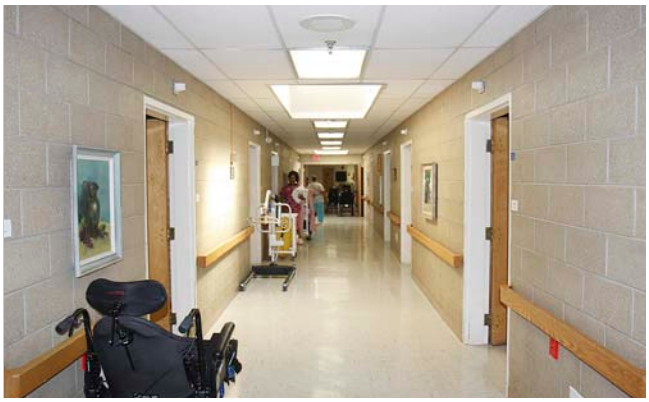
CASE STUDIES

Commercial/Office Space

Newmark Knight Frank Making Energy-Efficiency Their Standard

1 Long Wharf Drive in New Haven owned by Newmark Knight Frank (NKF), a world wide property management corporation, knows the value of providing their tenants with office solutions that provide operational savings as well as a comfortable work environment. NKF began its lighting upgrade project with the Energy Opportunities, a program from the Connecticut Energy Efficiency Fund and administered by The United Illuminating Company, by evaluating the facilities lighting and HVAC systems. By the time the project was completed NKF had retrofitted 1123-T12 fixtures with reduced watt T8 lamp and ballast systems and high-performance T8 lamp and ballast systems to improve area lighting, 119-T12 fixtures with "standard" 2 foot lamp and ballast systems, 17 incandescent and CFL exit signs with new LED exit sign kits and replaced numerous incandescent lamps with CFLs. NKF received a $42,380 incentive from the Connecticut Energy Efficiency Fund for these measures and expects an estimated annual energy savings of 439,520 kWh. NKF maintains a policy of implementing energy efficiency and LEED certified measures into their properties as a standard operating procedure. Next on the list for this facility is updating the HVAC system and evaluating the 170 heat pump systems and networking them with an EMS control system.

Orange Health Care Center Gets an Energy-Efficiency Check-up



Orange Health Care Center, a 60-bed facility, was the site of a house call of a different sort—when Small Business Energy Advantage (SBEA) came to visit. A SBEA vendor stopped by to give the check-up, an energy check-up. After reviewing the site it was determined that in order to enhance the financial health of the business a holistic approach could be taken to reduce the level of energy used and improve the working environment. Almost every section of the building was addressed through the retrofitting of old fluorescent light units with new high-performance T8 light and ballast systems, replacement of all incandescent lamps with CFLs, retrofitting all incandescent exit signs with new LED exit signs and installation of occupancy sensors to reduce the use of light when areas are unused. When the project was completed and the facility was given a clean bill of health, Orange Health Care Center received a $12,825 incentive from the Connecticut Energy Efficiency Fund for installing these measures and can expect an annual energy savings of 71,414 kWh.

Commercial office space provides a wide variety of environments demonstrating the needs of large and small business. With these spaces come a number of opportunities to employ energy-efficient solutions to maintain business sustainability and improve a business's bottom line. Through the Commercial & Industrial efficiency programs, administered by The United Illuminating Company and funded through the Connecticut Energy Efficiency Fund, businesses large and small can benefit through active participation.

Small Business Energy Advantage	offers financial incentives to small business owners who install energy-efficient solutions in their business. This can include lighting, refrigeration controls, occupancy sensors, timers and much more.
Energy Opportunities	helps commercial and industrial businesses retrofit their existing, operating, inefficient equipment with high efficiency alternatives, from lighting systems with occupancy sensors, to process systems. The larger your kWh savings, the larger your incentive.
Energy Conscious Blueprint	helps commercial and industrial business owners implement energy-efficient measures into their new building at the design stage without heavy financial impact. The more you implement the more energy you save and the more your incentive.

