# Custom Business Project Examples

**Intent** - This file is intended to be shared with your facility manager, or staff responsible for building operations & maintenance. The examples provided here are typical energy savings opportunities. Please reach out to Cedar Falls Utilities (CFU) to schedule an energy audit for your facility. We can help you identify opportunities specific to your building and operation.

## Interior and Exterior Lighting

1. Retrofit existing office fluorescent tubes with Type B TLEDs or upgrade the entire fixture with LED panels.
2. Replace 400 Watt metal halide high bay fixtures with 150 Watt equivalent LED fixtures in warehouses or industrial areas to cut lighting energy use by 60%.
3. Install occupancy/vacancy sensors in variable occupancy spaces such as restrooms, breakrooms, conference rooms, or warehouses to automatically turn off lights when the space is not in use.
4. Use scheduled dimming (30 to 50%) for both interior and exterior security lights to maintain safety while reducing energy use during unoccupied hours/nighttime.
5. Replace older outdoor lights with LED equivalents with a photocell sensor to ensure lights operate only when needed.

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## HVAC System Upgrades (space heating/cooling)

1. Replace aging units with high-efficiency HVAC equipment, such as condensing boilers or high EER rooftop units to reduce energy usage.
2. Install Energy Recovery Ventilators (ERVs) to reclaim energy from exhausted air.
3. Add Variable Frequency Drives (VFDs) to HVAC distribution system (fans and pumps) to reduce energy use during part-load conditions.
4. Improve building insulation and air sealing to reduce heating/cooling loads and improve comfort.
5. Recover waste heat for heating if possible *(opportunity for industrial customers)*.

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## HVAC Control Upgrades (space heating/cooling)

1. Upgrade controls for HVAC systems with a Building Automation Systems (BAS). Contact CFU Energy Services for a detailed HVAC controls audit.
2. For Roof-Top Units (RTU), implement Advanced Roof-top unit Controls (ARC) to implement Economizers, variable fan speed, and Demand-Controlled Ventilation (DCV). Retrofit kits are available for ARC retrofit.
3. More details related to HVAC controls can be found on our webpage under "Business Services and Rebates".

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## Water Heating

1. Replace electric resistance water heaters with heat pump water heaters to achieve up to 3x higher efficiency.
2. Upgrade to a condensing gas water heater/boiler to capture flue gas exhaust heat, for improved thermal efficiency of over 95%.
3. Insulate exposed hot water piping to reduce standby heat loss.
4. Plan to reuse waste heat from the industrial process for water heating is possible.

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## Motors and Drives

1. Install VFDs on larger pumps and fans to match motor speed to process demand during part-load.
2. Replace frequently used motors with premium efficiency models to reduce losses.

## Commercial Refrigeration

1. Upgrade to units with high EER and variable speed compressors units for better performance at partial loads.
2. Inspect refrigerated display cases, walk-in coolers, and freezers regularly to ensure door seals and gaskets are in good condition and doors close properly.
3. Minimize heat generated inside walk-in cooler/freezers by upgrading to LED lighting and high-efficiency motors. This reduces the load on the refrigeration system
4. Retrofit open refrigerated display cases with night curtains or doors to reduce compressor cycling and energy use overnight. *(grocery stores)*

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## Compressed Air

1. Conduct a compressed air leak detection audit to identify and fix air leaks.
2. Conduct air flow compressor analysis if planning to add a new compressor. This allows the compressor to be correctly sized based on actual demand at the facility. (Reach out to CFU for more details)
3. Add a VFD- compressor that adjusts to real-time demand instead of using all constant speed compressors.
4. Switch-off compressors after hours or isolate lines that are used only for part of the shift.
5. Replace non-cycling refrigerated dryers with cycling or variable-speed model to match moisture removal to system load.
6. Capture waste heat from air compressors and redirect it to supplement space heating during winter.

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## Industrial ventilation

1. Optimize ventilation of air by capturing dust, fumes, and contaminants closer to the source, reducing the amount of exhausted air.
2. Inspect and maintain dust collection and filtration systems to minimize excessive pressure drops and maintain efficient airflow.
3. Install VFDs on exhaust and ventilation fans to match airflow with demand to reduce fan energy use.
4. Use controls, exhaust and intake interlocks, or occupancy/process sensors to reduce or shut off ventilation when production areas are not in use.
5. If a large quantity of conditioned air is exhausted, evaluate strategies to implement heat recovery from the exhausted air to reduce heating/cooling energy use.

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## Steam Systems

1. Optimize boiler operating pressure to avoid maintaining higher steam pressure than required by the process or equipment.
2. Maintain the proper fuel-to-air ratio through regular burner tuning and combustion testing to improve boiler combustion efficiency
3. Recover heat from boiler blowdown to preheat boiler makeup water or support other heating loads.
4. Inspect steam traps regularly and repair or replace failed traps to prevent steam loss
5. Insulate steam piping, valves, fittings, and other hot surfaces to reduce heat loss and improve worker safety.

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## Process Equipment

1. Upgrade older industrial ovens, dryers, or presses to newer models with high-efficiency burners or electric elements.
2. Recover waste heat from process equipment and redirect it to preheat water or ventilation air.
3. Add controls to idle or shut off process lines during downtime or shift changes.

4. Use insulation blankets or jackets on hot process equipment and piping to reduce radiant heat loss and improve safety.