

## **VIII. Public Utilities and Energy**



**Longhill Road Water Tower**

## VIII. Public Utilities and Energy

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The future of worldwide energy supplies is uncertain at best and energy demand in the United States, China, and India continues to grow. Creating sustainable energy policies at the national, state, and local level could perhaps be the greatest challenge of the coming decades. Economic growth in the 20<sup>th</sup> Century has been possible only because of the vast consumption of fossil fuels that has powered our transportation, residential, and commercial sectors. A recent report by UNH Professor Clifford Wirth states:

*Oil and natural gas underlay manufacturing, transportation, employment, building construction, cement manufacturing, central heating and air conditioning, as well as the world's food production (planting, irrigating, harvesting, processing, and providing petrochemicals for fertilizers, pesticides, and herbicides). Oil provides the raw materials for manufactured products, including plastics, tires, paints, latex, chemicals, asphalt, synthetic fabrics, building materials, Styrofoam, Formica, medicines, and some 500,000 other products. Oil and natural gas are the life blood for economic development, urbanization, globalization, technology, a high standard of living, leisure time, modern medicine, nutrition, travel, control of infectious diseases, solid waste removal, water purification, water distribution, and waste water treatment.<sup>57</sup>*

The depletion of these fuels could have a dramatically negative effect on our economy, eliminating future growth and causing high unemployment. Fossil fuel sources are finite resources that many scientists believe are running out fast. This being the case, we must begin planning for a future where renewable clean energy plays a bigger role in powering our communities. The Town of Raymond, as well as all municipalities in New Hampshire should examine their utilities and start energy planning now to become more energy efficient in the future. This is needed to help bring down energy costs as well as cut emissions of harmful greenhouse gases.

The purpose of this report is to provide an overview of the town's existing utilities and energy use to begin to identify possible strategies for a more sustainable energy future. The information contained within this report was obtained through the assistance of the Public Works Director and contacts with various public and private utilities both locally and across the state during the spring of 2008.

In addition to this information, a community-wide master plan survey was conducted which included an overall question regarding expanding public water and sewer infrastructure in Raymond. While a citizen-based Utilities/Energy Topic Group was not created during the development of this master plan, it is highly recommended that the Town of Raymond consider the formation of an Energy Committee in the future to begin to develop a Comprehensive Energy Plan for the community. The results of the master plan survey as related to this report are summarized as follows.

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<sup>57</sup> Wirth, Clifford Ph.D. "PEAK OIL: ALTERNATIVES, RENEWABLES, AND IMPACTS" October 6, 2007  
Find report at <http://www.peakoilassociates.com/>

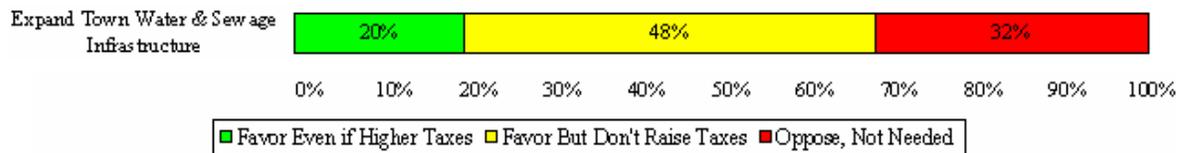
## UNH Survey Results

Between September and October 2007, the University of New Hampshire Survey Center conducted a community-wide master plan survey of the perceptions, interests and attitudes of residents about the Town of Raymond and future planning initiatives for Raymond. A total of 4,580 surveys were delivered to all Raymond postal patrons in the “On the Common” newsletter on September 14, 2007. In addition, a reminder (post card) was mailed on October 4, 2007.

A total of 409 Raymond residents responded to the survey representing a response rate of nine percent. The following responses were received to Question 6 (d) regarding expanding public water and sewer infrastructure. An Executive Summary of the Master Plan Survey and a copy of the survey questionnaire are contained within the Appendix of this plan.

### Public Utility Question

*Question 6 (d): Please indicate if you favor or oppose the following activities in Raymond and if so, are you willing to pay higher property taxes for them.*



### Overall Summary of Results

While there was only one survey question that focused directly upon public utilities and infrastructure issues, it is clear that Raymond’s residents want economic expansion (which requires infrastructure expansion). However, Raymond’s residents do not favor raising taxes to fund it.

Forty eight percent of respondents favored expansion of town water and sewage infrastructure, *but not raising taxes to do so*. The concern about taxes was one reason why the Town of Raymond and its residents passed a TIF district in 2006 to help pay for Raymond’s first wastewater treatment facility. The TIF district will use tax increments raised by new development within the district to pay for the facility over the life of the bond. When the bond payments have been made and the TIF expires, the Town of Raymond will receive the property tax returns from the developed area.

## **A. Public Water and Sewer Infrastructure**

### **Water Supply Capacity**

The Town of Raymond's public water supply is currently provided from three existing gravel packed wells located off Cider Ferry Road. The water supply from these wells is rated at 500 gallons a minute and currently the Town of Raymond has the capacity to pump and treat that supply. According to the Public Works Director, the Town is pumping approximately 300,000 gallons per day with the capacity to supply approximately 500,000 gallons a day; therefore, there is approximately 200,000 gallons of additional capacity. However, in anticipation of the need for additional water supply in the future, the Town of Raymond is considering installing future wells at the Thibeault property near the Raymond/Candia town line, and also the possibility of utilizing Onway Lake. Currently, the Thibeault property is minimally protected by the Town of Raymond's Groundwater Protection District (Zone I – see pages 49-50 of this plan for more information). However, if new wells were installed additional groundwater protection would be needed. Onway Lake is currently protected by the Comprehensive Shoreland Protection Act; however, if the surface water in the lake was used as a source for drinking water, new protections and water treatment systems would be needed.