Tips for Commercial Space

1. Change incandescent lighting to high efficiency alternatives such as LED, HID, or induction lighting.
2. Convert T12 fluorescent lighting to high performance or low wattage T8 and T5 lighting and ballasts systems.
3. Install occupancy sensors to reduce lighting/energy use in work areas.
4. Install timer controls or photocells for exterior lighting areas.
5. When building or retrofitting introduce daylight harvesting in office areas to reduce lighting needs and energy use.
6. Consider locating work stations requiring high illumination adjacent to windows.
7. Install direct digital control (DDC) energy management systems to provide centralized control (scheduling, settings, alarms, and monitoring) of the building's HVAC, lighting and process systems.
8. Instead of heating or cooling all night, optimize the HVAC controls by sequencing start-up and shut down times 30-60 minutes prior to start or end of the work day so that temperatures are achieved for employee arrival or closing. A smart thermostat can turn on the HVAC one hour before staff arrives. It could cut your HVAC costs up to 30%.
9. Purchase ENERGY STAR® office products such as computers, copiers, external power adaptors, fax machines, laptops, monitors, multifunctional devices, printers, scanners, water coolers and more.
10. Larger office spaces should consider Retro-commissioning or Re-commissioning the HVAC systems to optimize performance. Proper maintenance activities can save up to 30% of the fan and up to 10% space conditioning energy use.

For more information about Commercial and Industrial programs through the Connecticut Energy Efficiency Fund and administered by The United Illuminating Company visit **www.uinet.com** or call **1-877-WISE-USE**.

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CASE STUDIES

Manufacturing Space

F+F Mechanical Practices What They Preach

When entering the design phase of their new headquarters the goal F+F Mechanical, a HVAC mechanical contracting firm set was to design a building with a quality working environment, reduce energy use and solidify their position as a good corporate citizen. After learning about Energy Conscious Blueprint, a Connecticut Energy Efficiency Fund program, administered by The United Illuminating Company, F+F Mechanical committed to a project that would reflect the philosophy and practices they recommend to their customers. The design of this 50,000 square foot facility included daylight harvesting which greatly reduced overhead lighting needs. The use of high-efficiency lighting, reflective ceilings, occupancy sensors, photo sensors and timers manage lighting consumption around the clock. Climate control and HVAC systems played a major role in reducing energy use and maintaining the comfort of the facility. Through the installation of high-efficiency boilers (90%+), full direct digital control systems, variable frequency drives on all HVAC pumps and fan motors, free-cooling economizers on the air handling units, and free cooling dampers in the manufacturing areas this building really sets a standard for energy efficiency. These design aspects resulted in a $67,000 incentive from the Connecticut Energy Efficiency Fund and annual energy savings of 164,144 kWh.

Anton-Bauer Sees the Whole Picture with Energy Savings Measures

Anton-Bauer is a world wide manufacturer and provider of professional camera batteries, chargers, lighting and various key mobile powers systems for medical, military and broadcast and video production markets. When bringing their business plan into focus it became obvious to the folks at Anton-Bauer that energy efficiency would have a definite effect on their bottom line. After a facility review from a Small Business Energy Advantage program representative from the United Illuminating Company it was clear that some changes would provide noticeable results. Through the program the following measures were implemented: updating standard fluorescent lighting with high performance lamps and ballasts throughout the facility, reducing lamps with the use of reflectors, replacing metal halide lights with heavy duty industrial fluorescents, replacing 150 watt Halogen lighting with 32 watt LED and installing motion sensors in most areas. These measures provided Anton-Bauer with a $12,991 incentive from the Connecticut Energy Efficiency Fund and an annual energy savings of 95,685 kWh.

Manufacturing space requires custom solutions to meet the demands for competitive operations and site management. With those spaces come a number of opportunities to employ energy-efficient solutions to maintain business sustainability and improve a businesses bottom line. Through the Commercial & Industrial efficiency programs, administered by The United Illuminating Company and funded through the Connecticut Energy Efficiency Fund, businesses large and small can benefit through active participation.

Small Business Energy Advantage	offers financial incentives to small business owners who install energy-efficient solutions in their business. This can include lighting, refrigeration controls, occupancy sensors, timers and much more.
Energy Opportunities	helps commercial and industrial businesses retrofit their existing, operating, inefficient equipment with high efficiency alternatives, from lighting systems with occupancy sensors, to process systems. The larger your kWh savings, the larger your incentive.
Energy Conscious Blueprint	helps commercial and industrial business owners implement energy-efficient measures into their new building at the design stage without heavy financial impact. The more you implement the more energy you save and the more your incentive.

