Chapter 11
Utilities and Public Services

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1.0 INTRODUCTION

In every community there are aspects of daily life that are unseen or unnoticed. A reliable supply of clean drinking water is often taken for granted until a water ban is instituted, or a new water source is needed. The sewer system may be "out-of-sight and out-of-mind" until a line breaks and traffic must be detoured around the broken line. Electricity may be taken for granted until the power goes out, and solid waste disposal may be taken for granted until the Town must seek other waste disposal options. All of these matters come under the general heading of *infrastructure*, and the Master Plan examines the current status and likely future need for the various types of infrastructure in Littleton. This chapter analyzes the need for and discusses the present and future locations of public and private utilities, in the Greater Littleton Area. This includes water, sewer, electrical, solid waste, and telecommunications (wireless and land lines).

2.0 LITTLETON WATER AND LIGHT DEPARTMENT

In 1887 the original provider of water and electrical power to the Town of Littleton was a privately held company known as the Littleton Water Works. Through the efforts of Daniel C. Remich, a member of the 1903 New Hampshire State Legislature, an act was passed authorizing the Town of Littleton to purchase the existing company which at that time consisted of two pump stations and generating plants - one near the Apthorp dam and one at the Lafayette Avenue electric station.

Littleton Water & Light is a separately chartered department of the Town with three commissioners as its supervisory body. The commissioners are appointed to 3-year terms by the Town's Selectmen. The main department facility (which houses the administrative offices, equipment storage, and the repair area) is located on Lafayette Avenue. The Water and Light Department employs a staff of fifteen, which include office personnel, field maintenance personnel and a staff supervisor.

2.1 Water Department

It was the 1902 outbreak of typhoid fever, attributed to the Ammonoosuc River water supply, which prompted local officials to seek a secure water source. Seven and half square miles of drainage area on the side of Mt. Garfield located in the towns of Bethlehem and Franconia were purchased through a $200,000 bond issue. The eleven-mile pipeline to the Railroad Street Chlorinating Station, laid in 1903, services the Town to this day. Water flows by gravity into Littleton at the rate of up to 800,000 gallons per day (gpd).

Littleton also has a backup source that is a drilled rock well capable of supplying another 400,000 gpd. In 1961 this artesian rock well was developed as a supplemental water supply. Further improvements included a new 1,500,000 gallon water storage reservoir and pumping station in 1969; industrial park improvements in the 1970's and 90's; improvements to the disinfection facility in the 1990's; and finally continued aggressive replacement of small diameter galvanized pipes and services with emphasis on establishing loop feeds in the distribution system. Littleton also has over 2.5 million gallons of covered storage in Town with available fire flow in excess of 1200gpm in the industrial park.

The following is a synopsis of the Water Department's facilities and their function:

- Intake and Sedimentation basin on the North Branch of the Gale River that in 2001 was converted into a slow sand filtration facility.
- Intake on the South Branch of the Gale River (no longer utilized by department).
- Apthorp Reservoir: 158,000 gal (baffled) steel water reservoir.
- Monitoring facility, Bethlehem.
- Chlorination and metering facility, Railroad Street.
- Oak Hill Reservoir: 1 million gallon covered reservoir.
- Goss Pump Station: fills Mt. Eustis Reservoir.
- Manns Hill Pump Station: Supplies service to Manns Hill and Witcomb Woods residents.
- Brickyard Road Well: 270 gallons a minute artesian well, supplemental supply.
- 926 acres of National Forest Land used as a watershed for the Gale River facilities.
- Manns Hill Reservoir: 130,000 gallon steel tank.
- Hospital Reservoir: 158,000 gallon steel tank serving the vicinity of Exit 43.