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### **Public Sewer Systems**

The creation of the Sewer Overlay District at Exit 4 has been one of the most profound decisions for economic development and growth that has been passed in the Town of Raymond in several years. The Community Development Department 2006 report states:

*The adoption of this new district was one piece of a large puzzle that included proposed retail and residential development (condominiums), a Brownfield Clean-Up Project, and a tax increment financing district (TIF), which will pay for future construction of the community's first wastewater treatment facility within the Sewer Overlay District.*

The TIF district and the Town of Raymond's Brownfield Grant from EPA will help to clean up a contaminated former tannery site and allow for job growth and economic expansion in Raymond while providing opportunities for commercial and industrial development, including mixed use and multi-family residential. More information on the SOD is described in the Existing Land Use section of this plan (see page 51).

### **Possibility of Future Municipal System**

The Town of Raymond initiated a study in 2004 to evaluate the feasibility of providing centralized wastewater collection and treatment within the community. This study was conducted by Wright-Pierce Civil and Environmental Engineering Services, and a final report was issued in July of 2007. The objectives of a centralized wastewater collection, treatment, and disposal system as outlined in the report are to:

- Protect public health and sensitive water bodies (such as the Lamprey River, Governor's Lake) from possible present and future contamination due to failing septic systems;
- Protect public groundwater and private water supply wells;
- Promote quality growth and development in the more densely populated Town center; and
- Promote more dense future growth and development in other areas adjacent to the town center.

The goal of a centralized wastewater collection system in Raymond is to alleviate the greatest number of failing, or soon to be failing, septic systems as possible while also providing services to key areas within the community that require wastewater collection for present or future growth. The areas of Raymond considered for centralized sewer include the land area between Exits 4 and 5 along NH Route 101, north through downtown and including Governor's Lake. This area also includes Raymond's elementary school, middle school, and high school.<sup>58</sup>

Septic systems failures associated with older densely populated communities such as Old Bye Road and Green Hill Estates are considered too far from this proposed area to be considered feasible additions to a centralized sewer collection system. The report recommends that decentralized systems be evaluated for these communities.<sup>59</sup>

Map 11 provided within the Community Facilities section of this Master Plan shows the recommended future wastewater service areas on a priority basis with the Exit 4 West area being assigned the highest priority and the Exit 4 East/Downtown area being assigned the next highest priority.

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<sup>58</sup> See Section 3-2 of Wastewater Feasibility Study for the Town of Raymond New Hampshire: Final Report, Wright-Pierce Civil and Environmental Engineering Services: July, 2007.

<sup>59</sup> Ibid.

**The Recommended Plan of action from the Feasibility Study is as follows:**

**Wastewater Collection**

- 1 Provide wastewater collection for Exit 4 West area, including providing sewer service for Town’s Public Safety Complex and Elementary School along Old Manchester Road (i.e., Phase I)
- 2 Within 5 to 10 years (or sooner depending on demand) provide wastewater collection for Exit 4 East Downtown, Epping Street, and The Plains area (i.e., Phase II).
- 3 Within 10 to 15 years (or sooner depending on demand) provide wastewater collection for Governor’s Lake, Exit 5 and Route 27 area (i.e., 2025 planning period).

**Wastewater Treatment**

- 1 Provide MBR wastewater treatment facilities for an average daily flow of 250,000 GDP (i.e., Phase II) to accommodate all near-term wastewater collection priorities and provide managed septage treatment for the residents not connected to the Raymond sewer.
- 2 When necessary, expand treatment facilities to accommodate additional wastewater needs

**Wastewater Removal**

- 1 Finalize the permitting and construct 250,000 GOD groundwater disposal facilities on selected disposal site (groundwater discharge permit submitted October 2006, with conditional approval granted January 12, 2007)
- 2 Monitor performance of above groundwater disposal facility and determine the site’s ability to accommodate additional wastewater flows.
- 3 As necessary, investigate additional ground water disposal sites to accommodate additional wastewater flows.

The estimated costs and possible funding sources from section 7.2 and 7.3 of the Wastewater Feasibility Study are shown in Table 59:

**Table 59**  
**Summary of Capital Costs for Recommended Plan<sup>60</sup>**  
**Town of Raymond, NH**

<b>Project Element</b>	<b>Recommended Plan</b>
Collection System	\$2.1 M
WWTF	\$7.8 M
Disposal System	\$1.5 M
Total:	\$11.4 M

Source: Town of Raymond, NH

<sup>60</sup> Includes interceptor sewer and two pump stations for portion of Exit 4 West from proposed Granite Meadows to portion of Old Manchester Road north of WWTF location, including Elementary School and Public Safety Complex

It is intended that debt service associated with the capital costs of the Recommended Plan would be recovered through the Town’s TIF program. It is also important to note that any differential cost between the TIF proceeds and the debt service cost is to be guaranteed by private entities. As a result, the Town of Raymond’s initial sewer users (or the town at large) will not be directly burdened with the initial capital costs of the new wastewater facilities. There are also several additional potential external sources of funding that the Town of Raymond may be eligible for to reduce the capital debt of the project and allow Raymond and its citizens to realize the benefits of the TIF plan sooner than otherwise. Table 60 lists the potential external funding sources available.

