

Town of Bedford Energy Policy

The Town of Bedford is committed to energy conservation and management to decrease municipal energy consumption and cost while maintaining a comfortable, healthy, and safe environment that is conducive to work, learning and play.

Town buildings shall be operated in accordance with energy conservation best practices as outlined in Bedford's **Energy Reduction Guidelines**, including appropriate temperature settings, watering guidelines, and lighting levels.

Department heads and Directors shall create policies to implement appropriate energy conservation practices, raise awareness of energy efficient behavior among staff, and monitor performance. Education and outreach to building users shall be conducted, as outlined in **Occupant Involvement Guidelines**. A report of energy consumption shall be created and reviewed quarterly and recommendations for reducing energy consumption shall be made.

New vehicles shall be purchased in accordance with the **Vehicle Replacement Guidelines**.

All building projects, including but not limited to building construction and substantial renovations, shall include energy consumption and lifecycle analysis from initial design phase in compliance with the **Guidelines for Construction/Renovation of Town Buildings**.

Guidelines will be reviewed periodically by the Energy and Sustainability Committee and updated formally every five years.

Energy Reduction Guidelines

The Town of Bedford's Energy Reduction Guidelines address energy conservation with regard to current town assets, standards for town building construction or renovation, and public outreach.

General

Each Town Department shall be responsible for ensuring their buildings are managed in accordance with the Town Energy Policy, Energy Reduction Goals, and Energy Reduction Guidelines described herein. Emergency Services Departments shall make all reasonable efforts to conform to the guidelines but are exempt from requirements that would negatively affect the departments' ability to perform their duties.

Energy Reduction Goals

As a designated Green Community Bedford is committed to a goal of 20% reduction in energy use from 2009 levels.

Energy Performance Tracking

Building energy and carbon use shall be regularly monitored. An annual Energy Performance Report shall be generated which describes energy performance and greenhouse gas reductions for all major Town buildings. The report shall be disseminated for the purpose of educating energy managers, town employees, end users and staff regarding current energy use and efficiency. The Energy Performance Report shall include, for each major Town building:

- 1) comparisons of current and prior year(s) annual and monthly electricity use, fuel use, and greenhouse gas reductions;
- 2) comparisons to energy use targets;
- 3) and energy use per square foot.

The energy use comparisons shall be normalized for variations in weather, where appropriate. The annual report which Bedford must prepare and submit annually, as part of the Green Communities Act, to the State DOER, could be used for evaluating the Town's energy consumption.

Significant increases in weather-normalized energy use should be investigated to determine probable cause(s) for the increased energy use.

An Annual Audit of major Town buildings shall be conducted to assess energy performance related to: building envelope; heating, ventilating, and air conditioning (HVAC) systems; lighting systems; office equipment; and other major energy using equipment.

Municipal Electricity Purchase

The Town shall make all reasonable efforts to purchase electricity for municipal operations that is generated from 100% renewable resources or purchase renewable energy credits sufficient to offset electricity consumed for municipal operations that is generated from fossil fuels.

Air Conditioning Equipment

The following occupied space temperature setpoints are in accordance with ASHRAE 55, 2014 Edition for "Thermal Conditions for Human Occupancy" and shall apply during the appropriate occupied and unoccupied times:

- Cooling season occupied setpoints :74°F - 78°F
- Unoccupied setpoint: 85°F
- Occupied temperature setpoint shall not be set below 74°F.

During unoccupied times, ventilation shall be minimized and the air conditioning equipment shall be off, except (a) during times of high humidity or (b) where operation of equipment is shown to reduce energy consumption.

When only part of a building is being used (summer program, off hours meeting), a space should be chosen to minimize the air conditioning required for the group.

Heating Equipment

The following occupied space temperature setpoints are in accordance with ASHRAE 55 2014 Edition for "Thermal Conditions for Human Occupancy" and shall apply during the appropriate occupied and unoccupied times:

- Heating season occupied setpoints : 68°F - 72°F
- Unoccupied setpoint: 55°F
- Occupied temperature setpoint shall not be set above 72°F.

