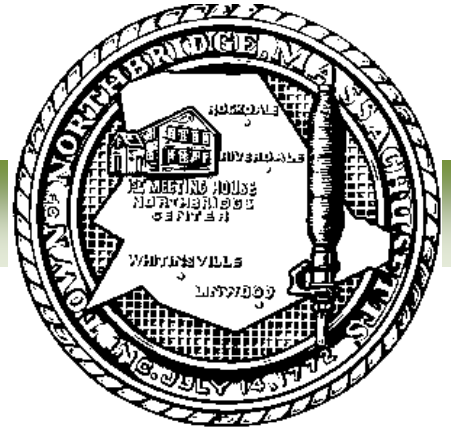




Town of Northbridge Massachusetts



Green Communities Action Plan

September 2010

Prepared by:



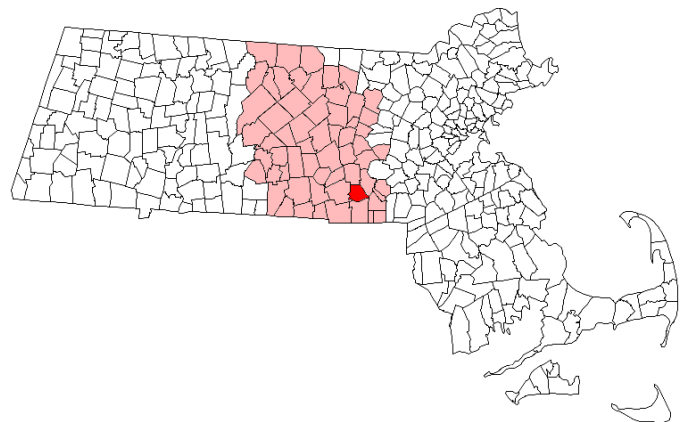
Demand Management Institute

Introduction

The development of this Green Communities Action Plan provides the Town of Northbridge with a set of actions to meet each of the five required criteria to achieve the Green Community designation. The Action Plan provides a comprehensive summary of all the actions that the Town has already taken to date and identifies the critical remaining steps to meet all five criteria and successfully become a Green Community. With the Green Community designation, Northbridge will become formally recognized as a sustainability leader in the Commonwealth, gain financial and environmental benefits through municipal energy savings and reduction of greenhouse gas emissions, and potentially attract new economic development opportunities within a rapidly expanding green economy. Lastly, as an official Green Community, the Town of Northbridge will qualify to apply for Green Communities grants for studying, designing, constructing or implementing energy efficiency and renewable or alternative energy projects including but not limited to:

- Energy conservation measures and projects
- Procurement of energy management services
- Installation of energy management services
- Adoption of demand side reduction initiatives
- Adoption of energy efficiency policies.
- Financing the siting and construction of renewable or alternative energy projects on municipally-owned land

The Town of Northbridge is a growing suburban town made up of several villages, including Linwood, Northbridge, Riverdale, Rockdale, and Whitinsville. It is located in the Blackstone River Valley of south central Massachusetts approximately 46 miles west of Boston. Northbridge has good highway access to Interstates 90, 146, 395, and 495, as well as rail access to the ports, airports, and intermodal facilities of Worcester, Providence, and Boston. Northbridge is bordered by Upton and Mendon on the east, Uxbridge on the south, Sutton on the west, and Grafton on the north.





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Town of Northbridge Facts

Population (2000 US Census)	13,182
Date Incorporated as a Town	1772
County	Worcester
Total Land Area	18 square miles
Regional Planning Commission	Central Massachusetts RPC
Housing Units (2000 US Census)	4,955
Number of Municipal Buildings	25
Number of Municipal Vehicles	57

The Town of Northbridge was annexed from Uxbridge in 1772 and was established as a district. Subsequently, in August of 1775, by general act, it became a town. Historically, Northbridge played a major role in early American industrial development, due to its natural resources (i.e., the Mumford and Blackstone Rivers) and strategic location to Worcester and Providence. At various times during the Industrial Age it was a leading manufacturer of cotton goods, boots and shoes, lumber, leather and, with the Whitin Machine Works in Whitinsville.¹ A number of the historic mill buildings have been renovated into housing and various businesses.

Northbridge has four schools within its borders and one school administration building. Northbridge schools include: Balmer Elementary School; Northbridge Elementary School; Middle School; and High School.

On July 13, 2009, the Northbridge Board of Selectmen voted to approve the composition of the 'Green Committee' as an advisory board to the Town. The Green Committee is tasked with exploring opportunities to use energy more efficiently and to eliminate energy waste in Northbridge.


The application established and provided evidence that the Town met some of the requirements of the Green Communities Criteria (meeting one or more is required for eligibility). A summary outline of the application is provided below:

- **As-of-Right Siting.** Research and Development (R&D) and Manufacturing uses are allowed as-of-right (no special permit required) in Northbridge's Limited Industrial District (I-2). Manufacturing and light industrial uses are also allowed as-of-right in the Industrial (I-1).
- **Expedited Permitting Process.** Northbridge has adopted the Chapter 43D Expedited Permitting Program and has designated two Priority Development Sites.
- **Established energy baseline for all building, vehicles and streetlights and commits to reducing baseline by 20% over five years.** Northbridge has not established an energy usage baseline yet, but has participated in MassEnergyInsight training.
- **Procure Fuel Efficient Vehicles.** Northbridge has no policy in place for the procurement of fuel-efficient vehicles for municipal vehicles.

¹ Town of Northbridge, *Code of the Town of Northbridge Massachusetts*, Version 9, Updated December 15, 2007.

Status of the Five Criteria At A Glance

**As-of-Right
Siting/Zoning**



Complies

**Expedited
Permitting
Process**



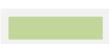
Complies

**Energy Baseline
and Reduction
Plan**



Needed

**Fuel-Efficient
Vehicles**



Needed

**Efficient New
Construction/
Stretch Energy
Code**



Needed

- **Require all new construction to minimize life-cycle cost of the facility by utilizing energy efficiency, water conservation and other renewable or alternative energy technologies.** Northbridge is considering adopting the Board of Building Regulations and Standards (BBRS) Stretch Code.

1. Summary of Initial Site Visit

On October 28, 2009, VHB, the consultant providing Northbridge with technical assistance in support of its Green Communities Action Plan, met with town staff, including Theodore Kozak, Town Manager, R. Gary Bechtholdt II, Town Planner, Richard Sasseville, Department of Public Works (DPW), James Sheehan, Building Inspector, and Paul Halacy, Schools Department. Kelly Brown, Regional Coordinator for Green Communities, also attended the meeting. Felipe Schwarz, Project Manager of VHB first provided an overview of the Green Communities Planning Assistance program and the goals of the technical assistance that will be provided. VHB's team also includes a subconsultant, Demand Management Institute (DMI), who provided technical assistance on the energy baseline and reduction and Stretch Energy Code outreach tasks.

The consultant team reviewed Northbridge's application for planning assistance. Town officials provided additional clarification on the town's progress on each of the criterion. The group

brainstormed on how to further the town's progress toward meeting the designation requirements during the planning assistance program and identified possible gaps or challenges. The consultant team further clarified and provided guidance on how Northbridge might meet the designation requirements.

After a thorough review of Northbridge's application, the group discussed possible presentation or workshop topics that would be helpful as part of the technical assistance program. The consensus was that a technical presentation on the Stretch Energy Code, including a question and answer session for building inspector staff and other interested individuals would be helpful. The group also felt that a meeting with the Green Committee to discuss next steps and provide guidance and purpose would be beneficial. Appendix A provides detailed meeting notes and a sign-in sheet of the initial site visit.

1

As-of-Right Siting for Renewable/ Alternative Energy Facilities

Green Communities Criterion #1

Provide for the as-of-right siting of renewable or alternative energy generating facilities, renewable or alternative energy research and development (R&D) facilities, or renewable or alternative energy manufacturing facilities in designated locations.

1. Background

A municipality must provide for as-of-right siting of renewable energy or alternative energy (RE/AE) generating facilities, RE/AE research and development (R&D) facilities, or RE/AE manufacturing facilities in designated locations. Green Communities Program guidance outlines the definitions of RE/AE as well as the requirements for R&D and manufacturing facilities. Additionally, the Green Communities Program has identified specific types of RE/AE generation facilities that are applicable to this criterion. They include:

- wind turbines (minimum of 600 kW in size);
- single ground-mounted system of solar photovoltaic (minimum 250 kW); or
- biomass combined heat and power generation in a stand-alone building (minimum of 5 MW).

As-of-right siting refers to the allowance of a particular use, such as those described above, by right within the zoning bylaws/ordinances. In short, the bylaws/ordinances do not unreasonably regulate such development nor do they require a Special Permit. As described in the criterion, the as-of-right siting is only required in the location(s) designated by the community for the use(s) selected. In some cases, the placement of these uses may already be allowed by right in the current zoning bylaws/ordinances as a permitted use for specific locations identified by the community, such as an

Industrial District. In other cases, the zoning bylaws/ordinances may need to be amended to allow as-of-right siting for the particular facility(ies) in the location(s) designated by the community. This may be accomplished in different ways, such as a change to the existing use table or the creation of a new zoning overlay district. Any zoning amendment would require the applicable local legislative approval method, as required by the Commonwealth's Zoning Act (M.G.L. Chapter 40A). If already allowed or once enacted, the as-of-right siting will allow an individual, business, corporation or governmental entity to establish the RE/AE facility identified in a specified location selected by the community, by right and without unreasonable regulation or special permit. Other permits may continue to be required for construction (such as conservation commission permits, air quality permits, building permits, fire code standards) or doing business (such as state or local licenses).