**Table 60**  
**Potential External Funding for Wastewater Improvements**  
**For Municipalities in New Hampshire**

Funding Source/Program	Town Eligibility
DES State Revolving Loan Fund Program (SRF)	Town should qualify for low interest loan for eligible portions of the project. Formal application and Town approval of all project funds is required
DES State Aid Grant (SAG)	Town should qualify for 20% grant on all eligible portions of the project (additional 10% available if average residential annual sewer user fee 120% of the State’s average; also referred to as SAG PLUS)
HB 207 Septage Grant	Town should qualify for 10% of the costs associated with receiving and treating septage at the WWTF
USDA Rural Development Grant and Loan Program	Town just qualifies for up to a 45% grant as Median Household Income (MHI) of \$48,829 is below \$49,467 the maximum for qualification, Grants are competitive, provided based on need and often require partial use of loan programs
NH Office of Energy and Planning (OEP) Grants Program (CDBG)	Town unlikely to qualify as MHI is too high
US Economic Development Agency (EDA)	Town could possibly qualify since jobs are being added area as a result of the project; however, grants are very competitive and financial hardship would need to be shown.
EPA State and Tribal Assistance Grant (STAG)	Town should pursue, at least for subsequent phases involving providing sewer services to existing areas; need backing of US Congressional representative
Public Service New Hampshire Energy Rebate Program	Depending on the design, Town should qualify for rebate for measures taken to provide and enhance energy efficiency for new facilities

## B. Solid Waste

The Town of Raymond’s solid waste management program involves both disposal and recycling. Between 2000 and 2004, Raymond generated an average of 4,735 tons of solid waste, which was collected through a curbside pick up program.

In 2005, the Town of Raymond instituted a new “pay as you throw” solid waste program which has substantially reduced this volume by 61 percent. Under the new “pay as you throw” system, residents pay \$2 per bag of solid waste to a hauler contracted by the Town of Raymond. The hauler collects and sorts recyclables at no charge. Residents also have the option of paying private haulers, who charge for recyclables. Even at the start of this program, the Town of Raymond was saving thousands of dollars and bringing in enough revenue to almost match the costs of disposal. This has resulted in significant tax reductions for residents.



**Transfer Station**

The reduction in annual solid waste tonnage can be seen in Table 61. Between 2000 and 2004, solid waste tonnage in Raymond had increased by 16 percent. With the implementation of the “pay as you throw” program, Raymond’s annual tonnage after 2004 has been essentially cut in half.

**Table 61  
Solid Waste-Annual Tonnage Summary  
Town of Raymond, NH**

<b>Year</b>	<b>Annual Tonnage</b>
2000	4502.0
2001	4460.0
2002	4497.7
2003	4978.5
2004	5240.3
2005	2849.9
2006	1548.0
2007	1452.1
2008	1475.2

Source: Public Works Department

Solid waste generation data by municipality is also available from the New Hampshire Department of Environmental Services, Waste Management Division as shown in Table 62 for the Southern New Hampshire Planning Commission Region.

As can be seen by this data, in 2007, recycling rates varied noticeably across the region from a high of 44.55 percent in the Town of New Boston to a low of 12.95 percent in Hooksett. The municipalities with the most recycled tonnage in 2006 were the City of Manchester and the towns of Derry and Goffstown, which combined for over 14,000 tons of recycled waste.

**Table 62**  
**Solid Waste Generation**  
**SNHPC Area**

2007 Solid Waste Generation					
Municipality	2006 Population	2006 Residential MSW Tons Per Year	2006 Recyclables-Tons Per Year	2006 Residential MSW & Recyclables Tons/Year	Recycling Rate
Auburn	5,210	1,231	454	1,685	29.96%
Bedford	21,464	8,725	1,331	10,056	13.72%
Candia	4,284	808	453	1,261	36.67%
Chester	4,706	533	366	899	40.98%
Deerfield	4,336	1,377	341	1,718	20.88%
Derry	36,346	9,261	3,559	12,838	30.91%
Goffstown	18,406	5,271	2,701	7,972	34.89%
Hooksett	13,794	4,599	576	5,175	12.95%
Londonderry	25,552	9,733	1,881	11,614	16.20%
Manchester	112,130	43,323	7,880	51,203	24.19%
New Boston	4,984	1,109	883	2,928	44.55%
Raymond	10,682	2,500	1,466	3,966	36.97%
Weare	8,920	3,032	594	3,626	16.39%

Source: NH DES

## C. Public Utility Infrastructure

### Electrical Service

The Public Service Company of New Hampshire (PSNH) is one of two main electric providers for the Town of Raymond. Raymond is also served by the New Hampshire Electric Cooperative. Under franchise agreements with the New Hampshire Public Utilities Commission (PUC), all utilities are required to meet the demand for all areas within their territory. It is expected that service providers provide an adequate supply of electricity to meet local demand for the near future. Long term forecasts and needs are greatly determined by fluctuations in future energy supplies and local municipal growth. Summarized below are some quick facts about PSNH delivery and service in New Hampshire.

