Custom Rebate

- Must **prove** it saves energy (kWh)
- Must have a reasonable payback
- Utility can pay an incentive up to 50% of the total cost
- Need pre-approval

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Technical Assistance Incentives

- **Available to existing facilities that use 500,000 kWh or more per year**
- Covers **50%** of one technical assistance service cost every three years up to:
  - **$10,000** if using less than 2 million kWh per yr
  - **$20,000** if using greater than 2 million kWh per yr
- Types of Services
  - Feasibility studies
  - Comprehensive energy audits
  - Retro-commissioning services

Progress Energy
TRADE ALLY

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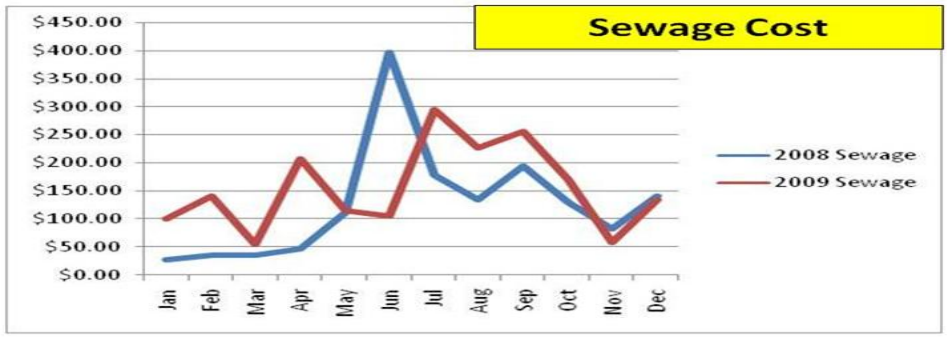
Utility Bill Analysis Findings



These 2 graphs (water and sewer) track together very closely, <u>but they should not.</u> Sewage should only be charged for water that goes down the drain, not water for irrigation or, in this case, water that is being evaporated in a cooling tower. For the small price of installing an irrigation meter ($340.00) the sewer bill will drop at least 50%.

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Water and Sewer

The sewer bill at this facility is based on water consumption. At one time, when the previous owner had the plant, the water used for the cooling tower and the irrigation system was deducted from the total (since this water never went to sewage). The meters below were read by the County Water and Sanitation Department monthly so the values could be deducted from the usage amount reported by the City Water System.

These had not been read since the new owner had purchased the building. You can see this by looking at the huge increases occurring during the summer months, when the irrigation and cooling tower load were at their max. When the Sewer Department was contacted, they did not want to do the readings again and offered to compromise with a flat rate. This resulted in an annual savings of over $20,000.00.

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This school district's newer elementary school was using more than 40% more energy than the state average, and far more than older schools in the same district. Met with the Energy Management System contractor and spent the day watching this system operate in detail.

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- Chillers were operated by a flow calculation that did a very poor job. The small chiller never ran at all.
- No low OA lock-out for chiller and high OA lock-out for boiler. Large chiller came on when it was 47F outside
- Only one call for heat would turn on the whole heating system
- Set-points need to be variable
- Simultaneous heating and cooling needs to be eliminated or greatly reduced

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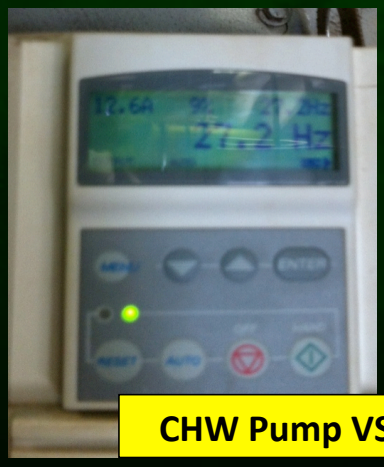
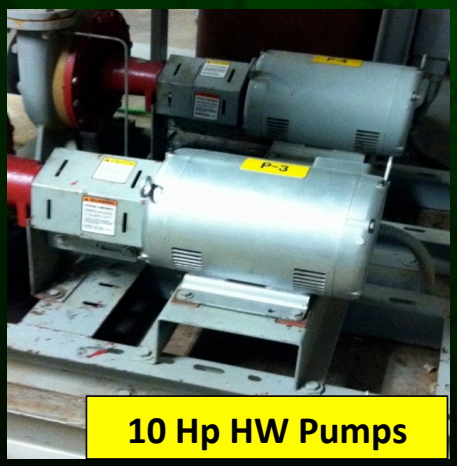
30 Hp CHW Pumps

CHW Pump Control Pkg.