2. Progress to date

According to the Town of Northbridge's Zoning Bylaw, Article V, Use Regulations, Research & Development (R&D) uses, including laboratory for scientific, agricultural, or industrial research are allowed as-of-right (without a special permit) in the Limited Industrial (I-2) District. Manufacturing and light industry uses are allowed as-of-right in both the Industrial (I-1) and Limited Industrial (I-2) Districts.

The Town's Zoning Bylaw does not currently allow by right renewable energy/alternative energy (RE/AE) generation uses. However, the Town is interested in evaluating how the Zoning Bylaw might be amended to include RE/AE generation uses by right either through the creation of overlay districts or a bylaw specific to renewable energy generation. Based on the Massachusetts Technology Collaborative (MTC) wind resources map, some locations exist in Northbridge that meet the 14 and above miles per hour wind speeds.²

While Northbridge does not specifically provide as-of-right siting of RE/AE generation facilities, Northbridge is interested in pursuing and promoting RE/AE generation projects within the Town. These efforts are described further below.

3. Method for Meeting Criterion

Type of as-of-right zoning

As described in the previous section, Northbridge currently complies with the criterion to provide as-of-right siting for the development of RE/AE R&D and/or manufacturing facilities.

Documentation

Northbridge will provide a letter from the Town Counsel confirming that the Town of Northbridge's I-1 and I-2 zoning districts allow for R&D and manufacturing of RE/AE activities as defined by DOER. In addition, the letter will provide yield calculations or

²

http://www.masstech.org/RenewableEnergy/Community_Wind/maps/Wind%20Resources_NORTHBRIDGE.pdf



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statements that adequately zoned sites are available for RE/AE R&D and RE/AE manufacturing facilities, demonstrating that there is land available for the construction of a facility or facilities of 50,000 square feet or larger. Additionally, the letter from the Town Counsel will confirm that any permitting procedures that require a Special Permit are not required for RE/AE R&D or RE/AE manufacturing uses that may be proposed within I-1 or I-2 sites.

4. Steps Completed During Planning Assistance

The following steps were completed during the Planning Assistance:

- VHB reviewed the Northbridge Zoning Bylaw.
- VHB provided model bylaws as guidance.
- VHB confirmed that a letter from Town Counsel is required.
- VHB reviewed zoning and map of Industrial zoning districts.
- VHB reviewed current zoning for siting as-of-right RE/AE generation.

5. Action Items & Schedule

In order to apply to become designated as a Green Community, the following tasks are required to meet this criterion and submitted to DOER as part of a Green Community Designation documentation package.

Action Item	Person Responsible	Completion Date
Submit the required documentation for Green Communities Designation Application including the following materials:	Town Planner/Town Counsel	Within 6 – 9 months
1. Letter from municipal counsel certifying that the existing zoning complies with the RE/AE Facilities criterion	Inspector of Buildings/Town Counsel	Within 6 – 9 months
2. The applicable section of zoning bylaw/ordinance	Inspector of Buildings/Town Planner	✓
3. Copy of zoning map that shows area zoned	Inspector of Buildings/Town Planner	✓
4. Important zoning definitions	Inspector of Buildings/Town Planner	✓
5. The relevant section of the use table and any key that will help DOER interpret the use table	Inspector of Buildings/Town Planner	✓
6. Any related local regulations applicable to facilities sited under the bylaw/ordinance—such as site plan review regulations—so that DOER can confirm that the related local regulations are non-discretionary;	Inspector of Buildings/Town Counsel	Within 6 - 9 months



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7. Yield calculations must be either included in the text of the letter or attached.

Inspector of
Buildings/Town Counsel

Within 6 - 9 months

✓ Provided in Appendix B

2

Expedited Permitting

Green Communities Criterion #2

Adopt an expedited application and permitting process under which these energy facilities may be sited within the municipality and which shall not exceed 1 year from the date of initial application to the date of final approval.

1. Background

To qualify as a Green Community, a municipality must adopt an expedited permitting process for RE/AE facilities sites identified in Criterion #1. The expedited timeframe for permitting shall not exceed one year from the date of initial application to the date of final approval. By adopting an expedited permitting process, the municipality is committing to making local permitting decisions within one year. The one year deadline will be established with an effective enforcement mechanism which is the inclusion of constructive approval provisions within local bylaws/ordinances or regulations. An expedited permitting process is accomplished by providing a transparent and efficient process for municipal permitting by various boards, including but not limited to, the Planning Board, Conservation Commission, Historic Commission, Zoning Board of Appeals, Fire Chief, and Board of Health. The result is a streamlined procedure that is efficient for municipal staff and boards to implement, and that will provide a predictable schedule for decision making for the applicants.

2. Progress to Date

The Town of Northbridge currently meets this criterion as there are two Priority Development Sites under Chapter 43D Expedited Permitting within the I-1 and I-2 Districts, which allows “as-of-right” siting for RE/AE R&D and manufacturing.

In November 2008, properties along Main Street and 670 Linwood Avenue (Linwood Cotton Mill property) were approved by the state for Priority Designated Site designation under Chapter 43D.

Main Street Properties

The following parcels are included as part of the 'Main Street Properties' 43D Priority Development Site:

- 1164 Main Street Assessors Map 1 Parcel 113;
- 1110 Main Street Assessors Map 1 Parcel 114;
- 1096 Main Street Assessors Map 1 Parcel 115;
- 1160 Main Street Assessors Map 1 Parcel 185; &
- Vacant parcel, Assessors Map 1 Parcel 199

Linwood Cotton Mill Property

The Linwood Cotton Mill is located in the Linwood Village District of Northbridge. This mill complex is included in the Linwood Cotton Mill National Register Historic District. This historic mill structure is located at 670 Linwood Avenue (a main arterial street connecting east/west Route 122 and Route 146) and is situated on the Mumford River within the southeast portion of town bordering Uxbridge, MA. The site is serviced by public water/sewer & natural gas and the Providence & Worcester Railroad lies directly to the east of the site.

No longer a working mill, the site consists of several outbuildings, waterway and dam, encompasses approximately 120,000 square feet of space on approximately 27 acres. The site is located within the I-1 District.

In 2004, the Town adopted a Historic Mill Adaptive Reuse District zoning bylaw, establishing an overlay for the Linwood Mill and the John Whitin Mill. The intent of the overlay district is to promote economic development by encouraging the preservation, reuse and renovation of underutilized or abandoned historic mill properties by allowing and encouraging mixed-use development which may include office, business, retail, light industrial, and residential.

3. Method for Meeting Criterion

Type of Expedited Permitting

As described in the previous section, three sites within the Town of Northbridge, designated as Priority Development Sites (PDS), fulfill the Green Communities Criterion 2 for expedited permitting.

Documentation

The Town of Northbridge will provide DOER with a certified copy of their Town Meeting vote designating the as-of-right zoned parcels as Priority Development Sites with its application to become certified as a Green Community. The Town of Northbridge will also submit a copy of the PDS site plans.



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4. Steps completed during Assistance

- VHB documented the Chapter 43D process and Town permitting process

5. Action Items & Schedule

In order to apply to become designated as a Green Community, the following tasks are required to meet this criterion and submitted to DOER as part of a Green Community Designation documentation package.

Action Item	Person Responsible	Completion Date
Compile the required documentation for Green Communities Designation Application	Inspector of Buildings/Town Planner	Within 6 - 9 months
Submit the required documentation for Green Communities Designation Application including the following materials:	Inspector of Buildings/Town Planner	Within 6 - 9 months
1. A certified copy of Northbridge's Town Meeting vote designating the as-of-right zoned parcel(s) as a Priority Development Site ("PDS")	Inspector of Buildings/Town Planner	✓
2. A copy of the applicable map(s) showing the two PDS sites	Inspector of Buildings/Town Planner	✓

- ✓ To be provided by the Town Planner.

3

Energy Use Baseline Inventory and Reduction Plan

Criterion #3

Establish an energy use baseline inventory for municipal buildings, vehicles, street and traffic lighting, and put in place a comprehensive program designed to reduce this baseline by 20 percent within 5 years of initial participation in the program.

1. Background

To fulfill Criterion 3, a municipality must establish an energy use baseline inventory for municipal buildings, vehicles, street and traffic lighting, and put in place an Energy Reduction Plan designed to reduce this baseline by 20 percent within five years of initial participation in the program. The energy use baseline inventory should be applied in the aggregate across buildings, streetlights, traffic lights and vehicles on a million British Thermal Units (MBTU) basis. There are a number of acceptable tools for performing the inventory including:

- **MassEnergyInsight:** In 2010, the DOER developed a new energy information reporting tool created MassEnergyInsight, a robust, easy-to-use, energy information system with customized electriTown, natural gas and oil usage details for cities and towns across Massachusetts. This web-based tool is provided at no cost to the municipality and offers a wealth of information that provides the foundation for critical decision making,
- **Energy Star Portfolio Manager:** This is a free energy and water consumption tracking software available on the Energy Star website. This program allows an entity to track and assess energy and water consumption within individual buildings (generally consisting of at least 5,000 square feet) as well as across numerous buildings. This program does not assess the energy consumption of vehicles, street or traffic lighting.
- **ICLEI Software:** The ICLEI software, Clean Air and Climate Protection (CACP) Software, is a one-stop emissions management tool that calculates and tracks emissions and reductions of greenhouse gases and criteria air pollutants. This tool



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is available, free of charge, to members of ICLEI and has the capability to assess buildings and facilities, vehicle fleets, waste, wastewater treatment, employee commute, street and traffic signals, and port and airport facilities.

