

ELECTRICAL AND COMMUNICATION SERVICES

INTRODUCTION

Presence and availability of adequate utilities is vital to the welfare of the community. The availability of certain utilities can also support the community's goals for economic development.

To meet these needs, private utilities presently being provided in the Town of Jaffrey include electricity and 3-phase power, and telecommunications infrastructure (broadband, cable television, telephone/wireless communications, internet service). Because of their diverse nature, each of these is considered separately in the following sections. It will be seen that, due to the rural nature of the Town, not all utilities are available throughout the community, such as 3-phase power and broadband. However, electricity and certain telecommunications services are somewhat easier to distribute and are available virtually everywhere in the Town. All electrical and telecommunications infrastructure in Jaffrey are currently provided by private business entities.

ELECTRICAL INFRASTRUCTURE

Electricity

Public Service of New Hampshire (PSNH) is the main electricity supplier for the Town of Jaffrey. PSNH is the state's largest electric utility, providing service to more than 447,000 homes and businesses. PSNH is a wholly-owned subsidiary of Northeast Utilities, a utility holding company based in Connecticut. With three fossil-fuel fired generating plants and nine hydroelectric facilities, PSNH has over 1,110 megawatts of generating capacity.

In Jaffrey, PSNH provides service to homes, commercial and industrial businesses and all streetlights. Distribution and transmission lines, which are placed along roadways, carry power throughout the Town to the individual customers. The voltage from these lines is stepped down to the voltage that is used by the specific customer by way of transformers.

Electricity in Jaffrey is distributed through one major substation, located off of Route 124. Two circuits originate from the Jaffrey substation. The 382/313 line spans from the Monadnock Substation in Troy to the Jaffrey Substation. The line continues as the 313 to the Jackman Substation in Hillsborough. The 382/313 lines have three (3) 34.5Y/19.92 kV taps in Jaffrey, which include;

- The 382X2 which starts near the Jaffrey Substation and crosses Highland Avenue. The line runs through the right-of-way in a southerly direction along Mountain View Drive and onto Route 202 near Old Jaffrey Road in Rindge.
- The 313X3 begins along Amos Fortune Road running in an easterly direction onto Dean Farm Road. The circuit feeds west and north from Highway 137 to the coterminous town border of Jaffrey and Dublin.
- The 313X2 originates off of Lehtinen Road and feeds to Route 202. The line toward Jaffrey becomes the 18X1 and continues to Downtown Jaffrey. Power from this line supplies the east quadrant and Contoocook Lake areas.

PSNH anticipates being able to provide current and future electricity demands of the Town of Jaffrey. There are currently no plans to expand operations.

3-Phase Power

Public Service of New Hampshire has indicated that three-phase service, required for manufacturing operations, is available along a majority of Route 202 and Route 124. Additionally, 3-phase is available along portions of Old Sharon Road, Webster Street, Knight Street, Fitzgerald Drive, Plantation Drive, Squantum Road, Prescott Road, Woodbound Road, Stratton Road, Charlonne Street, and Nutting Road. Customers requesting 3-phase power service are reviewed on a case-by-case basis. PSNH indicates that the projected revenue from a new customer requiring three-phase service would be reviewed and may be used to reduce customer contribution for the upgrade.

TELECOMMUNICATIONS INFRASTRUCTURE

Broadband (a.k.a. High-Speed Internet) Technology

Broadband is the common term for a high bandwidth internet connection one that can send or download information many times faster than with a standard telephone and modem. You can do everything you want to do online more quickly and more easily with broadband including logging-on, working from home through network connections, downloading files and music, and more.

There are different ways of delivering broadband services over telephone lines, cable connections, via one or two way satellite systems and even by radio and there are many companies who offer these services. High speed or Broadband Internet connectivity, when locally available, is provided either through a Local Exchange Carrier (LEC), typically a phone carrier, or an Internet Service Provider (ISP).

The capability of existing infrastructure in the Town of Jaffrey to provide broadband service such as DSL (Digital Subscriber Line) through telephone lines, cable service, satellite cable, and wireless to individual homes and businesses is described in the sections below.

Cable Television

Comcast is the current cable provider in Jaffrey and offers analog and digital video services, high-speed internet access and other advanced services over its broadband networks.