CHW Pump VSDs (different speeds?)



10 Hp HW Pumps

Pumps had their own control package: they were not controlled by the EMS. Pumps would not shut down and ran at different speeds at the same time.

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Air Handler

Blower Coil Units

- Though EMS showed units to be scheduled off, many were still operating due to hardware communication issues.
- OA should be minimized; why run dedicated systems when the building is unoccupied
- Thermostat set points were way too loose. Need to use ASHRAE standard

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EMS (or BAS) Utilization

Many times an EMS is used for nothing more than a fancy time-clock. This is a missed opportunity and waste of money. Control strategies can reduce energy use significantly. Examples:

- Optimum Start/Stop
- SA/DA reset
- Static reset
- HW reset
- CHW reset
- Demand Controlled Ventilation
- OA lockouts
- Humidity control strategies
- Advanced scheduling
- Variable override timers

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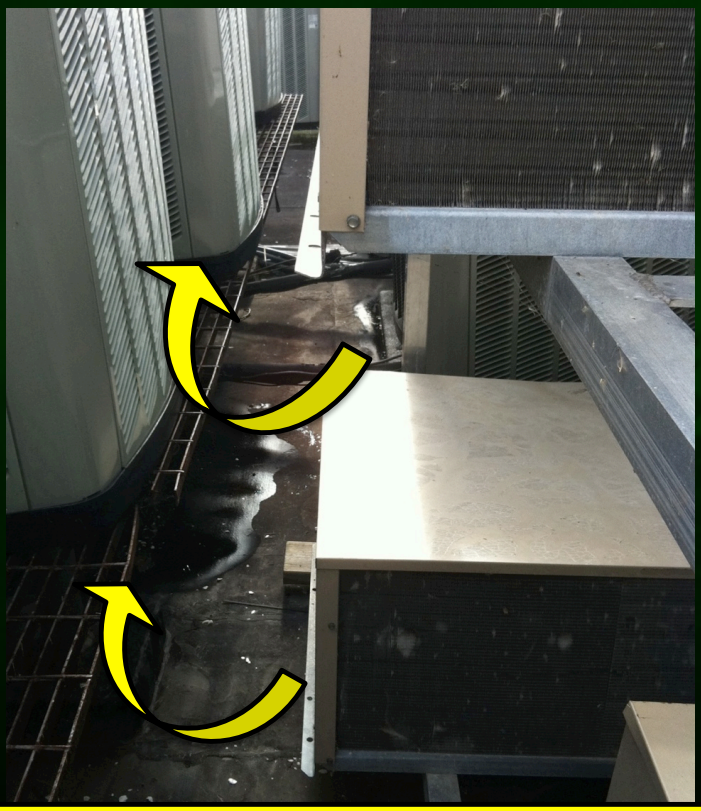
Poor Installation



The heat from the walk in refrigerator and freezer condensers ejects right into the HVAC condensers.

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Condensers are much to close to each other and to the walls. There is very little room for them to dissipate heat effectively.