- Other tools proposed by the community and deemed acceptable by DOER

Once the energy use baseline inventory has been established, the community must develop an Energy Reduction Plan to decrease energy consumption by 20 percent consisting of a number of key components which would enable a municipality to establish energy reduction goals and develop a structure to meet those goals over a five year time frame.

2. Quantification of Energy Use

The Town of Northbridge is structured such that the school system is managed separately from the municipal buildings. All decisions pertaining to day-to-day operations and maintenance are therefore either in the hands of the Town Director of Public Works or the School Business Manager. Capital intensive upgrades to School or Municipal property must be approved by the Town's Board of Selectmen and voted upon per Massachusetts Open Meeting guidelines.

The lists of school and municipal properties presented below are assets the town directly controls and they are divided based upon the best contact to discuss management and energy matters.

Town Assets and Management

The Town of Northbridge provides services to its 13,182 residents through multiple departments that have day-to-day operating budgets. Capital intensive upgrades and annual budgets must be approved by the Board of Selectmen and Town Meeting.

The lists of properties presented below are assets the Town directly controls and they are divided based upon the best contact to discuss management and energy matters.

Municipal Property

Northbridge Schools

Contact: Melissa Walker, Business Manager, (508) 234-8156



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- Northbridge High School
- Northbridge Middle School
- Northbridge Elementary School
- Balmer Elementary School
- Administration Building
- Street Lights
- Non-leased Vehicles

The schools have several vans and several pickup trucks (some fitted with plows) as well as three electric vehicles that were donated to the Town several years ago.

Energy matters and energy efficiency scoping work will require input from Paul Halacy, Director of Buildings & Grounds. The Schools pay bills on some street lights.

Municipal Property

Contact: Dick Sasseville, Director of Public Works, (508) 234-3581

- Town Hall
- Whitinsville Social Library
- Northbridge Senior Center
- Aldrich Early Education Center
- Main Fire Station
- Rockdale Fire Station
- Police Station
- DPW Highway Garage and Support Buildings (5)
- Northbridge Wastewater Treatment Plant
- Sewage lift stations (5)
- Upton Street Water Supply Booster Station
- Veterans Building
- Street Lights and Signals
- Building Inspector's Vehicle and Senior Center Bus/Vans

Whitinsville Water Company, a private enterprise, is overseen by the Northbridge Water Division. Half of the town's distribution is managed by Whitinsville Water Company while the other half is managed by the town. The Upton Street Booster Station is the only portion of the town-managed distribution system that uses energy.

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The Veterans Building is owned by the town but the majority of the building is leased to the VFW. The veterans affairs coordinator is a town official, and his office is the only portion of the building that is not leased.

There are approximately 1,200 street lights in town, many of which are owned by National Grid. The Town owns lights mounted on National Grid poles and also owns some subdivision lights and poles. Ornamental lights are owned by the town. Table 1, below, summarizes the types of ownership, billing rate type, and the approximate number of street lights.

Table 1
Summary of Municipal Street Lights

	Pole Ownership	Light Ownership	Billing Rate	Number of Lights
Type 1	Utility	Utility	Municipal Streetlight	~990
Type 2	Utility	Town	↓	~90
Type 3	Town	Town	↓	~70
Ornamental	Town	Town	General Service	~50

The town owns street signaling lights in Memorial and Ovan Squares, a flashing light at the intersection of Hill and Sutton Streets, and two school zone flashing lights. Signals on state highways are owned by the state.

Town-owned streetlights (Types 2, 3, ornamental) and signals need to be included in the baseline energy use calculation.

Energy Providers and Sources of Energy Data

Electricity for the entire town is provided by National Grid. The Town holds electrical generation purchasing contracts with Constellation Energy for municipal accounts; the school system holds contracts with Suez Energy.

Natural gas is available in all portions of the Town, and is provided by NSTAR Gas.

Heating oil is purchased from either Buckley Energy or Dennis K Burke for all school and town buildings. This contract is managed by the schools and is renewed each July for the coming fiscal year. The contract is awarded based on the lowest bid, and the contract tends to change from one company to the other each year. The fiscal year 2010 contract was awarded to Dennis K Burke.



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Propane is provided by Osterman Propane, and is used to power emergency generators at four of the six wastewater pumping stations. Consumption is typically limited to 1-hr generator exercise periods each week.

Diesel and gasoline for vehicles and equipment is purchased through Peterson Oil. The majority of fuel is purchased at Peterson's service station located at 191 Providence Road. The police station and the DPW highway garage have storage tanks to fuel vehicles when the service station is closed.

Calculation Methodologies

Prior to involvement in the Green Communities process, Northbridge had not employed a method of consolidating energy billing data to track end use consumption.

Going forward, the Town hopes to use MassEnergyInsight which allows for instant download of electricity and natural gas consumption information from large utilities. Monthly consumption of gasoline, diesel, heating oil, and propane will need to be entered manually by Town staff.

Data that is manually entered into MassEnergyInsight may need to be manipulated if billing cycles do not coincide with the end of each month. For example, if a billing cycle starts on June 12, 2009 and ends on July 15, 2009, the energy use during July will be calculated using the following expression:

$$\text{July 2009 Energy Use} = \text{Energy Use for Billing Period} * 15 \text{ Days in July} \div 33 \text{ Days in Billing Period}$$

For purposes of normalizing heating fuel consumption relative to variations in weather, natural gas and heating oil consumption values should be divided by the number of heating degree days (HDD). Modified heating fuel consumption value for the year can then be calculated by multiplying the units/HDD value by the baseline year HDD value. Normalization of electricity data for buildings with electric heat is not possible without sub-metering data for the facility heating equipment.

In the event that records of gas and diesel purchases do not reflect the total gallons consumed, the volume will need to be calculated based on monthly average fuel costs. This information is likely to be most easily obtained through Peterson Oil.

The overall energy consumption of all municipal and school buildings, fleets, and other holdings will be combined into a single value that will represent the energy consumption of the Town for one year.



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Energy Use Baseline

The baseline year can be 2007, 2008, or 2009, and the Town can choose which data set to utilize. Furthermore, the Town can choose whether to report energy consumption based on the calendar year or fiscal year.

The deadline for achieving a 20 percent reduction in energy use is five years after the end of the baseline year.

Northbridge anticipates calculating savings for each fiscal year relative to the consumption data for fiscal year 2009 (the period July 1, 2008 through June 30, 2009). The Town will need to achieve a 20 percent reduction in energy use by June 30, 2014 to maintain their Green Communities status.

Going forward, the baseline energy consumption will not be adjusted for any of the following reasons:

- The construction, demolition, or transfer of ownership of Town buildings¹
- The acquisition or loss of Town vehicles
- The expansion of the wastewater collection system or the water supply system to service new customers

Exempt energy end uses include the following:

- Commercial space and vehicles that are leased by the Town
- Street light fixtures and signals that are owned by the state or electric company

New Construction, Renovations and Replacement of Buildings

In order to address issues within a municipality's proposed Energy Reduction Plan related to new buildings or renovations or additions to municipal buildings, the following provides guidance for all communities as they draft their plans:

- For building stock added after the energy baseline was completed but during the Energy Reduction Plan timeframe (five years), the additional energy load from these buildings will not be added into the consumption profile and therefore the additional load will not be factored into the 20 percent reduction target. However, the MassEnergyInsight tool will be able to monitor the performance of these buildings, which will be built to the Stretch Code, and if a community is designated, it will be expected to monitor the performance of this building under its Green Communities reporting to verify that it is performing as designed and modeled. If it is not, a corrective action plan must be developed and implemented to correct the building's performance.
- Renovations that occur after completion of the baseline but during the Energy Reduction Plan timeframe (five years) will be factored into the 20

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percent reduction. This is not additional space and should be done such that the space will be more efficient than it was before the renovation.

- For additions that occur after completion of the baseline but during the Energy Reduction Plan timeframe (five years), after the addition comes on line, the energy load for that building counted towards the 20 percent reduction target will be pro-rated based on the building square footage. For example, if an addition provides an additional 30 percent square footage for the building, then 70 percent of the energy bills will be accounted for in monitoring the community's progress towards meeting the 20 percent reduction target.
- For communities that select to use a baseline that goes back two years, and then after the baseline year new buildings came on line, the additional load from these buildings will not be added into the consumption profile and therefore the additional load will not be factored into the 20 percent reduction target. However, as part of the Green Communities designation application and the Energy Reduction Plan, the community should address these buildings separately, noting how these building were built to be as energy efficient as possible and what the energy performance of the building was designed to meet. The Energy Reduction Plan must include a separate monitoring program for these buildings to ensure that they are performing as designed and modeled, and include a plan for corrective actions if they are not.
- For buildings that are removed from the building stock after the baseline was completed but during the Energy Reduction Plan timeframe (five years) and are not replaced by a new building, once these buildings are removed, the baseline will be readjusted to subtract that building and the 20 percent reduction target will be revised accordingly.
- For buildings originally included in the baseline that go offline and are replaced by a new building, the baseline will not change, and the new building will be included in the 20 percent reduction target.
- At any time, a community can petition DOER to consider modification of its baseline. For example, a community may replace an existing smaller school with a new school that is significantly larger, with a pool added, etc, and they may wish to adjust its baseline to take this added square footage and energy use data into consideration. DOER reserves the right to approve or deny any such petition.