- 5,628 Square Miles of utility service
- 211 New Hampshire Communities (2006)
- More than 490,000 Customers (2007)
- \$1,090.9 Million in Annual Revenue (2006)
- 8,029,898 megawatt hours in Annual Sales (2006)
- 1,328 Employees (July, 2006)

Table 63 provides a summary of the electricity demand between 2004 and 2006 across New Hampshire. PSNH Peak Power Demand is a measurement of the average demand for energy over an hourly period by all PSNH customers, as well as customers of other New Hampshire utilities connected to the PSNH system.

**Table 63**  
**PSNH State Electricity Demand**  
**Selected Periods, 2004-2006**  
**Town of Raymond, NH**

<b>Record</b>	<b>Demand (megawatts)</b>	<b>Date</b>	<b>Time</b>
1	2248.769 mw	2-Aug-2006	1:00 p.m.
2	2186.601 mw	18-Jul-2006	3:00 p.m.
3	2184.225 mw	1-Aug-2006	5:00 p.m.
4	2167.586 mw	27-Jul-2005	3:00 p.m.
Winter			
1	1875.028 mw	15-Jan-2004	7:00 p.m.
2	1859.549 mw	14-Jan-2004	6:00 p.m.

Source: PSNH

Four electric distribution companies operate in New Hampshire, each serving a mutually exclusive franchise territory. They include the Public Service Company of New Hampshire (PSNH), Granite State Electric Company (GSEC), Unital Energy Systems, Inc.(UES); formerly Concord Electric Company and Exeter and Hampton Electric Company), and the New Hampshire Electric Cooperative, Inc. (NHEC).<sup>61</sup>

PSNH, a subsidiary of Northeast Utilities, serves approximately 70 percent of the retail customers in New Hampshire. The company serves geographic and demographic diverse areas; ranging from urban southern areas to rural northern areas of the state. PSNH, which sold its share of the Seabrook Nuclear Power Facility in December 2002 in compliance with RSA 369-B and the PSNH Restructuring Settlement Agreement, still owns fossil and hydropower facilities. In January 2004, PSNH acquired Connecticut Valley Electric Company (CVEC). See Order No. 24,176. CVEC, which operated in the western region of the state, served approximately two percent of the retail customers in New Hampshire. At closing, PSNH purchased the assets of and made payments to CVEC to settle the stranded costs associated with a long-standing FERC stranded cost proceeding. CVEC's customers became customers of PSNH and now pay the same rates as other PSNH customers. Finally, following the completion of the acquisition, CVEC and Central Vermont Public Service Company (CVPS) withdrew their claims in Federal court and at the Federal Energy Regulatory Commission (FERC), thus resolving all remaining restructuring-related litigation.

GSEC, whose franchise territory includes western and southern areas of the state, serves approximately six percent of the retail customers in New Hampshire. GSEC is a subsidiary of National Grid. UES, a subsidiary of Unital Corporation, was formed when Unital consolidated two former subsidiaries, Concord Electric Company, and Exeter and Hampton Electric Company. On a combined basis, these companies serve approximately 11 percent of New Hampshire's retail customers in both the Seacoast and Capital areas. NHEC provides electric service to about 11 percent of retail customers throughout the central part of New Hampshire.<sup>62</sup>

### **Natural Gas**

Two New Hampshire utilities distribute natural gas, serving approximately 100,000 customers in New Hampshire's more densely populated areas. KeySpan serves approximately 82,000 customers in southern and central New Hampshire as well as the City of Berlin in northern New Hampshire while Northern Utilities serves approximately 27,000 customers in the seacoast area. Neither of these two companies currently provide natural gas service to the Town of Raymond and to do so would require major line extensions from either the City of Manchester to the west of Raymond or the towns of Exeter and East Kingston to the east costing in the millions of dollars.

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<sup>61</sup> Source: New Hampshire Public Utilities Commission  
<http://www.puc.state.nh.us/Electric/electric.htm> 10/24/07

<sup>62</sup> Ibid.

There are 2.3 million natural gas customers in New England; 2.1 million residential customers and about 236,000 commercial and industrial customers. The 2005 Energy Information Administration's Annual Energy Outlook forecasts a growth rate in New England or natural gas usage of 1.4 percent annually through 2025. The fastest growing gas consumption sector, nationally and regionally, is gas for electric generation. Gas-fired electric generation in New England accounted for less than one percent of its electric supply in 1980; however, today it accounts for over four percent and is expected to increase to 49 percent by 2010. Two new gas fired power generation facilities have been built in New Hampshire and are major users of natural gas in the state.<sup>63</sup>