The unoccupied temperature setting shall be 55°F (i.e. setback). This may be adjusted to a 60°F setting during extreme weather.

The unoccupied time shall begin when the occupants leave an area.

During the spring and fall when there is no threat of freezing, all HVAC systems shall be switched off during unoccupied times.

All domestic hot water systems shall be set no higher than 120°F or 140°F for cafeteria service (with dishwasher booster), as required by the local Board of Health.

All domestic hot water re-circulating pumps shall be switched off during unoccupied times unless freezing is a concern.

Lighting

Interior and exterior lighting levels shall be designed not to exceed levels establish by current regulations and codes. Lighting levels shall be minimized and excessive lighting levels shall be discouraged. Use the Illumination Engineering Society (IES) guidelines for foot-candle levels.

- Utilize natural lighting where appropriate.

- All unnecessary lighting in unoccupied areas shall be turned off either manually or via automatic control systems. Staff should be encouraged to shut off lights when leaving an area.
- All exterior lighting shall be off during daylight hours. Some may be off after midnight as long as it does not pose a security or safety situation.
- LED bulbs and/or current but proven energy efficient lighting technology, shall be used on a replacement basis and as funding permits.

Street Lights

As of 2016 Bedford street lights have been converted to LEDs. Future consideration should be considered for an advanced lighting control system. Streetlights and other outdoor/exterior municipal lighting shall be evaluated to determine whether timing mechanism should be installed or whether policies should be adopted to control usage. In some cases, this may result in certain lights being extinguished or removed.

- Full cut-off features (to direct light downward) should be installed as bulbs are replaced.

Traffic Lights

- Traffic lights should switch to blinking red after midnight (subject to MA DOT regulations)
- LED bulbs and/or current but proven energy efficient lighting technology, shall be used on a replacement basis and as funding permits.

Water

- All plumbing and/or intrusion (i.e. roof) leaks should be reported and repaired immediately.
- All landscape irrigation, where necessary, shall be operated and controlled in an efficient manner and to minimize evaporation.
- When spray irrigating, the water should not directly hit buildings, paths, or roadways.
- Water leaks / drips should be included in the annual audit of major Town buildings.

Parks and Playing Fields

- Automatic watering schedules shall be overridden when rain is abundant.
- Watering shall take place at such a time that minimizes evaporation.
- Mowers should be replaced with more fuel-efficient models, considering usage requirements and maintenance costs when replacement is due.

Occupant Involvement Guidelines

The achievement of the goal of a 20% reduction over 2009 energy use in the Town of Bedford's school and municipal buildings will be facilitated by the active involvement of the building occupants.

Behavior is key to reducing energy consumption. The American Council for an Energy Efficient Economy (ACEE) stresses that energy efficiency efforts need to move beyond technology dissemination and also focus on:

- Making energy use visible to building users by exploring the possibility of installing “instrumented displays” which provide visual indicators of energy consumption at various public buildings. It would also provide visual indicators of energy production, in the event, there are solar panels installed.
- Providing people with tools to manage their consumption and change their behavior
- Providing people with motivation (e.g. goals, budgets, etc.)
- Making energy savings easy and fun

Energy Committee

The Town of Bedford shall maintain an Energy Committee, comprised of Town staff with representatives of all departments at a variety of staff levels, to ensure that Bedford's Energy Policy is supported and that all stakeholders are involved in the process.

The Energy Committee will meet on at least a quarterly basis to discuss issues such as current energy usage in town buildings, employee involvement, needed tools, resources and the progress of the building energy committees with the ultimate goal of ensuring that Bedford reduces its municipal energy consumption.

Energy Captains and Teams

Each building or department shall designate an Energy Captain or Energy Team to ensure energy reduction within that group. The purpose of the Energy Captain or Team will be to define building-specific energy reduction measures, monitor energy use with assistance from the Town Facilities Director, and educate the building occupants. Each team will report back to their department head or the Facilities Director on energy reduction activities, and will receive timely information on building/department energy usage history and trends.