Presentation of Results

If the Town is successful in obtaining Green Community designation, an annual energy use report will need to be completed by the Director of Public Works or appropriate staff within six weeks of the end of each fiscal year (August 15). The purpose of this annual report is to do the following:

- Provide a status update on progress toward the 20 percent reduction goal



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- Explain factors that either increased or decreased total Town energy consumption
- Describe efforts undertaken during the previous year to reduce energy use
- Describe efforts that will be undertaken during the coming year
- Describe changes to the original energy reduction plan if it is found that the original scope of effort is unlikely to result in the 20 percent energy reduction target

DOER is planning to release specific reporting guidelines for reporting content and format for Green Communities. In the absence of this guidance, the Town will include the following items in annual energy reports:

- A bar chart illustrating how the overall energy use of the Town has varied over past years. The 20 percent energy use reduction target will be indicated by a horizontal line passing across all of the columns. MassEnergyInsight will be capable of producing this chart.
- A chart illustrating the distribution of energy use among the major end use groups listed below. Additional charts will be included that further break down energy use within each major end use group. MassEnergyInsight will be capable of producing these charts.
 - Town Buildings
 - School Buildings
 - Town Vehicles
 - School Vehicles
 - Wastewater Treatment
 - Water Supply
 - Street Lights & Signals
- Tables presenting normalized energy use for each end use account
 - Buildings will be compared on a kBtu/yr·ft² basis (thousands of Btu per year per unit area of conditioned space)
 - Vehicle fuel will be compared based on gallons consumed
 - Street lights and signals will be compared based on annual kilowatt-hours
 - Wastewater and water supply systems will be compared based on kBtu per million gallons of effluent treated or water supplied during the year



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3. Energy Reduction Strategies

The third goal of the Green Communities process is to reduce municipal energy use by 20 percent within five years of the baseline year. This document serves as a roadmap that describes steps that have already been taken by the Town, current plans for on-going optimization, and potential future modifications that can help achieve the target reduction.

The Town will create an Energy Reduction Plan within one year of the submission of this initial Green Communities planning document that will include specific projects to be undertaken and their estimated impact on energy use.

The following sections provides a snapshot at previous energy reduction measures, current initiatives, potential measures to be considered within a future Energy Reduction Plan and resources that the Town of Northbridge may consider when creating the required Energy Reduction Plan.

Past Efforts

The Town has taken advantage of National Grid incentive programs to upgrade lighting in the Middle School approximately ten years ago and again five years ago. Lighting systems in the High School were upgraded approximately 5 years ago.

A public safety committee worked with the police to determine whether any streetlights could be turned off. Approximately 120 lights owned by National Grid were subsequently taken out of service. Note that Table 1 above includes these non-operating fixtures within the Type 1 fixture count.

The Town established the Green Committee in 2009 with the goals of improving the energy performance of the town and raising general awareness of environmental issues within the community. Recycling is handled by a separate committee.

Current Efforts

The Town has recently applied to become a Green Community and is in the process of implementing this action plan.

The Town is currently discussing participation in National Grid's Building Optimization program. At no charge to the town, National Grid provides a consultant to review one large building of their choice for upgrades to building envelope, lighting, and HVAC systems. The Town has not yet selected a building to be reviewed. The consultant identifies opportunities that may qualify for incentives from National Grid that may then be studied in greater detail. The survey also includes recommendations for improvements that



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National Grid cannot provide incentives for such as improvements that save gas, oil, or other energy sources.

National Grid has also discussed the current Small Business program with the town. An unlimited number of sites with a maximum power demand less than 200 kW are eligible for participation. National Grid maintains a pool of lighting specialists that assess opportunities for lighting fixture and lighting controls upgrades. There is no limit on the number of walk-through audits. Retrofit projects are eligible for a 70% incentive and zero-interest financing on the remaining 30% of the project costs. The town would pay down their portion of the payment through monthly utility bills.

National Grid is in the process of reviewing the wastewater treatment plant to identify demand response and energy efficiency opportunities.

The Town is part of the initial focus group for the rollout of MassEnergy Insight.

The fire stations and public works buildings are currently planned to be replaced with new facilities. The town is also hoping to upgrade the Town Hall heating system and windows and improve the Senior Center. All of these projects present opportunities for improving energy performance.

The Town is currently on the waiting list for participation in DOER's energy audit program.

Potential Measures for Energy Reduction Plan

HVAC & Controls Improvements

All buildings should be reviewed to identify systems or equipment that are not operating as designed.

- The buildings should be reviewed for these potential issues:
 - Excessive ventilation rates
 - Poor control of ventilation scheduling (e.g. bringing fresh air into unoccupied buildings)
 - Inoperable economizer controls
 - Broken damper linkages
 - Overridden setpoints in control systems
 - Timeclock schedules that do not correspond to actual use patterns
 - Pumps operating against partially closed valves

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- Static pressure and differential pressure setpoints that are higher than necessary
- Consider hiring a testing and balancing contractor to review problematic buildings with a history of occupant comfort complaints or in systems with variable speed controlled fans/pumps that operate at high speeds when system loads are low.
- Review facility operation during unoccupied hours to identify equipment that is operating unnecessarily. Lights, large HVAC equipment, and pumping systems are common culprits.
- Install programmable thermostats to control all systems where setback is possible, and program the thermostats to allow space temperatures to be set back to 60°F or cooler and 85°F or warmer. Care should be taken to ensure proper freeze protection. Equipment rooms with electric unit heaters commonly have broken controls or controls that are set warmer than necessary. Mail-in rebates from Energy Star may be available for these thermostats.
- Air sealing of buildings is a standard approach to reducing heating costs. Care needs to be taken when reducing infiltration to prevent conditions favorable to mold formation. Improved ventilation control may be required in some cases. Energy recovery ventilators can reduce operating costs associated with increased mechanical ventilation airflow rates.
- Spaces with high design occupancies, such as auditoriums, may be over-ventilated relative to the number of people who are actually present for many business hours. Demand controlled ventilation controls allow ventilation rates to be reduced without compromising indoor air quality.
- Energy recovery ventilators are cost effective in situations where the outside air fraction must remain above 60 percent during non-economizer hours. For systems that do not require this much outside air, demand controlled ventilation controls are generally more cost effective.
- Ensure that all pipes, valves, and system components are insulated for space heating systems and domestic water heating systems.
- Consider installing thermostatically controlled valves or autovalves on radiators serving buildings with limited space temperature control capability. Digital control systems are an alternate approach that provide increased management and monitoring flexibility but at a higher cost.
- Place exhaust fans on timeclock or occupancy sensor control to minimize unnecessary exhausting of conditioned air.

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- Engage a company knowledgeable about the latest boiler and burner technology to review existing heating plants to determine whether cost-effective improvements can be made. The installation of advanced combustion controls with sealed air intake can improve overall system performance and reduce building infiltration.
- Implement policies requiring specific guidelines for unoccupied equipment operation in buildings. Regularly tour unoccupied buildings to ensure compliance.

Lighting Improvements

- Drive through Town and identify street lights and other exterior lights that are operating unnecessarily during the day.
- Turn off street lights if it is acceptable to residents and does not pose a public safety or property damage issue. Street lights can also be retrofitted with lower wattage, higher efficiency lamps and ballasts.
- Continue to take advantage of utility lighting efficiency programs to upgrade interior lighting systems. Improvements include reballasting and relamping with high efficiency T8 technology, the installation of occupancy sensors, and implementation of daylighting controls near exterior windows.
- Identify spaces that may be over-lit relative to illumination levels required for typical tasks. Replace fixtures or lamps as needed.
- Modify lighting system circuits to allow for multi-level switching. For example, allow fixtures along exterior walls with windows to be turned off.
- Utilize task lighting rather than general lighting provided that the changed light levels do not pose safety issues.

Building Envelope Improvements

- Fill uninsulated walls with an insulation product such as cellulose or foam. Care needs to be taken to manage condensation and avoid the creation of indoor air quality problems.
- Utilize the Energy Star Thermal Bypass Checklist to identify areas where infiltration is most commonly found, and properly seal voids, gaps, and cracks.
- Replace old single-pane windows with Energy Star rated windows. The greatest energy impact will be in buildings with low internal heat gains and leaky, double-hung windows.

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- Review historic buildings that may have been constructed with gravity air distribution systems to ensure that old chases are completely blocked at the roof and pickup points. If buildings still rely upon gravity systems, consider installing ductwork, dampers, and fans to bring ventilation rates under control.
- Retrofit exterior doors to minimize infiltration. In entrance areas that are routinely under-heated during the winter, consider installing a second set of doors to create an unconditioned air lock.

Process Equipment Improvements

- Review lab hood systems at the schools to ensure that safe ventilation rates are maintained and that the hoods do not operate excessively.
- Review exhaust systems serving vehicle bays to ensure that safe ventilation rates are maintained and that conditioned air is not unnecessarily being exhausted. Automatic controls utilizing carbon monoxide sensors could be of use.
- Review pumping systems to ensure that throttling valves are more than 90 percent open; consider the installation of VSDs on systems that are routinely more heavily throttled.

Vehicle Improvements

- Review the age and mileage performance of trucks, buses, and cars that the Town owns and determine whether the lower operating costs associated with new, fuel efficient vehicles would justify replacement of older models. There may be grant programs for improving bus fleets.

Alternative Energy Systems

- Solar hot water systems are the most cost effective option in the alternative energy market and should be considered for sites with good solar exposure, a moderate to heavy service water load, and an older or inefficient hot water generation system.
- Photovoltaics should not be pursued until all efficiency projects in the Town are complete and there is money to spare.
- Ground-coupled heating and cooling systems are commonly called 'geothermal' systems and are mistakenly regarded as a kind of renewable energy. Ground-coupled heat pump systems can lead to reduced heating costs but retrofits of existing heating systems are generally not cost effective.