**Table 64**  
**Natural Gas**  
**New Hampshire**

KeySpan Energy Delivery (Natural Gas)			Northern Utilities, Inc. (Natural Gas)			NH Gas Corp. (Propane)	Concord Steam Corp. (Steam)
Allenstown	Derry	Loudon	Atkinson	Hampton	Plaistow	Keene	Concord
Amherst	Franklin	Manchester	Dover	Hampton Beach	Portsmouth		
Auburn	Gilford	Merrimack	Durham	Hampton Falls	Rochester		
Bedford	Goffstown	Milford	East Kingston	Kensington	Rollinsford		
Belmont	Hollis	Nashua	East Rochester	Madbury	Salem		
Berlin	Hooksett	Northfield	Exeter	Newington	Seabrook		
Boscawen	Hudson	Pembroke	Gonic	North Hampton	Somersworth		
Bow	Laconia	Sanbornton	Greenland	Pelham	Stratham		
Canterbury	Litchfield	Tilton					
Concord	Londonderry						

### Recent Legislation and State Initiatives

Before adjourning the legislative session in June, New Hampshire enacted two key energy bills designed to promote renewable energy. First, New Hampshire established minimum renewable portfolio standards (Chapter Law 26, HB 873). Beginning in 2009, electricity suppliers must obtain 0.5 percent of their electricity from Class-I renewable resources. The requirement increases to one percent in 2010 and 16 percent by 2025.

The legislation also established three other RPS classes. Second, New Hampshire directed its Public Utilities Commission (PUC) to facilitate expansion of the transmission system, particularly in the northern part of the state, to develop additional renewable energy supplies. The PUC must issue a status report by December 1, 2007 (Chapter Law 364, SB 140).

<sup>63</sup> Source: New Hampshire Public Utilities Commission  
<http://www.puc.state.nh.us/Electric/electric.htm> 11/8/07

The legislation also provides for expedited review of renewable projects. The Site Evaluation Committee, which is responsible for siting of energy facilities, must develop rules by December 31, 2007, that streamline filing requirements for renewable energy projects. Finally, the legislation directed the Energy Policy Commission to study demand response and whether the state should allow utilities to invest in small-scale generation resources. The Commission must issue an interim report by December 1, 2007, and a final report by December 1, 2008.<sup>64</sup>

The Renewable Energy Act (Chapter Law 26, HB 873) requires providers of electricity to obtain Renewable Energy Certificates based on how much electricity they sell in the state. These certificates represent units of electricity generated with renewable sources. Companies can earn the Certificates by replacing non-renewable energy sources with renewable sources, or they can purchase Certificates that other companies have earned. If Certificates exceed certain price levels, electricity providers may choose instead to contribute to the new Renewable Energy Fund, which will be used to support thermal and electrical renewable energy initiatives.

### **Telephone, Cable Television, and Internet Services**

Comcast is the major provider in the region and for the Town of Raymond for cable television and for fast speed cable internet access. Verizon used to be the major provider of land line phone service along with Comcast in New Hampshire, but recently sold its communication phone and internet services to Fairpoint Communications, retaining its wireless internet services. The public utilities currently registered with the New Hampshire Public Utilities Commission (PUC) include incumbent local exchange carriers (Fairpoint and seven independent telephone companies), approximately 30 active competitive local exchange carriers, and over 100 in-state toll providers. The PUC does not regulate cable television, wireless/cellular, out-of-state long distance, or internet service providers.

Since the completion of the last Master Plan update for the Town of Raymond, the proliferation of cellular phones has lead to a correlating decline in growth and demand for land line service. Since the state does not regulate these operators, it has hard to say how many individuals are using a certain provider. The dominant companies for cellular service in the region are AT&T (formerly Cingular Wireless), Verizon, and Nextel.

In response to a growing concern among state and federal regulators and others, the cellular telephone industry recently introduced its Wireless Code of Conduct, a voluntary consumer code. If a customer has a dispute with a cellular phone provider, then he or she can read the Wireless Code of Conduct to find out the generally accepted polices. Customers should also contact their cellular provider. If the cellular provider does not resolve the matter to satisfaction, a customer can contact the Public Utilities Commission

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<sup>64</sup> August, 2007 Issue of "ISO New England Outlook" , The Newsletter of the Independent Service Operator for New England's wholesale electricity available at: <http://www.iso-ne.com/nwsiss/nwltrs/outlook/index.html>

or file a complaint with the Federal Communications Commission. While the PUC does not regulate cellular telephones, the Consumer Affairs Division is available to assist with complaints about cellular service.

Expanding broadband<sup>65</sup> service throughout New Hampshire and to rural areas of the state is a major economic development priority. The State of New Hampshire, Department of Economic Development (DRED), Division of Economic Development (DED) has recently initiated a project to develop a Broadband Action Plan for the State of NH to identify opportunities for expanded access to broadband connectivity in all regions of the State. In addition, officials at DRED and Senator Shaheen's Office are currently assembling New Hampshire-based projects for broadband stimulus funding under the American Recover and Reinvestment Act (ARRA) of 2009.

As this funding is allocated to various projects and parts of the state, it is important that the Town of Raymond adequately assess its internet, DSL and other broadband service needs to determine if the community can take advantage of these important initiatives. In addition to broadband services, wireless internet and other communications services are expanding across the state and these wireless services will compete as the demands for faster and less expensive communication systems grow.

#### **D. Energy Efficiency Plan**

Investing in an energy efficient future will have many tangible benefits for the Town of Raymond. In municipal buildings, energy savings can reduce operating costs for the community and cut carbon emissions. These savings can also be carried over into the way the Town of Raymond regulates land use and development by incorporating energy efficiency into building codes and local ordinances.