Behavior-based Energy Conservation

The Town of Bedford shall seek to implement the following energy conservation measures whenever possible:

- All department heads will be responsible for energy efficiency programs in their departments in accordance with these guidelines and any other possible means of increasing the level of efficiency with which energy and other resources are used.
- All Boards, Commissions, Committees, and other organizations that utilize any municipal building for meetings, events, shall be made aware of these guidelines and their important role in energy reduction.
- Employees who are responsible for purchasing will be provided training and educational opportunities that enhance organizational understanding of green purchasing and sustainable best practices.
- Alternative commuting options such as biking, walking, carpooling, vanpooling and public transit options should be encouraged. Employees traveling to off-site meetings shall be encouraged to rideshare whenever possible.
- Town contracts will include energy-friendly provisions whenever practical.

All users of town facilities are responsible for ensuring compliance with the following guidelines:

- Town Manager's Office shall schedule use of space to conserve energy.
- Reservations should be cancelled when space will not be used so that areas will not be unnecessarily heated/cooled.

- Doors and windows shall remain closed when operating heating or air conditioning systems.
- Building users shall be encouraged to dress appropriately for the season.
- No use of space heaters will be permitted.
- Produce trending reports to identify efficiencies and deficiencies. Develop a corrective action plan to address the deficiencies.

Engagement and Outreach

An Energy Policy is only as good as its implementation. Effective implementation of Bedford's Energy Policy and guidelines will require consistent effort, observation and follow-up by many individuals if the goal of energy reduction is to be achieved. Outreach and education are necessary components of this effort.

Social marketing techniques shall be developed to spread knowledge about and commitment to energy reduction efforts. All users of town facilities, including Town staff, residents, students and teachers, shall be enlisted as "energy savers" as well as "energy consumers".

In collaboration with the Energy and Sustainability Committee, energy usage for Town buildings will be made publically available on a regular basis, as well as posted on the Energy and Sustainability Committee web page.

In communicating with all stakeholders, it should also be emphasized that an accumulation of small but consistent efforts on the part of all building users, plus timely and considered feedback are crucial to success in energy use reduction.

Stakeholders should also be made aware that energy savings (which produce cost savings or avoidance of cost increases) allow the Town to spend constrained financial resources on programs and services rather than energy.

Recognizing that familiarity with residential energy efficiency enhances public awareness and appreciation of municipal energy reduction efforts, and that citizens also benefit financially from reducing their own residential energy usage, the Town will maintain and publicize programs that can assist and encourage residential energy reduction.

Vehicle Replacement Guidelines

Fleet management includes assessing operational needs and planning to minimize fleet size, vehicle and equipment use, and vehicle idling times to maximize efficiency and minimize mileage driven.

Hybrid or other energy saving vehicles shall be purchased on a replacement basis where appropriate technology exists. Replacement vehicles should have mileage equal to or exceeding the guidelines specified in the Green Communities "Guidance and Model Policy" for fuel-efficient vehicle purchase:

The inventory and replacement plan for non-exempt vehicles must include school vehicles.

Bedford will continue to implement a monitoring system to record miles driven, fuel consumption, etc. for each vehicle and other motorized equipment in every department. The criteria to decide when the vehicle must be replaced should recognize modern improvements in vehicle life, and reflect community values in items such as acceptable wear-and-tear or appearance.

Vehicles shall only be recycled if the replacement vehicle meets the fuel efficiency criteria prescribed above.

Bedford will enforce its "No Idling" policy as prescribed by the state.

Guidelines for Construction/Renovation of Town Buildings

Minimum Energy and Sustainability Goals for Building Construction and Renovations: High Performance Buildings

The Town of Bedford is a Green Community and committed to best practices and efforts to reducing its Greenhouse Gas (GHG) emission by as much as possible. The Town of Bedford, as a Green Community member, has set a goal of 20% energy reduction using 2009 baseline. However, as the Town continues to improve its infrastructure, the Town is committed to continue to build on to its reduction beyond the 20% initial goal.

