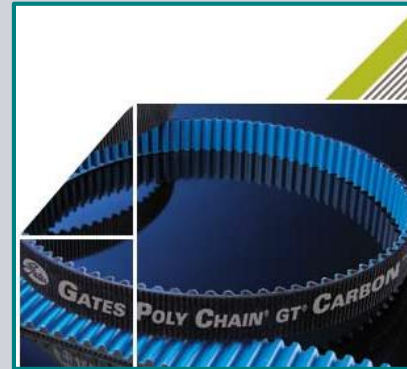
## Building Automation (Scheduling, Setbacks, & Programming)

- Implemented equipment scheduling, temperature setbacks, and upgrades to the building automation infrastructure.
- Replaced major ventilation equipment and controls in six buildings on Belknap Campus and three buildings on the Health Sciences Campus.
- Building energy consumption was reduced by 30%.
- Annual energy savings: \$1,794,326



## Building Automation (Fan and Pump Controls)

- Approximately 320 fans and pumps were upgraded with replacement motors, no-slip belt drives, and variable speed controls.
- Motor energy consumption was reduced by an average of 25%.
- Annual energy savings: \$370,500



## Energy Efficient Lighting

Installed the following:

- 117,483 fluorescent lamps for interior lighting
- 41,714 premium efficiency ballasts
- 2,011 occupancy sensors
- 1,729 induction lamps for exterior lighting
- Reduces lighting energy consumption by 15%
- Annual energy savings: \$1,041,689



## Boiler Replacements and System Upgrades

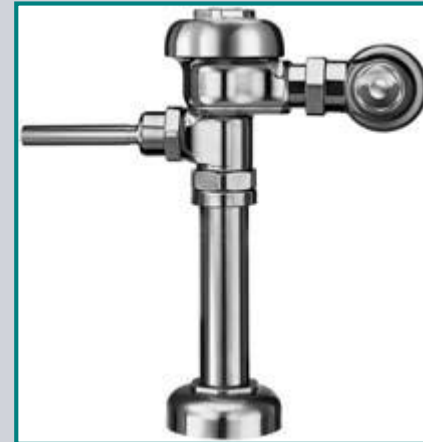
- Replaced two large coal boilers with two new natural gas-fired steam boilers, thus eliminating 100% of the existing coal usage.
- Replaced four smaller hot water boilers with more efficient natural gas boilers, thus reducing consumption by more than 10%.
- Installed 1,152 insulated steam jackets on steam valves to reduce heat loss at the valve by 90%.
- Annual energy savings: \$703,033





## Water Conservation Upgrades

- Replaced 2,400 toilet flush valves with reduced flow valves.
- Replaced 2,042 faucet aerators with low flow, pressure independent aerators
- Replaced 616 shower heads with low flow showerheads
- Reduced hot and cold water consumption by an average of 30%
- Annual energy savings: \$338,554



## Power Factor Correction

- Installed a large capacitor bank on Belknap Campus to reduce penalties on the electric bill.
- Savings will be approximately 8% of the costs billed to that meter.
- Annual energy savings: \$163,306



# Phase I & II Comparison

## Phase I and II Project Comparison

	Phase I Project	Phase II Project	Combined
<b>No. of Buildings</b>	<b>69</b>	<b>19</b>	<b>88</b>
<b>Total Square Footage</b>	<b>4,500,000</b>	<b>1,691,175</b>	<b>6,191,175</b>
<b>Contract Amount Including Allowance</b>	<b>\$21,713,289</b>	<b>\$24,516,469</b>	<b>\$46,229,758</b>
<b>Total Energy &amp; Operational Savings Guaranteed</b>	<b>\$32,489,093</b>	<b>\$31,074,538</b>	<b>\$63,563,631</b>
<b>Contract Term</b>	<b>13.5 Years</b>	<b>15.5 Years</b>	