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Energy Reduction Plan Resources

The DOER's energy efficiency walkthrough program is being funded in 2010 and there may be opportunities for further participation. The Town is already on the waiting list for participation.

The major gas and electric utility companies offer considerable expertise and resources for municipalities searching for ways to improve energy performance. Facility managers should remain in contact with their utility representatives and fully understand the requirements of the prescriptive and custom incentive programs. One major benefit of working with utilities is the offer of free or reduced cost scoping studies and their standard 50/50 cost sharing offer for focused engineering studies.

Municipalities can independently hire consultants to perform comprehensive operations and maintenance (O&M) reviews of Town buildings and facilities. These services can help managers prioritize projects relative to budget constraints, risks to equipment/building longevity, and energy performance goals. It is important that these consultants be aware of utility incentive program requirements/opportunities and the Town's goal of reducing energy consumption by 20 percent.

MassEnergyInsight will allow each building within the Town to be compared on a Btu/ft² basis. Additional benchmarking resources exist that allow a building's annual energy use to be compared to other buildings within the geographical region. Energy Star's portfolio manager provides a performance score for specific building types (e.g. schools, office buildings) based on historical utility data and building use details. More information can be found at the following website:

http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfolio_manager_benchmarking

The Town should consider subscribing to National Grid's Energy Profiler Online service to access historical 15-minute demand data for facilities on the large commercial rates (monthly demand >200 kW). This data can be reviewed to determine a facility's demand profile during unoccupied hours. If unoccupied demand is more than 10 percent of the normal occupied period demand, then there may opportunities for setting back or turning off equipment. This data is also useful in identifying equipment response to programmed building schedules and past changes in operating strategies.

4. Method for Meeting Criterion

Upon the Town's participation with the MassEnergyInsight tool, the fiscal year 2009 utility data will need to be reviewed and fuel use data will need to be entered into the



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system. Additional inputs include the conditioned floor area of each building. This process will create the baseline energy consumption number that the Town will work against over the next five years. The results of the baseline analysis will be contained in an initial energy use report. This report will be submitted to DOER.

Then, the Town will need to determine which steps they will be taking to achieve the required 20 percent reduction in municipal energy. The approach will need to be documented in an Energy Reduction Plan that must be filed with DOER's Green Communities Program.

The Energy Reduction Plan will include summaries of the recommendations prepared by various consultants and vendors as well as opportunities the Town has identified. Estimates of energy savings and costs for each action will be included in the plan.

Upon completion, the Energy Reduction Plan will need to be approved by the Board of Selectmen, whoever has the authority to approve such a plan. In addition, since the baseline will include Northbridge schools, DOER requires approval of the Energy Reduction Plan by the appropriate school department representative (ie, either Superintendent of Schools or School Committee) in accordance with typical Town procedures.

Documentation

The Town of Northbridge will provide DOER with the identified energy baseline reporting tool, which is likely to be DOER's MassEnergyInsight tool, the results of the baseline inventory, and an approved Energy Reduction Plan that describes how the Town will reduce energy use by 20 percent over the next five years.

5. Steps completed during Assistance

- VHB/DMI identified the necessary information required to develop the energy baseline.
- DMI reviewed all energy data submitted for review.
- VHB/DMI met with and presented to the Town to discuss all energy information data to better grasp the extent of municipal energy use and initiatives.

6. Action Items & Schedule

In order to apply to become designated as a Green Community, the following tasks are required to meet this criterion and submitted to DOER as part of a Green Community Designation documentation package.



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Action Items	Person Responsible	Completion Date
Attend MassEnergyInsight training session	Department of Public Works	✓
Configure MassEnergyInsight tool, review account numbers and enter 2009 fuel data for baseline	Department of Public Works	✓
Identify specific improvement opportunities	Department of Public Works/Green Committee	Within 6 - 9 months
Draft an Energy Reduction Plan	Department of Public Works/Green Committee	Within 6 - 9 months
Compile the required documentation for Green Communities Designation Application	Department of Public Works/Green Committee	Within 6 - 9 months
Submit the required documentation for Green Communities Designation Application including the following materials:	Department of Public Works/Green Committee	Within 6 - 9 months
1. Identification of inventory tool used	Department of Public Works/Director of School Buildings & Grounds	Within 6 - 9 months
2. Provide documentation of results of inventory	Department of Public Works/Director of School Buildings & Grounds	Within 6 - 9 months
3. Copy of plan / specific Actions to be implemented and timeline with milestones to achieve required energy reductions	Department of Public Works/Director of School Buildings & Grounds	Within 6 - 9 months
4. Documentation that both the general government and school district have adopted the energy reduction plan	Department of Public Works/Director of School Buildings & Grounds	Within 6 - 9 months

4

Procurement of Fuel Efficient Vehicles

Green Communities Criterion #4

Purchase only fuel-efficient vehicles for municipal use whenever such vehicles are commercially available and practicable.

1. Background

To qualify as a Green Community, the municipality must enact a policy to purchase only fuel-efficient vehicles for municipal use, whenever such vehicles are commercially available and practicable. The purpose behind this criterion is to reduce carbon dioxide emissions by municipal vehicles, which has a positive impact on the environment and results in costs savings for the municipality. Exempt from this policy are heavy-duty department of public works trucks, police cruisers, fire trucks and school buses. In communities that only have vehicles exempt from the policy, alternate policies to support fuel efficiency are required; such as policies that encourage municipal employees to utilize alternate transportation modes (for example, bicycle, transit) or carpooling.

2. Progress to Date

According to data provided, the Town of Northbridge owns approximately 57 vehicles mostly representing 7 different departments or functions within the Town.

Northbridge does not yet have a purchasing fuel efficient vehicles policy but is interested in drafting and adopting a fuel efficient vehicle policy. The vehicle inventory will be completed with the required information by Town staff and submitted as part of a forthcoming Green Communities designation application.

Upon completion of the vehicle inventory table, the fuel efficient vehicle policy (with completed inventory table) will need to be approved by the Board of Selectmen or whoever has the authority to approve such a policy. In addition, since the inventory may include non-exempt vehicles under the control of the school department, DOER requires approval of the fuel efficient vehicle policy by the appropriate school



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department representative (ie, either Superintendent of Schools or School Committee) in accordance with typical Town procedures.

3. Method for Meeting Criterion

Documentation

Northbridge will provide a copy of the adopted Fuel Efficient Vehicle Policy as well as an inventory of existing fleet (model, year, estimated mpg) with plans for replacement with fuel efficient vehicles.

4. Steps completed during Assistance

- VHB provided DOER's model vehicle policy.

5. Action Items & Schedule

In order to apply to become designated as a Green Community, the following tasks are required to meet this criterion and submitted to DOER as part of a Green Community Designation documentation package.

Action Item	Person Responsible	Completion Date
Complete the vehicle inventory table and determine which vehicles would be subject to a Fuel Efficient Vehicle Policy	Department of Public Works/Director of School Buildings & Grounds	Within 6 - 9 months
Adopt a Fuel Efficient Vehicle Policy	Board of Selectmen/School Department Representative	Within 6 - 9 months
Compile the required documentation for Green Communities Designation Application	Department of Public Works/Director of School Buildings & Grounds	Within 6 - 9 months
Submit the required documentation for Green Communities Designation Application including the following materials:	Department of Public Works/Director of School Buildings & Grounds	Within 6 - 9 months
1. A copy of the policy or other mechanism adopted for purchasing only fuel efficient vehicles	Department of Public Works/Director of School Buildings & Grounds	Within 6 - 9 months
2. Inventory of existing fleet (model, year, estimated mpg) with plans for replacements with fuel efficient vehicles	Department of Public Works/Director of School Buildings & Grounds	Within 6 - 9 months
3. Documentation that both the general government and school district have adopted the fuel efficient	Board of Selectmen/School Department Representative	Within 6 - 9 months

5

Minimize Life-cycle Costs in Energy Construction

Green Communities Criterion #5

Require all new residential construction over 3,000 square feet and all new commercial and industrial real estate construction to minimize, to the extent feasible, the life-cycle cost of the facility by utilizing energy efficiency, water conservation and other renewable or alternative energy technologies.

1. Background

To qualify as a Green Community, the municipality must require all new residential construction of more than 3,000 square feet and all new commercial and industrial real estate construction to minimize the life-cycle cost of the facility by utilizing energy efficiency, water conservation and other renewable or alternative energy technologies.

One method to satisfy this criterion is to adopt the Massachusetts State Building Code's new appendix called the Stretch Energy Code (780 C.M.R. Appendix 120 AA). The Stretch Energy Code was approved as an appendix at a meeting of the Massachusetts Board of Building Regulations and Standards (BBRS) in May 2009. Based on the International Energy Conservation Code (IECC) 2009, the purpose of the Stretch Energy Code is "to provide a more energy efficient alternative to the base energy code applicable to the relevant sections of the building code for both new construction and existing buildings." For municipalities that choose to adopt this appendix, they would meet this Green Communities Program criterion. Whereas Green Community designation applies only to new residential construction over 3,000 square feet and all new commercial and industrial real estate construction, the Stretch Energy Code applies to all residential buildings of any size for both new construction and redevelopment. Another method to satisfy this criterion is to establish an alternate policy that meets the requirements of the Green Communities Program and would require approval by the DOER. At this time, model policies or



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regulations that may be an acceptable alternative to adopting the Stretch Energy Code is not available from the DOER.