The June 2007 issue of New Hampshire Town and Magazine featured several New Hampshire municipalities which are currently tackling energy efficiency. Many of these towns have adopted an energy component to their Master Plan, with a goal of reducing carbon emissions by 20 percent by 2010.<sup>66</sup> In addition, zoning articles have been passed, aimed at encouraging new non-residential development to address renewable energy and energy efficiency. Also, many municipalities all across New Hampshire are making energy efficiency system upgrades to municipal-owned buildings and SAU facilities to help save money in the short term and lower property taxes in the long term.<sup>67</sup>

There are a number of ways that the Town of Raymond can begin to incorporate renewable energy and energy efficiency into local ordinances. The first step has already been taken; by including this energy efficiency section in the Town's Master Plan,

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<sup>65</sup> Broadband according to the Computer Desktop Encyclopedia commonly refers to Internet access via cable and DSL, which is as much as 400 times faster than analog dial-up.

<sup>66</sup> French, Marie Ann "Towns and Cities Tackle Energy Conservation" New Hampshire Town and City, June 2007 Pg 12

<sup>67</sup> Ibid.

Raymond is acknowledging that energy efficiency is a priority for the community and that by encouraging or requiring energy efficient development, the overall community will directly benefit from these actions. Second, simple solar heating and cooling provisions related to the orientation and siting of buildings on a lot or along a street can be incorporated into the Planning Board's site plan and subdivision regulations design standards under the enabling authority of RSA 674:36 II (k). In addition, energy efficiency language can be incorporated into the Board's site plan regulations as allowed as an innovative land use control per RSA 674:44 II (i).

Third, Raymond can adopt additional building codes that are more stringent than state codes for both residential and non residential development to produce greater energy efficiency under the authority granted by RSA 155-A:2 VI. Currently, RSA 155-D requires that all new construction comply with State energy efficiency codes and receive a permit certifying compliance. While the Public Utilities Commission is charged with administering the code, it is the responsibility of the local building code official to "review plans and specifications to determine if all pertinent data and features of the structure and the equipment systems conform to the provisions of the code. By applying passive solar heating and cooling design standards in conjunction with building codes, it has been estimated that energy utility bills can be decreased by 30 percent. Add to that "well insulated and tightly constructed building shells" and the savings can reach 75 percent (Urban Land Institute, 2000).

In addition to the above measures, RSA 72:61-72 allow municipalities to adopt property tax exemptions for property owners that have installed solar, wind-powered, or central wood heating energy systems on their property. While only 56 New Hampshire communities offered these exemptions as of 2003, the southernmost three counties in the state contained the most communities offering tax exemptions. Hillsborough County had the most communities with 10, while Cheshire and Rockingham Counties each had eight.

Another incentive offered by the state is backward or net metering allowed under PUC Rule 900. Net metering focuses on how much energy a household produces and consumes through the use of solar, wind, or water-powered generators. Whenever the household is generating more electricity than it is consuming, the meter runs backward, and the homeowner is billed only for the net meter reading.

Amendments to RSA 198:15-b, effective July 22, 2005, also increase support to school districts building high performance schools. Additional state financial support is available to these districts and the School Building Aid formula can be augmented by up to 3 percent, or \$100,000 per year, for districts that design and construct a facility consistent with the high performance school standards published by the Department of Education.

Lastly, the most advanced energy efficiency action that the Town of Raymond could take is to develop and adopt a comprehensive energy efficient performance zoning ordinance to promote renewable energy and energy efficiency. An excellent model zoning article which can be used as a guide in developing a comprehensive energy efficient

performance zoning ordinance is provided in the *Innovative Land Use Planning Techniques: A Handbook for Sustainable Development*.

While there are currently very few energy efficient development ordinances in New Hampshire, these ordinances are permitted as a means of carrying forth the purposes of zoning ordinances as established in RSA 674:17. Section I (j) of that statute specifically encourages the use of solar, wind, or other renewable energy systems and the law gives municipalities the power to establish buffer zones or other zoning districts that overlap any existing districts.

RSA 674:21 I (h) also gives communities such as Raymond the enabling authority to offer voluntary incentives to developers in exchange for meeting a number of energy efficiency performance standards. While most voluntary provisions may be initially ignored by developers or builders, providing a set of incentives with tangible energy and monetary savings may actually draw interest that would not otherwise exist. While the return on the initial, more costly investment of energy efficient systems is usually seen in less than ten years, and as fast as only a few years, incentives can help lessen the initial cost burden. Incentives can also be used to offer a subsidy to the development through possible tax deferments, deductions, credits, or abatements.

Other incentives may also include awarding developments a special certification status or the provision of technical and design assistance from the Town. Traditional zoning incentives include density bonuses or property tax credits. Additionally, there is the possibility of net metering or receiving a refund for excess power generated on site and pumped back into the “grid.”

Alternatively, rather than implementing a set of energy efficient development regulations, communities can also choose to require all development and renovations meet the requirements of the various US Green Building Council Leadership in Energy and Environmental Design (LEED) Programs including:

- LEED-NC: New commercial construction and major renovation projects
- LEED-EB: Existing building operations
- LEED-CI: Commercial interior projects
- LEED-CS: Core and shell projects
- LEED-H: Homes
- LEED-ND: Neighborhood development.