In order to continue these efforts, the Town requires minimum energy and sustainability levels in all new construction, major renovation, and gut rehabilitation projects. For these projects, there shall be broad-based goals established early in the planning phase of these projects. Although each project may be unique, specific goals need to be developed during the schematic and design development phases and must include minimum, but acceptable, performance requirements for all building systems, such as roof, windows, walls, HVAC, lighting, flooring, and any other appliances. **A primary goal for these projects shall be to minimize, to the greatest extent possible, the use of fossil fuels for heating, cooling, and other building operations.**

Use energy simulation models of baseline and proposed design during the conceptual and schematic, development, and construction phases.

To the extent that it is possible and feasible, the guidelines below should be followed.

1. Energy Efficiency:

- For new construction and/or major renovation/gut rehabilitation, 20% reduction in total energy when compared to the same building baseline in 2009 or the average taken over the last five of energy use, whichever gives greater energy savings. If the new building is on a new site and did not exist before, a 20% reduction over the Town' 2009 baseline for a square foot average as calculated based on 2009, for a comparable building.
- All construction design and work should include energy efficiency measures while still building for functionality and maintainability.
- LEED and CHPS certification should be considered where possible.
- Systems with Lowest Life Cycle Cost, instead of just lowest first costs shall be considered. i.e. Low Construction cost and High Maintenance / operating cost should be avoided.
- EPA ENERGY STAR rating with a score of 75 or higher after 12 month' performance determined based on Energy Star Target Finder for intensity.

2. Water Efficiency:

- Minimum 20% reduction in potable water use when compared to EPACT 1992 requirements for fixture performance.
- Where possible and feasible, consider captured rainwater for building irrigation.

3. Renewable Energy:

- Projects shall consider on-site renewable energy system to offset the building' annual energy use and cost. The Life Cycle Costs Analysis shall be used to determine the difference percentage achieved when a renewable energy system is used.
4. Commissioning:
 - Provide enhanced design and construction phase commissioning of all major building systems including lighting, building envelop, HVAC and control systems.
 - Provide Building Systems Manual for commissioned systems and an annual re-commissioning check lists and procedure for said systems.
 - Provide training for building operators and occupants as requested by the Town.
 - Provide post-construction commissioning and opposite season commissioning within 1 year after completion.
 - Provide annual re-commissioning services for a minimum of 2 years.
 5. Sub-Metering:
 - Provide, at minimum, building level meters to measure electricity, water, natural gas (fuel), high temperature hot water, and chilled water usage. For larger building where various sections, floors or applications may exist, provide sub-meters for performance measurement. The Additional sub-meters shall be considered for any space where equipment and systems may consume 25% of the building level energy or water usage.
 - All Sub-meters should be tied back to a location or data closet suitable for remote monitoring.
 6. Sustainability:
 - Projects shall designed for high performance building and/or to achieve a minimum LEED Silver rating under the current LEED-NC or LEED –EB.
 - Consider the following for extra credits:
 - Alternative Transportation, Bicycle storage and racks, changing rooms.
 - Heat Island Effect-Roofs: use an energy simulation model to evaluate and determine the roof color based on Life Cycle Cost Assessment.
 - Recycled content (5% or higher) for a combination of post-consumer and pre-consumer.
 - Indoor Air Quality (IAQ) Management Plan.
 - Low Emitting Materials: for adhesives, sealants, paints and coating, carpet and floor systems.
 7. Education:
 - Projects to be designed and constructed to serve as educational learning to inspire the building occupants about energy and sustainability.
 - Provide Real-time energy display(s) in a space as designated by the Town.
 - Provide posters and interior signs highlighting the sustainability and energy features of the building.
 - Provide a carbon model to estimate the GHG reduction when using sustainability and energy efficiency measures and features.