Tips for Manufacturing Space

1. When building or retrofitting introduce daylight harvesting in manufacturing and office areas to reduce lighting needs and energy use.
2. Turn-off lights where natural lighting is sufficient.
3. Convert T12 fluorescent lighting to high performance or low wattage T8 and T5 lighting and ballasts systems.
4. Install high efficiency LED exit signs.
5. Have all systems maintained on a regular basis ensuring the most efficient operations.
6. Assure the compressed air system is shut down when the plant systems are not being used (i.e. nights and weekends). Use smaller dedicated compressors to serve minimal after hour needs. Repair air leaks and develop a regular maintenance program. These actions can save up to 20% of the compressed air system's energy.
7. Repair steam and condensate leaks and return condensate to the boiler. In a perfect system, all condensate could be returned to the boiler for reuse in steam generation.
8. Install direct digital control (DDC) energy management systems to provide centralized control (scheduling, settings, alarms, and monitoring) of the building's HVAC, lighting and process systems.
9. Optimize start-up and shut-down times and equipment sequencing. Adjust starting time (30-60 minutes prior) so that temps are achieved for employee arrival. A smart thermostat can turn on the HVAC one hour before staff arrives. It could cut your HVAC costs up to 30%. To ensure efficiency proper staging and sequencing of boilers, chillers, and air-handling units is critical.
10. Benchmark energy consumption in your facility and develop an operations and maintenance program based on best practices. The benefits of good maintenance far outweigh the costs and efforts involved. Good maintenance can save time, reduce operating costs, and improve plant manufacturing efficiency and product quality.

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CASE STUDIES

Retail Space & Energy Efficiency

Energy Efficiency at Big Y Includes New Design and Retrofit

The Stratford, North Branford and North Haven stores are the locations of this supermarket chain's implementation of energy-efficient measures. Through the Connecticut Energy Efficiency Fund's Energy Conscious Blueprint (ECB) and Energy Opportunities (EO) programs, administered by The United Illuminating Company—Big Y has made a difference that can be seen on their bottom line and in the environment. This year long project at the three store locations, included the North Haven retrofit of ceiling lights, refrigerated case lights in the frozen food sections and installation of night curtains in the dairy and fresh foods sections through EO. The retrofit measures resulted in an incentive of $121,378 with annual energy savings of 356,544 kWh. At their new stores in Stratford and North Branford measures included refrigeration controls, evaporator fan controls, condensers, high efficiency motors, variable frequency-drives controls on motors, energy-efficient air conditioning systems, T8 ceiling lighting, LED lighting in refrigeration units and the installation of night covers for refrigeration cases. The new construction measures resulted in an incentive of $112,364 and 795,795 kWh annual energy savings in Stratford and an incentive of $110,915 and 787,353 kWh annual energy savings in North Branford.

Wine Merchants Maintain Quality through Energy Efficiency

73 State Street in North Haven is the site of Wine Merchants, a full service wine and spirits retailer, providing "the everyday, to the hard to find" for their customers. Quality and value are important to the folks at Wine Merchants, so it was easy for them to understand how energy efficiency could improve their bottom line while maintaining quality. A complete audit was done on the facility to access what improvements could be made to maintain quality and reduce energy costs. At the conclusion of the project, there was a complete replacement of standard fluorescent lighting with high-performance T8 lamp and ballast systems, replacement of all incandescent bulbs with compact fluorescent light bulbs, upgrades of all standard refrigeration motors with electronically commutated motors (ECMs), installation of refrigeration door heater controls and refrigeration evaporator fan controls and replacement of fluorescent refrigeration door lights with LED lighting. The results were twofold, providing an increase of product quality and appearance while reaching the end goal of energy efficiency. These measures provided Wine Merchants with an $8,633 incentive from the Connecticut Energy Efficiency Fund and an annual energy savings of 30,813 kWh.

Retail space can provide challenges to showcase product, sell merchandise, carry necessary stock, ensure quality and so on. Many of these challenges provide an excellent opportunity to employ energy-efficient solutions to maintain business sustainability and improve a business' bottom line. Through the Commercial & Industrial efficiency programs, administered by The United Illuminating Company and funded through the Connecticut Energy Efficiency Fund, businesses large and small can benefit through active participation.

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Energy Opportunities	helps commercial and industrial businesses retrofit their existing, operating, inefficient equipment with high efficiency alternatives, from lighting systems with occupancy sensors, to process systems. The larger your kWh savings, the larger your incentive.
Energy Conscious Blueprint	helps commercial and industrial business owners implement energy-efficient measures into their new building at the design stage without heavy financial impact. The more you implement the more energy you save and the more your incentive.