2. Progress to Date

The Town of Northbridge does not currently meet this criterion. Upon request by the Town Manager, VHB held a technical presentation on the Stretch Energy Code to the Board of Selectmen, Green Committee members and the general public. The presentation highlighted the code itself in detail and associated costs. It is anticipated that the Stretch Energy Code may be brought forth before Town Meeting for consideration in 2010 or 2011.

3. Method for Meeting Criterion

Type of Method

As described in the previous section, the Town of Northbridge intends to adopt the Stretch Energy Code (Appendix 120 AA to the MA Building Code 780 CMR).

Documentation

Assuming adoption is successful; DOER will require documentation that the Town Meeting approved adoption of the Stretch Energy Code.

4. Steps completed during Planning Assistance and to be completed

- VHB held a technical presentation on the Stretch Energy Code.
- VHB provided a copy of the presentation to the Town for outreach use.
- Northbridge (building inspectors) will attend training on the Stretch Energy Code.

5. Action Items & Schedule

In order to apply to become designated as a Green Community, the following tasks are required to meet this criterion and submitted to DOER as part of a Green Community Designation documentation package.



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Action Item	Person Responsible	Completion Date
Building Inspectors attend BBRS Stretch Energy Code training	Inspector of Buildings	✓
Conduct public outreach meeting on Stretch Energy Code	Green Committee	✓
Adopt the Stretch Energy Code at Town Meeting	Town Meeting	Within 12 months
Submit the required documentation for Green Communities Designation Application including the following materials:	Board of Selectmen /Green Committee	Within 12 months
1. Documentation of Town Meeting vote adopting MA Board of Building Regulations and Standards (BBRS) Stretch Energy Code.	Board of Selectmen	Within 12 months

Summary of Action Items

Action Item	Person Responsible	Completion Date
CRITERION #1		
Submit the required documentation for Green Communities Designation Application including the following materials:	Town Planner/Town Counsel	Within 6 – 9 months
1. Letter from municipal counsel certifying that the existing zoning complies with the RE/AE Facilities criterion	Inspector of Buildings/Town Counsel	Within 6 – 9 months
2. The applicable section of zoning bylaw/ordinance	Inspector of Buildings/Town Planner	✓
3. Copy of zoning map that shows area zoned	Inspector of Buildings/Town Planner	✓
4. Important zoning definitions	Inspector of Buildings/Town Planner	✓
5. The relevant section of the use table and any key that will help DOER interpret the use table	Inspector of Buildings/Town Planner	✓
6. Any related local regulations applicable to facilities sited under the bylaw/ordinance—such as site plan review regulations—so that DOER can confirm that the related local regulations are non-discretionary;	Inspector of Buildings/Town Counsel	Within 6 - 9 months
7. Yield calculations must be either included in the text of the letter or attached.	Inspector of Buildings/Town Counsel	Within 6 - 9 months
CRITERION #2		
Compile the required documentation for Green Communities Designation Application	Inspector of Buildings/Town Planner	Within 6 - 9 months
Submit the required documentation for Green Communities Designation Application including the following materials:	Inspector of Buildings/Town Planner	Within 6 - 9 months
1. A certified copy of Northbridge's Town Meeting vote designating the as-of-right zoned parcel(s) as a Priority Development Site ("PDS")	Inspector of Buildings/Town Planner	✓
2. A copy of the applicable map(s) showing the two PDS sites	Inspector of Buildings/Town Planner	✓



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Action Item	Person Responsible	Completion Date
CRITERION #3		
Attend MassEnergyInsight training session	Department of Public Works	✓
Configure MassEnergyInsight tool, review account numbers and enter 2009 fuel data for baseline	Department of Public Works	✓
Identify specific improvement opportunities	Department of Public Works/Green Committee	Within 6 - 9 months
Draft an Energy Reduction Plan	Department of Public Works/Green Committee	Within 6 - 9 months
Compile the required documentation for Green Communities Designation Application	Department of Public Works/Green Committee	Within 6 - 9 months
Submit the required documentation for Green Communities Designation Application including the following materials:	Department of Public Works/Green Committee	Within 6 - 9 months
1. Identification of inventory tool used	Department of Public Works/Director of School Buildings & Grounds	Within 6 - 9 months
2. Provide documentation of results of inventory	Department of Public Works/Director of School Buildings & Grounds	Within 6 - 9 months
3. Copy of plan / specific Actions to be implemented and timeline with milestones to achieve required energy reductions	Department of Public Works/Director of School Buildings & Grounds	Within 6 - 9 months
4. Documentation that both the general government and school district have adopted the energy reduction plan	Department of Public Works/Director of School Buildings & Grounds	Within 6 - 9 months



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Action Item	Person Responsible	Completion Date
CRITERION #4		
Complete the vehicle inventory table and determine which vehicles would be subject to a Fuel Efficient Vehicle Policy	Department of Public Works/Director of School Buildings & Grounds	Within 6 – 9 months
Adopt a Fuel Efficient Vehicle Policy	Board of Selectmen/School Department Representative	Within 6 – 9 months
Compile the required documentation for Green Communities Designation Application	Department of Public Works/Director of School Buildings & Grounds	Within 6 – 9 months
Submit the required documentation for Green Communities Designation Application including the following materials:	Department of Public Works/Director of School Buildings & Grounds	Within 6 – 9 months
1. A copy of the policy or other mechanism adopted for purchasing only fuel efficient vehicles	Department of Public Works/Director of School Buildings & Grounds	Within 6 – 9 months
2. Inventory of existing fleet (model, year, estimated mpg) with plans for replacements with fuel efficient vehicles	Department of Public Works/Director of School Buildings & Grounds	Within 6 – 9 months
3. Documentation that both the general government and school district have adopted the fuel efficient	Board of Selectmen/School Department Representative	Within 6 – 9 months
CRITERION #5		
Building Inspectors attend BBRS Stretch Energy Code training	Building Inspectors	✓
Conduct public outreach meeting on Stretch Energy Code	Green Committee	✓
Adopt the Stretch Energy Code at Town Meeting	Town Meeting	Within 12 months
Submit the required documentation for Green Communities Designation Application including the following materials:	Board of Selectmen/Green Committee	Within 12 months
1. Documentation of Town Meeting vote adopting MA Board of Building Regulations and Standards (BBRS) Stretch Energy Code.	Board of Selectmen	Within 12 months



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Appendix A
Site Visit Meeting Notes



Green Communities Planning Assistance Program

Initial Site Visit – Town of Northbridge, October 28, 2009 Meeting Notes

Action Items:

For VHB:

- ☐ VHB to provide model wind and solar bylaws
- ☐ VHB to provide fuel-efficient vehicles model policy
- ☐ VHB to send link to DOER webinar on Stretch Code
- ☐ K. Brown to find out when one year deadline for Action Plan implementation begins. When Action Plan is submitted or when technical assistance begins?
- ☐ K. Brown to find out approximately when Northbridge can anticipate energy audits.
- ☐ K. Brown to find out DOER's stance on whether recycled police cruisers would be considered exempt.
- ☐ OTHERS?

For Town of Northbridge

- ☐ To provide zoning ordinance
- ☐ To provide an inventory of all municipal vehicles and fuel usage
- ☐ To provide copies of 43D applications/any information on sites – what they are zoned and what is allowable on the site.
- ☐ To view DOER webinar on Stretch Code
- ☐ To attend DOER focus group on Energy Information Reporting System on November 9th in Worcester.
- ☐ To provide a list of planned or considered energy-related upgrades/renovations in the next 5 years if any.

MEETING NOTES

Introductions (All) – see sign-in sheet for attendees and contact information.



Overview of Green Communities Planning Assistance Program, Consultants Roles & Responsibilities and the Action Plan (Felipe Schwarz - VHB)

Discussion of Northbridge's Application/5 Criteria:

1. **As-of-Right Siting**

- Progress to Date:
 - Northbridge has Industrial and Limited Industrial Districts that may allow renewable energy/alternative energy (RE/AE) manufacturing and/or research and development (R&D) as-of-right.
 - The town is interested in amending zoning so that RE/AE R&D/manufacturing is listed more clearly as a permitted use.
 - The town does not allow RE/AE generation as-of-right but may be interested in exploring this further.
 - There may be two sites that may be appropriate for RE/AE generation: one on Upton Street near the water tower and one at an open space site on Hill Street.
- Method for meeting criteria:
 - Complies – may need letter from town counsel that states RE/AE manufacturing or R&D is not precluded from Industrial or Limited Industrial Districts.
- Steps to be completed during Technical Assistance:
 - Provide guidance on contents of the letter from town counsel.
 - Assist with siting as-of-right RE/AE generation
 - Provide examples of wind generation and solar bylaws for consideration.
- Steps to be included in Action Plan:
 - Explore potential for specific sites that would be appropriate for RE/AE generation.
 - Develop overlay zoning districts with as-of-right condition for RE/AE generation.
 - Develop zoning bylaw for wind and/or solar
- Person Responsible: TBD
- Timeline for completion: TBD

2. **Expedited Permitting**

- Progress to Date:
 - Adopted Chapter 43D Expediting Permitting process for two sites for mixed use or business use. Two sites are identified as Priority Development Sites near National Grid. There is no activity on these sites yet.
 - Town's permitting process already has a quick turnaround (under 1 year).
- Method for meeting criteria:
 - Adopted Chapter 43D process for a number of sites but need to clarify what these sites allow in terms of RE/AE R&D and generation.
- Steps to be completed during Technical Assistance:
 - Potentially assist in identifying additional sites for potential energy generation
 - To document 43D expedited permitting process & town permitting process



- Steps to be included in Action Plan:
 - Town may want to identify additional 43D sites for RE/AE generation by establishing an Overlay or Bylaw as part of Action Plan
- Person Responsible: TBD
- Timeline for completion: TBD

3. Energy Use Baseline Inventory and Reduction Plan

- Progress to Date:
 - Northbridge has not begun to document energy usage. They have applied for the Energy Audit program (currently 27th on the list of municipalities approved for energy audits).
 - DOER is encouraging municipalities to use DOER's Energy Information Reporting System (EIRS) tool to establish a baseline and monitor progress. The EIRS is able to download electric bills directly. DOER is holding a focus group on November 9th in Worcester for the new system and has invited Northbridge staff to attend. Northbridge's Town Planner and Building Inspector will see if they can attend.
- Method for meeting criteria:
 - Need to determine best tool for developing baseline (use DOER's new tool)
- Steps to be completed during Technical Assistance:
 - VHB to assist with determining baseline data and tools to use
 - VHB to assist with developing plan and evaluating reduction strategies
- Steps to be included in Action Plan:
 - Reduction strategies - TBD
- Person Responsible: TBD
- Timeline for completion: TBD (*20% reduction must be achieved w/in 5 years of baseline)
- Q/A:
 - When will Northbridge be able to have energy audits completed (currently 27 on list of cities/towns approved for audits)?