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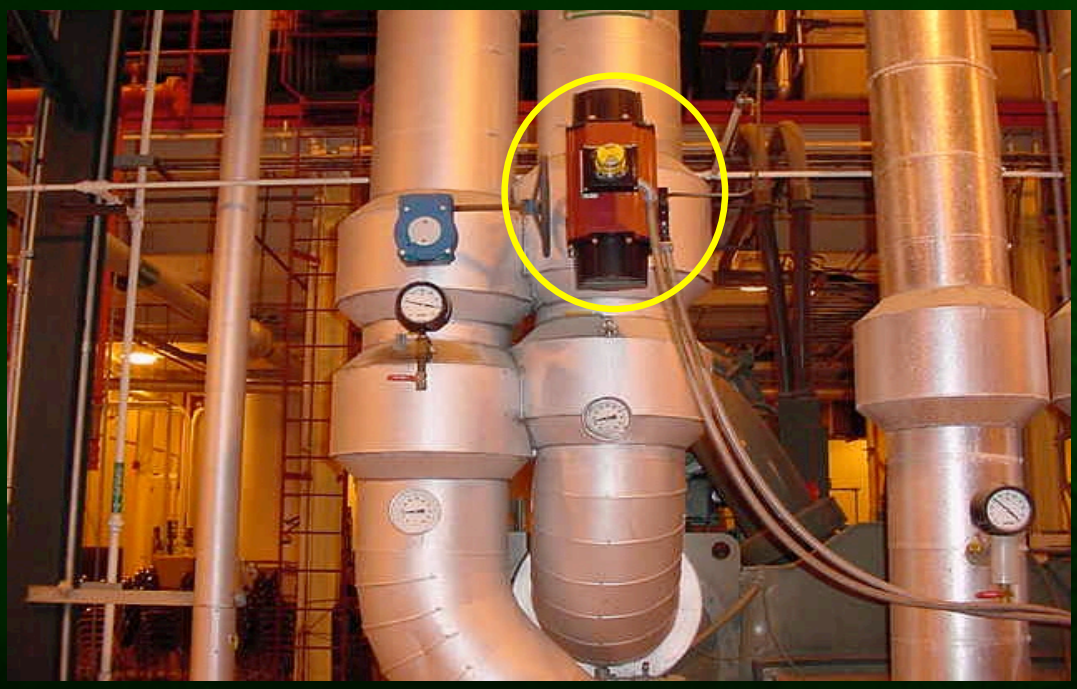
Improper Valve position Example



This valve was opened a few years ago to compensate for a "water hammer" issue that occurred by accident. Power readings taken on the pump with this valve open and closed showed an increase from 66KW to 82KW. The pump consumed 16 more KW with this valve open. Shutting this valve saved $7,140.00 a yr.

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Single Point Bulletins

A good tool to drive energy awareness

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Man-fan example

This man-fan was running 24/7 though the area was only occupied about 90 hours a week. This equates to just over $300.00 a year. Remember man-fans do not lower the room temperature, they are only helpful if you are there to feel their benefit. How many of these have you seen running in a non-occupied space? Many man-fans at this facility use more power than this one.

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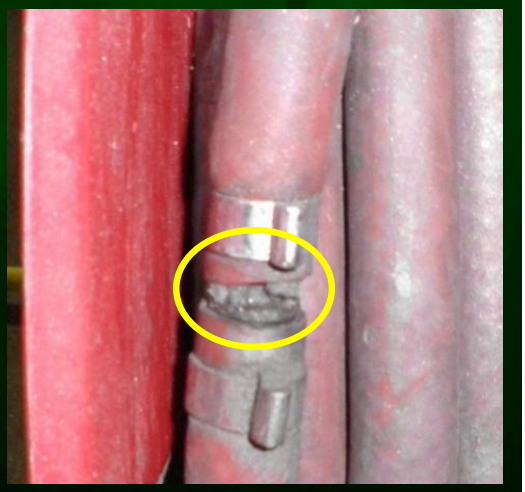
Compressed Air Leak examples

Let's assume these leaks add up to a 1/8" leak (probably very conservative). A continuous 1/8" leak costs and unbelievable $7,000.00 a year. This is totally preventable. Maintenance usually repairs these within one day if they are notified. The next time you hear the hissing sound, remember it sounds like money!



