

Small Business Energy Conservation and Efficiency

By the Reading Climate, Energy, and Environment Advisory Committee
Data provided by Jared Carpenter, RMLD

Small businesses have many opportunities to save money with energy efficiency. For some measures, you may need to work with your landlord/owner and head office. If you are paying the utility bills in a rented space, work with your landlord to defray your costs.

The type of heating / ventilation / air conditioning (HVAC) equipment and customer traffic (walk-ins or by invitation) will determine whether you can implement all these recommendations.

- First establish a baseline of energy use. Collect all past year receipts from electricity, oil, natural gas, and water resources. You could include items such as paper and fuel for vehicles, if these are a significant part of your business. It is also helpful to know the square footage of your business. You can also use past receipts to quantify your future gains.
- Perform a green business energy audit. Use an online resource to get a general idea of your business' energy use. You can find tools at:

http://www.energystar.gov/index.cfm?c=tools_resources.bus_energy_management_tools_resources

- Enter your energy bills into the Energy Star Portfolio to get a comparison with similar buildings. Use the following link:
http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager
- Contact Jared Carpenter at the RMLD for an energy consultation and a list of available programs and incentives for small businesses. If you purchase natural gas, contact National Grid for their programs that can assist in partial payment for a future professional audit as well as efficiency incentives.
- Survey your employees about their working environment including illumination, thermal comfort, and air quality among others. Involve employees with efficiency measures.
- Prior to a professional energy audit, perform all improvements according to your ability to do so. Below is a list of energy saving actions that you or the custodial staff may be able to accomplish.

1. Office Equipment

- Turn off PCs, monitors, printers, and copiers nightly and on weekends. If unable to switch off the entire computer, turn off the monitor and printer.
- When purchasing PCs, monitors, printers, fax machines and copiers, consider buying ENERGY STAR models and make sure they are set to a power-saving mode when not in use.
- If feasible, use laptop computers where possible, as they consume 90 percent less energy than desktop computers.
- Paper-reducing strategies, such as double-sided printing, re-using paper, and using e-mail instead of sending memos or faxing documents, not only save energy, but conserve other resources.

2. Lighting

- Turn off non-essential and decorative lighting, especially in unoccupied areas.
- Use task lighting to directly illuminate work areas.
- Lower the height of light fixtures if possible to increase usable light.
- Replace flickering, dim and burned-out lamps.
- Clean fixtures and diffusers (at least annually).
- Schedule janitorial services during the day, or use a minimum number of lights when cleaning.
- Color-code or mark light switches and circuit breakers that can be turned off when not needed including when crews are cleaning.
- Replace burned out lamps with lower wattage lamps or energy-saving lamps wherever possible.
- Replace incandescent lighting systems with compact fluorescent (CFL) and/or high-pressure sodium fixtures.
- Replace existing T12 lighting systems with energy-efficient T8 or T5 lighting and electronic ballasts—take advantage of RMLD’s Commercial Lighting Rebate.
- Install time clocks or photoelectric cells to control exterior lighting, advertising sign lighting and some interior lighting.
- Paint dark walls and ceilings with lighter colors to maximize the effect of existing light sources.
- Install dimmer or occupancy switches where appropriate to lower energy use such as in stairwells, copy rooms, restrooms.
- Implement a group re-lamping schedule, and re-lamp at 70% of rated lamp life. Lamps that run longer than 70% of their rated life can cost more in terms of energy use.
- Trim bushes and trees away from outdoor lighting to maximize illumination and prevent shadows.

3. Heating/Ventilation/Air Conditioning (HVAC) Systems

Regularly...

- Keep vents/doors closed in unoccupied areas to prevent unnecessary heating or cooling of storage areas and closets.
- Reduce fresh air intake to the minimum necessary for the type of business.
- Treat water in evaporative condensers regularly.
- Use outside air to cool buildings when outdoor air is lower than indoor temperatures (Install air conditioner economizers).
- Install time clocks, set-back thermostats, and microprocessor thermostats to monitor HVAC systems when buildings are unoccupied.

Monthly ...

- Check air filters monthly, and clean or change as needed.
- Check air intake screens and clean as required.
- Brush off air conditioner condenser coils monthly.

Seasonally ...