4. Policy to Purchase Only Fuel Efficient Vehicles

- Progress to Date:
 - Not in compliance – the Town has no policy in place.
 - Does not currently have an inventory of vehicles.
 - There are no general purpose vehicles – old police cruisers are recycled to other employees. The Senior Center has a bus and two vans and the school has three electric carts.
 - The Town currently uses vehicles as multi-use “tools” for snow plowing, etc.
- Method for meeting criteria:
 - Complete a vehicle inventory
 - Establish a policy
 - Develop a purchasing plan

- The alternative to the vehicle policy purchasing plan is to provide incentives for alternative means of commuting including by carpool and bicycle.
- Steps to be completed during Technical Assistance:
 - To provide model policy and assist/review policy and/or plan
 - Determine whether purchasing plan or alternative means of meeting policy will be adopted.
- Steps to be included in Action Plan:
 - Town to commit to vehicle policy purchasing plan or alternative policies
 - Town must commit to purchasing efficient police cruisers once become commercially available
- Person Responsible: TBD
- Timeline for completion: TBD
- Q/A:
 - Are police cruisers still exempt from vehicle policy if they have been recycled and are being used for other municipal purposes?

5. Minimize life-cycle costs in energy construction/Stretch Code

- Progress to Date:
 - The building inspector stated that he was not familiar with the details of the Stretch Code and is becoming more knowledgeable about the revised State Building Code. He may be interested in attending the free training that will be available in January.
 - The consensus was that the Stretch Code would be the most difficult of the five criteria to obtain consensus from town leaders.
 - The main concern for the town is the economic impact of adopting the Stretch Code both for the homeowner and the developer. A big concern is that developers may turn to surrounding communities that have not adopted the Stretch Code to avoid additional perceived construction costs.
- Method for meeting criteria:
 - Adopt the Stretch Code
- Steps to be completed during Tech Assistance:
 - The Building Inspector will view Stretch Code webinar.
 - DOER to provide materials on potential costs/savings of Stretch Code (developing now)
 - Provide assistance on educating about Stretch Code (possible presentation)
 - The town is interested in holding a more focused presentation/discussion on the Stretch Code
 - It was also suggested that VHB meet with the newly-formed Energy Committee
- Steps to be included in Action Plan:
 - Plan for either adopting the Stretch Code or establishing an alternative way to evaluate life cycle cost assessment of new construction – TBD.
 - To document plan for adopting Stretch Code - TBD.
- Person Responsible: TBD



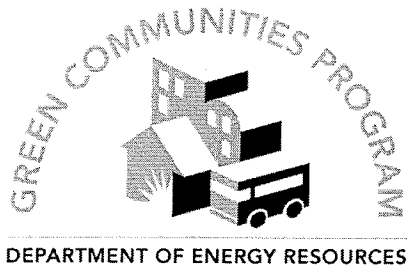
- Timeline for completion: TBD
- Q/A:
 - Q: *What is the potential additional cost for builders or homeowners with the Stretch Code?*
 - A: DOER is pulling together sample projects – to provide estimates of costs and savings.

6. Other opportunities

- There is currently a proposal that has been accepted by the town for a private company to put a solar array on the town's the wastewater treatment plant property and to sell electricity to the town. Northbridge would save on distribution costs and there would be overall savings over a guaranteed period of time. The development has been approved by the town but construction has not begun.

7. Schedule/Next Steps

- Possible Presentations/Workshops:
 - #1 - Tech Presentation/Q&A on Stretch Code – content and attendees TBD.
 - #2 – Meeting with Energy Committee to discuss next steps and help provide guidance and purpose.
- Bi-weekly check-in ½ hour conference calls – to set up



Green Communities Planning Assistance Program

Initial Site Visit – Town of Northbridge

October 28, 2009

SIGN-IN SHEET

Name	Phone number
Department/Organization/Committee	Email address
1. Felife Schwarz VHB	617-924-1770 fschwarz@vhb.com
2. Alyssa Sandoval VHB	617-924-1770 asandoval@vhb.com
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Town of Northbridge
Green Communities Action Plan

Appendix B
Zoning Bylaw Use Table

existing conforming use, structure or lot shall not by any action become nonconforming, and any existing nonconforming use, structure or lot shall not become nonconforming or further nonconforming as provided herein.

ARTICLE V Use Regulations

§ 173-9. Applicability of use regulations.

Except as provided by the Zoning Act or in this chapter, in each district no building, structure or land shall be used or occupied except for the purposes permitted in the district as prescribed in this article. Any use not listed shall be construed to be prohibited.

§ 173-10. Designations used in Table of Use Regulations.

In the following Table of Use Regulations, the uses permitted by right in the district shall be designated by the letter P. Those uses that may be permitted by special permit in the district, in accordance with § 173-47, shall be designated by the letter S. Uses designated "-" shall not be permitted in the district.

§ 173-11. Uses subject to other regulations.

Uses permitted by right or by special permit shall be subject, in addition to use regulations, to all other provisions of this chapter.

§ 173-12. Table of Use Regulations. *(Editor's Note: The Table of Area is included at the end of this chapter)* [Amended 5-13-1980 ATM, Art. 39]

In the Table of Use Regulations, the uses permitted by right in the district shall be designated by the letter P. Those uses that may be permitted by special permit in the district, in accordance with § 173-47, shall be designated by the letter S. Uses designated "-" shall not be permitted in the district.

Table of Use Regulations

Use	R-1	R-2	R-3	R-4	R-5	R-6	B-1	B-2	B3 ¹	I-1	I-2	H
Residential												
One-family detached dwelling	P	P	P	P	S	P	--	--	--	--	--	S
Two-family dwelling	--	S	S	P	P	S	--	--	--	--	--	S
Multifamily dwelling [Amended 1-23-1996 STM, Art. 12]	--	--	--	S	P	--	S ²	--	--	--	--	--
Accessory residential building such as tool-shed, boathouse, play-house, shelter for domestic pets, private greenhouse, private swimming pool and private detached garage for noncommercial vehicles	P	P	P	P	P	P	--	--	--	--	--	P

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Planned townhouse development	--	--	--	--	--	S	--	--	--	--	--	--
Community facilities: Church or other religious purpose	P	P	P	P	P	P	P	P	P	P	P	P
Educational purpose which is religious, sectarian, denominational or public	P	P	P	P	P	P	P	P	P	P	P	S
Nonprofit recreational facility, not including a membership club	P	P	P	P	P	P	S	S	S	--	--	S
Nonprofit country, P hunting, fishing, tennis or golf club	P	P	S	S	P	--	--	--	--	--	--	
Nonprofit day camp or other nonprofit camp	P	P	P	S	S	P	--	--	--	--	--	S
Town building, except equipment garage	P	P	P	P	P	P	P	P	S	S	P	
Town cemetery, including any crematory therein	S	S	S	S	S	S	S	S	S	--	--	--
Historical association or society	S	S	S	S	S	S	P	P	P	--	--	P
Nonprofit hospital or sanitorium	S	S	S	S	S	S	--	--	--	--	--	--
Street, bridge, tunnel	P	P	P	P	P	P	P	P	P	P	P	P
Town equipment garage	--	--	--	--	--	--	S	S	--	P	P	--
Public utility, except power plant, water filter plant, sewage treatment plant and refuse facility	P	P	P	P	P	P	P	P	P	P	P	S
Power plant, water filter plant, sewage treatment plant and refuse facility	--	--	--	--	--	--	--	--	--	P	S	--

Agricultural:

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Agriculture, horticulture and floriculture, except a greenhouse or stand for retail sale	P	P	P	P	P	P	P	P	P	P	P	P
Year-round greenhouse or stand for wholesale and retail sale of agricultural or farm products [Amended 6-11-2002 ATM, Art. 23]	S	S	S	S	S	S	P	P	P	--	S ³	--
Temporary (not to exceed erection or use for a period exceeding 3 months in any 1 year) greenhouse or stand for retail sale of agricultural or farm products raised primarily on the same premises	P	P	P	S	S	P	P	P	P	S	--	--
Raising and keeping livestock, horses and poultry, including dairy farming, not including the raising of swine or fur animals for commercial use	P	P	S	S	--	S	--	--	--	--	--	--
Commercial stables, kennels or veterinary hospital in which all animals, fowl or other forms of life are completely enclosed in pens or other structures	S	S	S	S	--	S	--	--	--	--	--	--
Noncommercial forestry and growing of all vegetation	P	P	P	P	P	P	P	P	P	P	P	P
Retail and service: Stores usually selling a combination of 2 or more of the following: dry goods, apparel and accessories, furniture and home furnishings, small	--	--	--	--	--	--	P	S	P	--	S ³	--