The Department currently serves 1,600+ connections (approximately 3,700 residents) in the Town of Littleton, and a daytime population that swells much larger to include employees and visitors spending time in this regional center. Approximately 500,000 gallons of water are being consumed each day in Littleton. Steps will need to be taken to secure additional secure water sources, and to understand to what extent the existing system is being strained by large scale development outside the downtown area. New water sources for Littleton should be located in the town, and will be supplied by groundwater rather than surface water sources.

2.11 Land Use Implications and Potential Actions

Land Use Implications

The Water Department in Littleton provides a critical resource to residents and businesses in the community. Here are a few items to consider related to the Water Department in Littleton:

1) Nearly 1.9 million gallons of water are available in Littleton each day, and only 500,000 gallons are currently being utilized.

2) One million gallons of water are treated each day due to the overflow rate at the Oak Hill Reservoir on School Street.

3) New uses are being created at the outer reaches of the Water Department's service area. Elevations above 990 feet are only serviceable from the Mann's Hill, Mt. Eustis, and Exit 43 vicinities, and cannot be connected to the gravity system.

4) The Department and Town need to find and develop an additional water source to lessen dependency on the single supply line from the Gale River. Although sections have been replaced some of the original water line is still in service. In light of growing federal regulations stemming from water rate withdrawals to national security issues, the development of a source inside the Town boundaries may be feasible.

Potential Actions

There are an array of possible actions the Town may want to consider pursuing as it evaluates the impact of the Water Department on Littleton and the land use implications. This section will be used to identify the specific actions for Littleton to take upon completion of the master plan.

1) Develop an additional underground water source in Littleton that can be protected and managed by the community.

2) Identify areas in Littleton for future development that do not strain the water system, and any of the other resources discussed in this plan, or identify the infrastructure improvements needed to service these higher elevation areas outside the downtown.

2.2 Electric Department

Electricity was originally generated by a hydro-plant and dam at Apthorp Station, but beginning in 1926 the Littleton Water and Light started purchasing part of its power from the Bradford Electric Company. In 1932 power was purchased from the Connecticut River Power Company. A new hydroelectric power station was built in 1936 and remained in use until 1971. In response to the first major oil crisis in 1979 the Apthorp plant was redeveloped and fully automated under the auspices of the White Mountain Hydroelectric Company.

Littleton's Electric Distribution System consists of four distribution substations, two 34.5 kV delivery taps, approximately 150 miles of distribution lines, 3,500 meters, and more than 3,700 utility poles.

Littleton's largest industrial customers are taking advantage of free electrical energy audits and power quality monitoring to help make our largest users more competitive in

their own marketplace. Power quality monitoring ensures that our customers are efficiently using power supplied to them so that sophisticated computer operated equipment and machinery will operate reliably. Littleton's industrial electrical rates are more than 50% lower than New Hampshire's two largest electric utilities and about 30% lower than the New England wide average. Littleton's low rates are in part reflective of local control and non-profit operation, lack of debt, a good mix of industrial (50%) commercial (20%) and residential (30%) customers, and steady system growth. LWL is constantly seeking to improve the service and products it delivers.

Major upgrades to the electrical system occurred from 1989 through 1996 with a new electrical bypass at the Partridge Lake Substation; new switch gear installed at the Lafayette Substation; and complete rebuilding and increasing capacity of the Burndy and South Street substations. With passage of a $6,000,000 bond issue in December 1997, Littleton Water and Light terminated its long-term power supply contract with the New England Power Company, which enabled LWL to buy power on the open market. As a result, LWL continues to offer the lowest electric tariff in New Hampshire and one of the lowest in New England.

In 1999 Electrical System Consultants started a 5-year electrical system work plan for LWL. In 2000 the Lafayette transformer was replaced due to a build up of gas. Construction began on circuit 41. Major electrical lines were upgraded on Broomstick Hill Road in conjunction with the Town of Littleton Public Works Department.

In 2001 Circuit 41 (Washington Street) was completed. Circuits 42 and 43 (Union Street and Manns Hill Road) electrical contracts were completed by contract and upgraded to 15 kV in 2002.