Another alternative for the Town of Raymond is to adopt the Energy Star standards for all new construction and renovations. Many of these standards have been incorporated into the EPA Community Energy Challenge designed for municipalities.

### **EPA Community Energy Challenge**

The Community Energy challenge is an opportunity for municipalities across New England to identify simple and cost-effective measures that increase energy efficiency

and renewable energy use while reducing air pollution and saving money.<sup>68</sup> As a part of this effort, the Environmental Protection Agency (EPA) is challenging all New England communities to save money and reduce air pollution by assessing their energy use, taking action to improve energy efficiency, and seeking out renewable energy choices. EPA will provide technical assistance to every community that chooses to take the challenge.

This voluntary program is set up to be accomplished in the following 4 steps:

### **Step 1. Take the Pledge**

Agree to assess energy use in your community's schools, municipal buildings, or wastewater facilities. Set a target for reductions (at least 10 percent lower than your baseline) in energy use intensity (energy use per square foot). The timeframe for reductions is up to participants.

### **Step 2. Assess Energy Use**

Allow the ENERGY STAR Portfolio Manager tool to help take control of energy consumption in your municipality. Track energy use per square foot, costs, greenhouse gas emissions. This can be accomplished by logging onto the ENERGY STAR WEB site by utilizing EPA's free ENERGY STAR Portfolio Manager tool.

### **Step 3. Understand Opportunities for Efficiency**

Work with many organizations across the region to identify opportunities for energy efficiency and renewable energy sources. These groups include: Energy Star, NSTAR, Keyspan, National Grid, Jordan Institute, ICLEI, CT Clean Energy Fund and others. These organizations can help the Town of Raymond increase energy efficiency and promote renewable energy use in municipal and school district buildings and operations.

### **Step 4. Recognize Successes**

EPA New England and EPA ENERGY STAR contractors also provide free, live web-based training in benchmarking and energy management, including follow up technical support, to all participating communities. EPA New England will recognize community achievements under the Challenge and track overall progress. Participating municipalities may be eligible for national EPA recognition as:

**Energy Star Leaders** – for a demonstrated average reduction of 10 percent or more across all buildings; or

**Energy Star Label** – awarded to buildings performing in the top 25 percent according to the National Energy Performance Rating System.

EPA New England also organizes additional recognition activities, including, but not limited to: media events to highlight progress, case studies posted on the web, and articles in general and trade publications. EPA also encourages members of its extensive partner network, notably regional utilities, and energy service and product providers, to help Energy Challenge participants implement their energy efficiency plans.

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<sup>68</sup> <http://www.epa.gov/region1/eco/energy/energy-challenge.html>

## **PSNH Energy Rebate Program**

Each year, PSNH has limited funds available to provide incentives or rebates to customers investing in energy-efficient electric technologies. PSNH's Energy Service Program is a series of energy conservation programs and services available to large commercial and industrial customers. This program is designed to help PSNH customers lower their operating costs through joint investment in electrical energy conservation.

Some areas where PSNH provides rebates are for energy efficient products in lighting, heating, cooling, water heating, motor efficiency, weather stripping and caulking, as well as refrigeration. PSNH has program rebates for both large business retrofit as well as small business retrofit. If a business is operating aging, inefficient equipment and systems PSNH can help better the efficiency of a facility through services including installation of variable frequency drives, replacement of motors, air compressors and lighting upgrades. Rebates are also available for custom projects. Technical assistance is also offered through the Retrofit Program, including project evaluation, measure identification, equipment monitoring, and energy audits.

To help fund these improvements, the program offers prescriptive and custom rebates to customers who replace equipment at their facility with more energy efficient equipment. Not only will participants save money in the form of rebates, but they will also see long-term savings in their energy bills. Financial incentives are available for qualifying energy efficient equipment:

- Lighting and Controls
- LED Traffic Lights
- Electric Motors
- Variable Frequency Drives
- Air Compressors
- Custom Projects

PSNH also offers energy rebate programs for public schools. PSNH has developed the New Equipment & Construction/Schools Program to promote energy efficiency, protect the environment, and increase the economic vitality of New Hampshire. All public schools, grades K-12, are eligible for this New Equipment & Construction Program. PSNH offers prescriptive and custom rebates designed to help municipalities purchase and install energy efficient equipment. Financial incentives for a wide array of energy efficient technologies are available, including:

- Energy Efficient Lighting Systems
- Energy Efficient HVAC Systems & Chillers
- Premium Efficient Motors
- Energy Efficient Dry Type Transformers

## Energy Efficiency Action Goals

Concerns about the instability of the nation's foreign oil supply, about the rapid escalation of energy costs, and about the impact of energy use on climate change are all causes of great concern that necessitate a comprehensive strategy towards energy efficiency and sustainable living in the years to come.

Reducing energy consumption and carbon emissions is one of the most challenging areas facing the nation as well as the Town of Raymond. Given our existing infrastructure and low density development patterns, the need to reduce the total number of vehicle-miles traveled, especially by the single-occupancy motor vehicles is great. Measures which can help to alleviate some of these concerns include public transportation and improvements to enhance bicycling and walking. However, improving energy efficiency in buildings is equally as important. In order to bring about necessary change, both voluntary actions and an active regulatory approach will be vital in reducing energy consumption and energy costs.