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wares, hardware and food [Amended 6-11-2002 ATM, Art. 23]

Establishment primarily selling food and drink for home preparation and consumption or on its premises [Amended 6-11-2002 ATM, Art. 23]	--	--	--	--	--	--	P	S	S	--	S ³	--
Sales by dispenser-type vending machines	--	--	--	--	--	--	P	P	P	P	P	--
Establishments selling new automobiles or new and used automobiles and trucks, new automobile tires and other accessories, aircraft, boats, motorcycles and household trailers	--	--	--	--	--	--	S	P	S	S	--	--
Hotels and motels -- [Amended 6-11-2002 ATM, Art. 23]	--	--	--	S	--	P	P	P	--	S ³	--	
Lodging house -- [Amended 10-22-1996 ATM, Art. 22]	--	S	S	S	--	--	--	--	--	--	--	
Bed-and-breakfast inn [Added 10-22-1996 ATM, Art. 22; amended 10-22-2002 ATM, Art. 10]	S	S	S	--	--	S	S	--	--	--	--	S
Personal service establishments [Amended 6-11-2002 ATM, Art. 23]	--	--	--	--	--	--	P	S	P	--	S ³	--
Funeral home or mortuary establishment	--	--	S	S	P	--	P	S	--	--	--	S
Convalescent or nursing home	S	S	S	S	S	--	--	--	--	--	--	S
Membership club	S	S	S	S	S	S	P	S	S	--	--	S
Miscellaneous business offices and services	--	--	--	--	--	--	P	S	P	--	S ³	--

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[Amended 6-11-2002
ATM, Art. 23]

Home occupation (subject to § 173-13)	P	P	P	P	P	P	P	P	P	P	P	P
Automotive repair, automobile services and garages (not including a junkyard or open storage of abandoned automobiles or other vehicles)	--	--	--	--	--	--	S	P	--	S	S	--
Automotive or other junkyard or open storage of abandoned automobiles or other vehicles	--	--	--	--	--	--	--	S	--	S	--	--
Miscellaneous repair service	--	--	--	--	--	--	S	P	--	--	--	--
Motion-picture establishment [Amended 6-11-2002 ATM, Art. 23]	--	--	--	--	--	P	P	P	--	S ³	--	
Amusement and recreation services	--	--	--	--	--	--	S	S	S	--	--	--
Horse racing facility and all accessory uses incidental to a horse track, on a site containing at least 50 acres, provided that no accessory uses will be permitted on the site until a track is constructed for live horse racing [Added 1-25-1992 STM, Art. 1]	--	--	--	--	--	--	--	--	--	P	--	
Taxi and bus terminals	--	--	--	--	--	--	P	P	S	--	--	--
Communications and television towers	S	S	--	--	--	--	S	S	--	S	S	--
Airport and landing strip	S	--	--	--	--	--	--	--	--	S	S	--
Commercial parking lot or structure [Amended 1-23-1996 STM, Art. 10]	--	--	S	S	S	--	P	P	P	S	S	--

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[illegible]

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Tattoo parlor/
body piercing
studio [Added
10-22-2002 ATM,
Art. 9]

S

S

Historic inn⁴
[Added 6-17-2003
ATM, Art. 20]

S

Wholesale and manufac-
turing:

Mining and quarrying	--	--	--	--	--	--	--	--	--	S	S	--
Construction activities or suppliers	--	--	--	--	--	--	--	--	--	S	S	--
Manufacturing and light industries	--	--	--	--	--	--	S	S	--	P	P	--
Railroads and railway express service	--	--	--	--	--	--	S	S	--	P	P	--
Trucking service and warehousing	--	--	--	--	--	--	--	S	--	P	P	--
Other transportation services (taxicabs)	--	--	--	--	--	--	--	S	--	P	P	--
Wholesale trade	--	--	--	--	--	--	S	S	P	P	--	--

Adult entertainment uses
[Added 10-28-1997 ATM,
Art. 19]

Adult bookstore	--	--	--	--	--	--	--	--	--	S	--	--
Adult motion-picture theater	--	--	--	--	--	--	--	--	--	--	S	--
Adult paraphernalia store	--	--	--	--	--	--	--	--	--	--	S	--
Adult video store	--	--	--	--	--	--	--	--	--	S	--	--
Adult live enter- tainment establishment	--	--	--	--	--	--	--	--	--	S	--	--

NOTES:

1[Added 9-11-1990 STM, Art. 20]

2The area, width and yard requirements for such use shall be as required in the R-5 District.

3Use shall only be allowed if part of a Planned Business Development. [Added 6-11-2002 ATM, Art. 23]

4Parking shall be provided as per Article VIII; said parking shall be prohibited within the front yard, as defined herein. [Added 6-17-2003 ATM, Art. 20]

§ 173-13. Permitted home occupations.

The following uses are hereby specifically declared to be customary home occupations within the meaning of this chapter:

- A. The use of a room or any area in a dwelling or in a subordinate building thereto as an office, studio or workshop, provided that:
 - (1) No stock-in-trade is regularly maintained for display or sale.
 - (2) No offensive noise, vibration, smoke, dust, odor, heat or glare is produced.
 - (3) There is no exterior display and no exterior sign (except as hereinafter permitted in this chapter).
 - (4) There is no exterior storage of material or equipment, including the exterior parking of commercial vehicles, and no other exterior indication of such use or variation from the residential character of the premises.
- B. Private greenhouses, toolshed, playhouse or other similar structure for domestic storage or use.
- C. The keeping of animals, principally for personal enjoyment or household use.
- D. Private garage for not more than three vehicles, one of which may be a commercial vehicle if not exceeding 21/2 tons in load capacity.

§ 173-14. Unregistered and disabled vehicles.

No person shall suffer or permit two or more unregistered motor vehicles or parts thereof to remain on his premises, and no person shall suffer or permit any unregistered or disabled motor vehicle or parts thereof to remain within 75 feet of any public way, unless a written permit is issued therefor by the Board of Selectmen. Said permit shall not be required for vehicles or parts thereof stored or garaged inside of buildings.

§ 173-15. Trailers.

- A. Trailer camps or parks shall not be permitted in any zoning district.
- B. Utility trailers and trailers used primarily for recreational purposes may be parked in any zoning district.
- C. A trailer may be lived in for a period of no more than four months in any residential district, provided that a special permit has been issued by the Board of Selectmen. In such cases, such trailer shall be subject to the same requirements as for a one-family detached dwelling for the zoning district in which it is located.
- D. The Building Inspector may grant a temporary permit for the use of a trailer or trailers for business use in connection with a construction project.
- E. The owner and occupier of a residence which has been destroyed by fire or other natural holocaust may place a mobile home on the site of such residence, and said owner or occupier may reside in such mobile home for a period of time not to exceed 12 months while the residence is being rebuilt. Any such mobile home shall be subject to the provisions of the State Sanitary Code.

§ 173-16. Permitted uses in Limited Industrial District (I-2).

Uses permitted in Limited Industrial District I-2 include:

- A. Office for administrative, executive, professional, sales and other similar use.
- B. Laboratory for scientific, agricultural or industrial research.
- C. Light industrial use, including manufacturing, storage, processing, fabrication, packaging and assembly, provided that such activities will not be offensive, injurious or noxious because of sewage and refuse, vibration, smoke or gas, fumes, dust or dirt, odors, danger of combustion or unsightliness.
- D. Printing or publishing establishments.
- E. Horse racing facility and all accessory uses incidental to a horse track, on a site containing at least 50 acres, provided that no accessory uses will be permitted on the site until a track is constructed for live horse racing; and further provided, however, that notwithstanding the provisions of the first sentence of § 173-49.1D(3)(c), the period for site plan review shall be 90 days. [Added 1-25-1992 STM, Art. 1]
- F. With a special permit, year-round greenhouse or stand for wholesale or retail sale of agricultural or farm products. [Added 6-11-2002 ATM, Art. 23]
- G. With a special permit, stores usually selling a combination of two or more of the following: dry goods, apparel and accessories, furniture and home furnishings, small wares, hardware and food. [Added 6-11-2002 ATM, Art. 23]
- H. With a special permit, establishment primarily selling food and drink for home preparation and consumption or on its premises. [Added 6-11-2002 ATM, Art. 23]
- I. With a special permit, personal service establishments. [Added 6-11-2002 ATM, Art. 23]
- J. With a special permit, motion picture establishment. [Added 6-11-2002 ATM, Art. 23]
- K. With a special permit, miscellaneous business offices and services. [Added 6-11-2002 ATM, Art. 23]
- L. With a special permit, hotels and motels. [Added 6-11-2002 ATM, Art. 23]
- M. With a special permit from the Planning Board, planned business development. [Added 6-11-2002 ATM, Art. 23]

§ 173-16.1. Forest Products Overlay District (FPOD). [Added 6-26-1990 STM, Art. 1]

- A. In area(s) of the Town designated as Forest Products Overlay District(s), the existing underlying zoning designation shall remain applicable and any use permitted in the underlying zone shall continue to be permitted on the terms and conditions provided for such uses in such underlying district.
- B. In a Forest Products Overlay District, the following uses shall be permitted:
 - (1) Planting, growing and harvesting timber.
 - (2) Cutting, packaging and warehousing cord wood and wood products.