- Check cooling systems in the spring before the cooling season begins.
- Set thermostats at 78 degrees or higher for cooling during the summer.
- During the summer, use only the fan portion of cooling systems when outdoor air is cooler than indoor temperatures. Keep doors and windows closed when air conditioning systems are operating.
- Check heating systems in the fall before the heating season begins.
- During the winter, open shades and blinds on sunny days to warm buildings naturally, and close them at night to prevent heat loss.
- Set thermostats at 68 degrees or lower for heating in the winter, and 55 degrees when buildings are unoccupied. If heating is required in warehouses, set thermostats to 50 degrees.

4. Weatherization

- Keep doors between heated and unheated spaces and cooled and uncooled spaces closed, and install automatic door closers if needed.
- Install weather-stripping around exterior doors and operable windows, and around doors between heated and unheated or cooled and uncooled spaces.
- Install door bottoms, thresholds, or door “shoes” to seal gaps beneath exterior doors and doors to unheated or uncooled spaces.
- If exterior treatments are not feasible, consider interior window film, insulated drapes, valances and/or blinds.
- Caulk cracks and gaps around windows and doors, in the building foundation, and between different building materials.

5. Water Reduction

- Reducing water use decreases the energy needed to pump, heat or chill water.
- Repair leaky water fixtures and toilets promptly.
- Install aerating low-flow faucets (and showerheads if you have them).
- Insulate your hot-water storage tank and supply pipes.
- Lower the thermostat on the water heater to 120 degrees F. This is an optimal level for safety and savings, and provides comfortable hot water for most uses.
- Drain a quart of water from your water tank every 3 months to remove sediment that impedes heat transfer and lowers the efficiency of your heater.
- Be sure to place the faucet lever on sinks in the cold position when using small amounts of water; placing the lever in the hot position uses energy to heat the water even though it never reaches the faucet.

6. Landlord Inputs

Below are items that will normally require input from your landlord, and are longer range improvements. Remember, you are paying the utility bills. Also, as the occupant, you can

visually check much of the HVAC equipment and inform your landlord of discrepancies. Your landlord may have less interest in cleaning air filters than you do.

- Install more efficient security and parking lot lighting. High-pressure sodium fixtures are more efficient than metal halide, mercury vapor, fluorescent or incandescent fixtures.
- Maximize natural lighting by installing skylights or windows.
- Trees that lose their leaves in the fall (i.e., deciduous) are the most effective at reducing heating and cooling energy costs. When selectively placed around a building, they provide excellent protection from the summer sun but permit winter sunlight to reach and warm your building. The height, growth rate, branch spread, and shape are all factors to consider in choosing a tree.
- Vines provide shading and cooling. Grown on trellises, vines can shade windows or the whole side of a building.
- Replace old HVAC systems with new energy-efficient systems.
- Install ceiling paddle fans, stratotherm fans, or other re-circulating systems to create air movement. Ceiling temperatures can often be 30 to 40 degrees higher than floor temperatures, and air movement from fans can enhance the cooling ability of air conditioning systems.
- Check AC housings yearly, and remove rust and re-paint as required.
- Install intermittent ignition devices on gas furnaces to save gas.
- Modify flue dampers on gas furnaces to increase burner efficiency.
- Insulate exterior walls and floors, and insulate roof or ceiling spaces to R-19 standards or above wherever possible.
- Install window treatments where feasible, such as shade screens, shades, awnings, or overhangs.
- Check V-belts (fan belts) monthly for frays, cracks, and nicks, and replace as necessary.
- Check heat recovery devices monthly for proper operation.
- Repair roof leaks. Insulation will lose effectiveness when wet.
- Repair and maintain door and window weather-stripping to prevent water and moisture entry, causing doors and windows to warp and deteriorate.
- Consider permanently closing and sealing doors and windows NOT needed for building access or ventilation and that are NOT used as safety or fire exits.
- Buy a new, energy-efficient water heater. While it may cost more initially than a standard water heater, the energy savings will continue during the lifetime of the appliance.
- Check ducts, vents, and pipes every 3 months, and repair any damaged insulation.
- If you heat water with electricity, consider installing a roof solar water heater.

Resourced from:

<http://rmlld.com> and http://rmlld.com/Pages/rmldma_conservation/index

<http://www.smud.org/business/saving-energy/conservation-tips.html>

<http://www.sonoma-county.org/bea/energy.htm>

<http://www.gbcertified.org> (Green Business Certification used by Reading Co-op)