In 2003 construction started on the new west side substation (NH Route 18) that will replace the Partridge Lake substation when finished. Major electrical upgrades were completed on Oak Hill Avenue and High Street in support of the Littleton High School renovations project. New ITRON meter reading handheld computers were placed “in service” that are automated meter reading (AMR) capable and able to read an electric meter remotely from a distance up to 2300 ft.

2.21 System Limitations

Analysis of the limitations of the existing Town transmission line, substations, and distribution lines from the LWL *Existing System Analysis* is presented below.

- Town 34.5 kV Transmission Line – Capacity is an issue along this line. Continued maintenance and planning for improvements are required to be able to serve future loads. Since this transmission line is radial, the entire town is out of service in the event of a failure with no means available to quickly establish service. The development of another transmission supplier/provider and or a connection point directly to the grid would provide an additional layer of

reliability to an already reliable system A major concern with this line is the high cost for transmission delivery service.

- Partridge Lake Substation – Serving the rural areas north and west of the Town of Littleton the disadvantages of this facility include its age and its location. It is expected that in June 2004 a new substation located on NH Route 18 will be placed in service, replacing the exiting facility near Partridge Lake.
- Multiple Operating Voltage Levels – The Town of Littleton serves electrical load at four primary voltage levels. Operating at so many voltage levels necessitates maintaining an inventory of materials for each voltage level. The operational flexibility of this system is severely limited. It is the goal in of the LWL to have one distribution service voltage (12470/7200Y) and a sub-transmission voltage of 34,500. It is anticipated that in 2006 the major overhead circuits within the system will be ready for conversion to a higher operational service.
- Contingency Conditions – With the additional circuit added in 2002 to the department circuit configuration, it is possible to serve the Lafayette Substation service area from the South Street Substation during peak load conditions. When the Departments service area has one distribution voltage (12470) the loads will be configured in such a way as to maximize the efficiency of the entire electrical system.
- Electric Facilities Mapping – The LWL has incorporated a Geographic Information System (GIS) as a functional mapping and data base system. When fully operational, system maps and one line circuit diagrams will be available that link data base functionality to each point.

2.22 Land Use Implications and Potential Actions

Land Use Implications

The Light Department in Littleton plays a critical role in providing the infrastructure and services the community's residents, businesses, and visitors require. Here are a few items to consider related to the Littleton Water and Light Department:

1) Littleton is fortunate to have electricity available at a relatively low cost. Littleton's industrial electrical rates are more than 50% lower than New Hampshire's two largest electric utilities and about 30% lower than the New England wide average.

2) The current system does have limitations that need to be addressed.

Potential Actions

There are an array of possible actions the Town may want to consider pursuing as it evaluates Light Department's ability to provide services in the future and the land use implications. This section will be used to identify the specific actions for Littleton to take upon completion of the master plan.

1) Evaluate the development of another transmission supplier/provider for the Town's 34.5 kV transmission line, or a connection point directly to the grid, would provide an additional layer of reliability to an already reliable system.

2) Reduce the cost for transmission delivery service along the Town's 34.5 kV transmission line.

3) Establish one distribution service voltage (12470/7200Y) and a sub-transmission voltage of 34,500.

3.0 WASTE DISPOSAL

The landfill on Riverside Drive was closed in July 1993 and a new transfer station and recycling center was opened to handle Littleton's solid waste. Unfortunately, the facility was destroyed in a fire in 1999 and had to be totally rebuilt. The new facility is now three years old and is expected to meet the community's needs for the next ten years. Property taxes are not used to cover the costs of waste disposal in Littleton. Any surplus revenues or unused expenditures remain in a special account that can only be accessed by a vote at Town Meeting.