Achievements in municipal energy reduction will require investment and innovation; however, a number of simple-cost effective solutions can be implemented, including for example installing LED Traffic Signals to reduce energy costs. Many towns in New Hampshire are finding large gains as a result of this simple change.

LED lights use 80 to 90 percent less energy than conventional incandescent bulbs. In addition, LED lights require 1/6 the maintenance of conventional bulbs, only needing replacement every eight to ten years. A street light conversion completed in 2007 will eliminate 15 tons of CO<sub>2</sub> in 2015.<sup>69</sup>

For the City of Keene, NH, the numbers broke down as such:

- Cost of converting traffic signals to LED: \$19,000 after PSNH Rebate
- Financial savings from reduced energy use: \$3,854 a year
- Payback: 5 years (However, this does not include the projected savings that occurred as a result of growth in the traffic signal area. If this is taken into account, the payback period becomes 1-2 years.)<sup>70</sup>
- Reduces air pollution emissions that contribute to visibility degradation and health problems
- Reduces preventative maintenance costs
- Reduces liability of accidents due to burned out signals
- Saves tax payer dollars
- Excellent opportunity to lead by example, investing in a highly cost-effective energy savings measure

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<sup>69</sup> City of Keene's Local Action Plan for Climate Protection  
[http://www.ci.keene.nh.us/sites/default/files/2004\\_CAP\\_FINAL.pdf](http://www.ci.keene.nh.us/sites/default/files/2004_CAP_FINAL.pdf) accessed on 11/28/07

<sup>70</sup> Ibid.

Other changes and actions can be taken as well. In 2007, the New Hampshire Carbon Coalition issued the New Hampshire Guidebook on Energy Efficiency and Climate Change, which outlined five steps that communities can take to address energy efficiency. These steps are:

1. Formation of an Energy Committee;
2. Create a baseline inventory of energy use;
3. Determine energy reduction;
4. Draft an Action Plan to reduce energy use; and
5. Implement and monitor action plan programs.

The most important step is having an Energy Committee, or some other entity, that is committed to making changes and will take on the responsibility of trying to make sure that these steps are addressed. Without this it will be hard to implement any sort of plan, because there will be no driving force behind it.

More importantly in the very near future, there is going to be funding available through competitive grants from the state Office of Energy and Planning (OEP) under the Energy Efficiency and Conservation Block Grant (EECBG) Program through the recent American Recovery and Reinvestment Act of 2009.

For more information visit: <http://www.nh.gov/oep/recovery/eecbg.htm>

### **Energy Efficiency and Conservation Block Grant (EECBG) Program**

The EECBG program in New Hampshire is going to be administered by the OEP. Projects that will be funded include:

- Development of an Energy Efficiency and Conservation Strategy
- Retention of Technical Consultant Services to assist in the development of an Energy Efficiency and Conservation Strategy
- Residential and Commercial Building Energy Audits
- Financial Incentive Programs for energy efficiency improvements
- Grants to nonprofit organizations and governmental agencies for the purpose of performing Energy Efficiency Retrofits
- Energy Efficiency and Conservation Programs for Buildings and Facilities
- Development and Implementation of Transportation Programs to conserve energy
- Building Codes and Inspections to promote building energy efficiency
- Energy Distribution Technologies that significantly increase energy efficiency, including distributed generation, combined heat and power, and district heating and cooling systems
- Material Conservation Programs including source reduction, recycling, and recycled content procurement programs that lead to increases in energy efficiency
- Reduction and Capture of Methane and Greenhouse Gases excluding carbon capture or sequestration from power plants

- Energy efficient Traffic Signals and Street Lighting
- Renewable Energy Technologies on Government Buildings
- Any Other Appropriate Activity that meets the purposes of the program and is approved by DOE.

## **E. Recommendations**

The following is a list of goals and actions that the Town of Raymond should strive towards in creating a sustainable, energy efficient future that cuts down on energy use and saves costs for the Town of Raymond:

1. Reduce dependence on fossil fuels and make the pledge to join either the EPA Energy Challenge or the Cities for Climate Protection Campaign (CCP) which is administered by the International Council for Local Environmental Initiatives (ICLEI).
2. Encourage increased use of solar, wind, small hydro, clean biomass, clean fuels and related technologies produced in community-scale facilities.
3. Reduce energy consumption through conservation and efficiency.
4. Reduce greenhouse gases.
5. Encourage a sustainable supply of clean energy with equal benefit to all.
6. Promote a comprehensive public transportation system including creation or expansion of bus lines, public rail transportation, shuttles, car sharing, and safe and attractive bicycling and walking facilities with an emphasis on energy efficiency and use of renewable fuels. (Promote Transit Oriented Development).<sup>71</sup>
7. Encourage farmers and large land owners to develop local energy sources and production (such as wind, small hydro, solar, or generation of methane gas from manure to generate electricity or to help produce clean bio-fuels) as an additional income stream.
8. Increase local and community-ownership (municipal, membership based non-profits, co-ops, etc.) of renewable energy resources so that profits can remain local and so that affordable energy resources will be available for generations to come.
9. Encourage sustainable small local businesses.

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<sup>71</sup> Transit Oriented Development (TOD) is characterized by high density, mixed use development within ¼ to ½ mile of a transit hub that allows for easy pedestrian access to transit stops.