Tips for Retail Space

1. Convert T12 fluorescent lighting to high performance or low wattage T8 and T5 lighting and ballasts systems.
2. Retrofit with high efficiency LED exit signs.
3. Install timer controls or photocells for exterior lighting areas.
4. Turn-off lights where natural lighting is sufficient.
5. Keep skylights and windows clean.
6. Instead of heating or cooling all night, optimize the HVAC controls by sequencing start-up and shut down times 30-60 minutes prior to the start or end of the work day so that temperatures are achieved for employee arrival or closing. A smart thermostat can turn on the HVAC one hour before staff arrives. It could cut your HVAC costs up to 30%.
7. Perform regular maintenance tune-ups on cooling equipment. Regularly clean condenser coils, change belts and filters and fix duct leaks. Check for proper economizer operation and adequate refrigerant levels. Maintenance activities can save up to 30% of fan and up to 10% of space conditioning energy use.
8. Replace internal case and shelf lighting with LED lighting to reduce refrigeration and lighting energy use or turn case lighting off at night when not needed.
9. Install refrigeration controls to reduce energy use at night when temps are lower. In addition, installing night shades to open faced coolers can reduce energy use.
10. Adopt a procurement policy as part of your overall successful energy management strategy.

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CASE STUDIES

Warehouse Space

DeGrand Builds Efficiency into Warehousing Space

430 Island Lane in West Haven is the site of DeGrand & Sons, Inc, an off-site warehouse storage facility for building materials, electronics, computer hardware and recycling services. When adding additional warehouse space to the existing facility, security and safety were a top priority to their client base and DeGrand & Sons needed a way to accomplish this in the most cost effective manner. DeGrand & Sons began its lighting project with the Connecticut Energy Efficiency Fund's Energy Conscious Blueprint program and administered by The United Illuminating Company. Last year they installed T5 high output (H.O.) high bay warehouse fixtures and lamps containing 6 H.O. lamps and 2 ballasts in each fixture, and motion sensors on each fixture to reduce lighting usage to only those times when customers or service providers were on-site. The results were a well lit area and an energy-efficient solution. DeGrand & Sons, Inc. received $6,370 from the Connecticut Energy Efficiency Fund for these measures and expects an estimated annual energy savings of 101,308 kWh.

A Warehousing Habitat Illuminated by Efficiency

Habitat for Humanity of Coastal Fairfield County ReStore is a resale facility that accepts donations of new and used building materials, furniture and appliances and sells them to the public to help aid in its mission. And since Habitat for Humanity is a not-for-profit providing affordable homes for low-income families – reaching their goals is always a budget driven process. After contacting a vendor about the Small Business Energy Advantage program and evaluating the facility it was determined that significant cost savings could be achieved with a lighting retrofit. The whole warehouse area was retrofitted with new high-performance T8 light and ballast systems throughout. Additionally, bi-level switching was installed to control the number of fixtures operating at any given time—thus providing the ability to manual control energy use. When the project was completed, Habitat for Humanity received a $3,357 incentive from the Connecticut Energy Efficiency Fund for installing these measures and can expect an annual energy savings of 18,860 kWh.

Warehousing space is unique as it provides controlled environments with special needs that are not occupied by staff or personnel for the majority of the time. With these spaces come a number of opportunities to employ energy efficient solutions to maintain business sustainability and improve a business's bottom line. Through the Commercial & Industrial efficiency programs, administered by The United Illuminating Company and funded through the Connecticut Energy Efficiency Fund, businesses large and small can benefit through active participation.

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Energy Conscious Blueprint	helps commercial and industrial business owners implement energy-efficient measures into their new building at the design stage without heavy financial impact. The more you implement the more energy you save and the more your incentive.

Tips for Warehouse Space

1. Change incandescent lighting to high efficiency alternatives such as LED, HID or induction lighting.
2. Convert T12 fluorescent lighting to high performance T8 and T5 lighting and ballasts.
3. Install occupancy sensors to reduce lighting/energy use in storage areas and hallways.
4. Install timer controls or photocells for exterior lighting areas where lighting is not critical.
5. Adopt a procurement policy that requires ENERGY STAR® rated products as part of your overall successful energy management strategy.
6. Automatically control lights with daylight sensors where daylight is sufficient such as reception and entry areas.
7. Retrofit exit signs with high efficiency LED exit signs which can last up to 50 times longer than the incandescent styles.
8. Install control systems to manage heating and cooling in areas based on need. Not heating and cooling areas that are unused or unoccupied for long periods can significantly reduce your energy costs.
9. Installing a new high efficiency HVAC system, can use up to 40% less energy than systems that just meet minimum standards. On units less than 5.4 tons choose ENERGY STAR® qualified high-efficiency air conditioning equipment with the highest SEER or EER ratings when your system needs to be replaced.
10. Install commercial grade ceiling fans and add controls to the exhaust fans. By using ceiling fans, a facility can set the thermostat higher, because the air movement cools the room by up to 4°F.

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