3.1 Transfer Station

The Town of Littleton is a member of the Pemi-Baker Solid Waste District. At the 1993 Littleton Town Meeting, residents voted to start a "Pay by the Bag" program to help offset the costs of waste disposal. Special Littleton garbage bags must be purchased and used to dispose of waste at the transfer station. Recycling of most items is also available at no cost, and provides an incentive to reduce the amount of waste each household throws away. The transfer station also accepts construction debris, furniture, tires, appliances, and other bulky items for a fee. A separate fee schedule is available for these items. The "Pay by the Bag" system is also being used in several surrounding towns.

3.2 Recycling

The recycling center accepts recyclables from residential, commercial, and industrial generators. The center also accepts recyclables from sources outside of Littleton including Bretton Woods, the Town of Dalton, Grafton County, and others.

The Town relies on the Pemi-Baker Solid Waste District for an Electronics Recycling Program, Paint Recycling, Florescent Bulb Recycling, and a Household Hazardous Waste Collection.

3.3 Land Use Implications and Potential Actions

Land Use Implications

Littleton's Transfer Station plays a necessary role in the services the community's residents, businesses, and visitors require. Here are a few items to consider related to the transfer station:

1) The Transfer Station promotes recycling rather than disposal.

2) Commercial and Industrial operations are encouraged to recycle. Their material increases the volume of materials being recycled by the Town and helps make the operation more cost effective.

Potential Actions

There are an array of possible actions the Town may want to consider pursuing as it evaluates transfer station's ability to provide services in the future and the land use implications. This section will be used to identify the specific actions for Littleton to take upon completion of the master plan.

1) Continue to promote residential, commercial, and industrial recycling in Littleton.

2) Expand the categories of materials accepted at the Recycling Center as new materials become marketable.

3.4 Wastewater Treatment

The Town operates a wastewater collection and treatment facility which services about 70% of the population, and is supported by the collection of user fees. The facility is located on Meadow Street and discharges the treated effluent into the Ammonoosuc River. The Town contracts with a private firm to operate the treatment facility. Littleton is responsible for maintenance of the facility and all of the collection lines on the system.

The present facility, a secondary treatment plant, was placed in operation in 1989. The facility's capacity is 1.5 million gallons a day. One problem that this facility resolved in Littleton was exclusion of storm water runoff from the plant's system. This facility is operating at slightly more than 65% of its capacity. Town Officials believe the Sewage Treatment Plant should serve the needs of the community for at least the next 5 to 10 years.

It was estimated that this facility would process the Town's sewage for at least 20 years from the date of completion without substantial improvements to the facility. This forecast has held true. The Town of Littleton will begin a new effort to evaluate this facility and plan for future improvements in approximately 2008.

3.41 Land Use Implications and Potential Actions

Land Use Implications

Littleton's wastewater treatment infrastructure provides a critical service to residents and businesses in the community. Here are a few items to consider related to wastewater treatment in Littleton:

1) There are concerns with the location of the service area related to current and future development.

2) Access to this infrastructure should be available in areas that are zoned for commercial, industrial, and high density development. This infrastructure should not be available in out-lying areas or along routes where the town does not want to encourage development in the future.

Potential Actions

There are an array of possible actions the Town may want to consider pursuing as it evaluates the wastewater treatment infrastructure in Littleton and the land use implications. This section will be used to identify the specific actions for Littleton to take upon completion of the master plan.

1) Study the extent of the Wastewater Treatment Plant's service area, and its compatibility with areas of Littleton that have been zoned for future development.

4.0 TELECOMMUNICATIONS

Littleton's ability to attract, retain, and generate businesses will increasingly depend upon the availability of telecommunications infrastructure to support the needs of these companies. This will require the availability of high bandwidth connections to the Internet and wireless connections, both for industrial and commercial areas where companies are located, and in residential areas where employees, residents, and small businesses are located. This requirement for adequate bandwidth is one that major providers will need to address with fiber optic, wired and wireless connections into and within the Littleton area.