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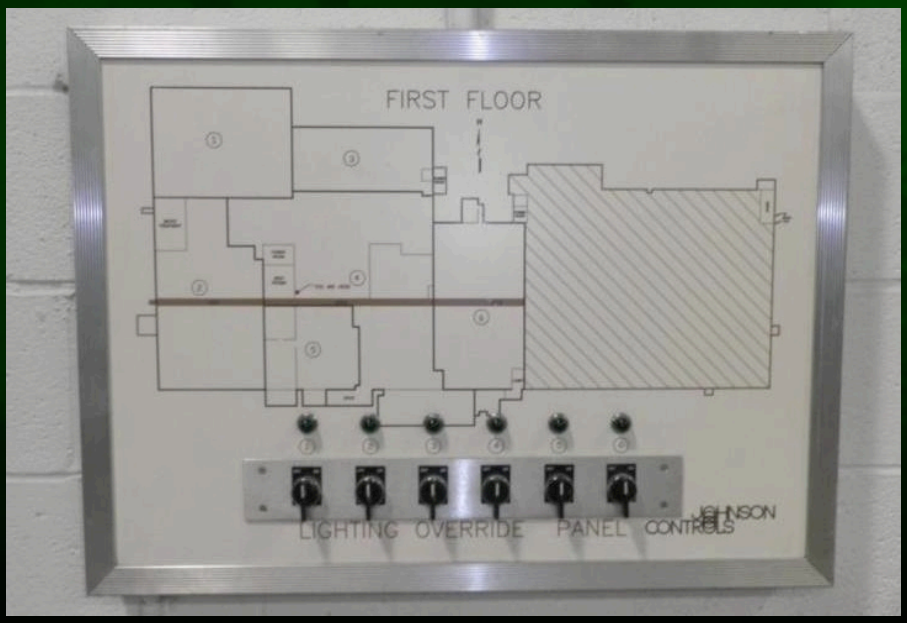
Lighting example

If the lighting override is used, it should be turned off when no longer needed and not allowed to time out. Some of these timers are 2 hours and some of these zones can cost up to $15.00 for just one hour of operation. Knowing your zone helps prevent the waste associated with turning every zone on, just to make sure you get the right one (this does happen).



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Exhaust fan example

This exhaust fan can cost over $50.00 a month to operate, not to mention the cost of the conditioned air that is being pumped outside the building. This fan was not turned off when production ended.

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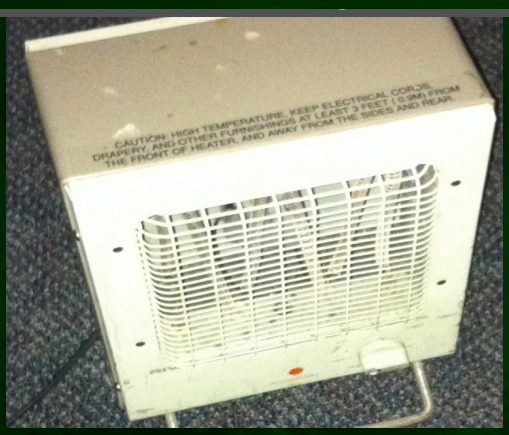
Space Heaters



- They are a fire hazard
- They consume very large amounts of energy
- They affect other employees comfort by causing the HVAC system to work harder in the summer (making it colder for those without the heaters) and less in the winter (having a thermostat meet temperature when the whole room may not be warm).

Personal fans, on the other hand, do not change building temperature, just airflow, and do not use much electricity.

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To sell an energy project, think like a life insurance salesman, only backwards!

When selling a policy for $275.00 a year it is presented as costing only $.75 a day. When working with energy and justifying a project, think the opposite (annually)!

This is especially easy when looking at loads that run 24/7, such as an exit sign.

40 watts – 4 watts = 36 watts * 8760 hrs (hours in a year) = 315360/1000 (watts in a kilowatt) = 315.4 kWH * $.11 (price per kilowatt hour) = $34.69 a yr in savings

Doesn't that sound better than saving 9.50 cents a day?

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Questions?

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