Littleton should undertake an assessment of the existing carriers and bandwidth, and promote the improvement of this infrastructure if it is deemed insufficient. The Town can promote this infrastructure investment by working with carriers to site such infrastructure improvements. There is currently a "pole study" being conducted in the three North Country counties according to the Coos Economic Development Corporation. This study should show to what extent the existing facilities can accommodate more infrastructure, and will provide a cost estimate for establishing a fiber optic network in the region.

4.1 Land Lines

Local telephone service in Littleton is provided by Verizon, and long distance services are available through many providers, including MCI, AT&T, Verizon, and others.

Internet connections also are available through such companies as Earthlink, NCIA, AOL, and Verizon through the existing land line network. This land line system is also an integral part of the wireless telecommunication system, and necessary for transmitting calls.

4.2 Wireless Facilities

Littleton currently has three towers providing communications, broadcast, and personal wireless service. The Manns Hill facility is owned by Atlantic Cellular of Colchester, Vermont and broadcasts for New Hampshire Public Television, WLTN, Verizon personal wireless service, and communications for the Littleton Fire, Police and Highway Departments. The Pine Hill facility is owned by Profile Broadcasting of Littleton and broadcasts radio signals for WLTN. The Mount Eustis facility is used to provide personal wireless service through US Cellular.

Another facility is located in the Town of Bethlehem on Mt. Agassiz. The Mt. Agassiz facility provides personal wireless service through U.S. Cellular. Another broadcast facility, owned by WLTN, is located on Breezy Hill in Lisbon.

Wireless service is an increasingly sought after service for phone and internet access. Increased wireless service throughout Littleton would be beneficial to all users. As the number of users increases in Littleton wireless providers will be looking at add additional wireless telecommunications facilities to the network to handle the capacity and peaks in demand. The western portion of Littleton has already been identified as a region that still needs coverage.

4.3 Cable Services

Littleton's cable television service is currently provided through Adelphia Communications Corporation. Adelphia also provides high bandwidth residential connections over its cable infrastructure for internet access. There are, however, competing technologies such as Digital Subscriber Lines (DSL) that offer advantages in some cases, which are difficult to provide to large areas of the Town. DSL facilities generally require equipment to be housed in the local telephone company central office and within 17,000 to 20,000 feet of the subscriber property. The distance of these facilities to some rural areas makes DSL unfeasible.

In new developments and redevelopment projects infrastructure planning should include the installation of conduit to accommodate wiring for existing and future telecommunications technology. This feature will allow people to access services online, easily work from their homes, and will potentially reduce the number of vehicles traveling on local and regional roadways.

4.4 Future Infrastructure Expansion

Despite the Town's predominately rural nature and relatively small population, the citizens of Littleton demand access to new and emerging telecommunications infrastructure. Zoning and other local regulations should allow for the careful siting and installation of telecommunications capabilities such as fiber optic cabling, and the wireless, cellular and satellite communication infrastructure needed to support and retain commercial and residential interests. Whenever possible, unobtrusive installations and co-location should be encouraged.

4.5 Land Use Implications and Potential Actions

Land Use Implications

Littleton's telecommunications infrastructure provides a critical service to residents, businesses, and visitors in the community. Here are a few items to consider related to telecommunications in Littleton.

1) Fast and reliable telecommunications infrastructure has become necessary for economic development.

2) Telecommunications provides access to information, retail, entertainment, education, town services, and in some cases employment without requiring a trip on local roadways.

3) Increases in the number of users in Littleton will result in a need for additional telecommunications facilities to handle this additional capacity.

Potential Actions

There are an array of possible actions the Town may want to consider pursuing as it evaluates the telecommunications infrastructure in Littleton and the land use implications. This section will be used to identify the specific actions for Littleton to take upon completion of the master plan.

1) The Town of Littleton should work in cooperation with existing and future telecommunications service providers to insure future expansion of the cable, high speed internet, and other telecommunications infrastructure coincides with projected residential and commercial development.