Jaffrey currently has cable television with expanded cable service capabilities. The expanded cable suite includes additional programming such as movie channels and additional features such as “On Demand” in limited areas of Town. Satellite cable television is available to individual residences and businesses throughout the community, provided a southeasterly exposure is available, and is an alternative cable service for those areas not served with cable options through Comcast. There are a number of satellite cable providers and installers serving the area.

Telephone and Wireless Communications

Landline phone service is provided for new and existing residences and businesses in Jaffrey by Verizon. Long distance calling service through landline phones is available through a number of service providers. A list of Authorized Toll Providers is available from the NH Public Utilities Commission at <http://www.puc.state.nh.us/Telecom/telecom.htm>. In addition, Verizon, U.S. Cellular, and various other telecommunications companies provide cellular and personal wireless service to the area.

Based on the 2003 US FCC Towers database distributed by the New Hampshire Office of Energy and Planning, there are currently three wireless facilities in Jaffrey (see Utilities and Public Service Map). Table 27 identifies existing telecommunications towers in Jaffrey:

Table 27: Telecommunications Towers

Location	Height/Type	Owner
20 Webster Street	80-foot monopole	U.S. Cellular Corporation
141 Old Sharon Road	125-foot monopole	Crown Atlantic LLC
365 Turnpike Road	50-foot silo	Nextel Communications

Source: NH OEP Cell Tower Database, November 2003

Federal law regulates the placement of cellular towers in a given community; however, emphasis has been placed on balancing the need for telecommunications infrastructure with a community's desire to maintain community character. The Telecommunications Act of 1996 preserved state and local regulatory authority for the placement, construction or modification of wireless facilities. However, local zoning and regulations may not prohibit wireless services within the community or address the potential effects of non-ionizing electromagnetic radiation and unreasonably discriminate among providers of functionally equivalent services.¹

Internet Connectivity

Telephone Lines

Internet connections over telephone lines are provided by a combination of a Local Exchange Carrier (LEC, aka "the Phone Company") and an Internet Service Provider (ISP). These two functions can be provided by one company, but for residential customers are more commonly provided by two separate companies. LECs typically provide bandwidth and contract with ISPs to market and sell connectivity. ISPs also typically offer value added products including web-hosting space, web design assistance, email and access to news groups and other services. For competitive reasons, LECs and ISPs offering services in Jaffrey change frequently. An up-to-date list is provided by the NH Public Utilities Commission at:

<http://www.puc.state.nh.us/Telecom/internetbroadband.htm>.

Dialup connections over telephone lines are universally available in Jaffrey, with a maximum available bandwidth of approximately 52 kilobits per second (kbps).

Digital Subscriber Line (DSL) high-speed computer internet service is the most widely available high-speed telephone connection type in the region, and currently provides a maximum available bandwidth of approximately 3000 kbps (download). DSL phone service may be available to individual residential and business customers in Jaffrey, depending on the residential or business location's proximity to the Verizon central office located on River Street in downtown Jaffrey. DSL broadband has a limited service area of 18,000 feet from the central office or substation providing service, and the maximum bandwidth available on the line decreases as the distance from the central office increases. All DSL services in Jaffrey are provided over Verizon telephone lines, but may be resold through a competing LEC or ISP.

High-speed data services are also available in the form of commercial-grade T-1 connections. Again, these connections are typically provided over Verizon lines, but may be resold by a competing LEC. These data lines are

¹ Source: Telecommunications Act of 1996, 47 U.S.C. 332(c)(7).

not subject to the same distance limitations as DSL connections, but due to high cost are not generally a viable option for residences.

Cable

High-speed Internet connections are available to customers in town currently served by Adelphia/Comcast. The connection is established on the same physical cable as the cable TV, and currently provides a maximum bandwidth of approximately 4000 kbps (download). The available bandwidth is governed more by competitive considerations than technological limitations, however, and may change in the future.

Satellite

High-speed Internet connections are available via satellite, provided the property has a clear view to the southeastern horizon. Typically, this type of connection provides maximum bandwidth of approximately 1000 kbps (download). Satellite service is more expensive than DSL or Cable connections, but less expensive than a commercial T-1 line. Some applications experience problems on satellite connections due to the latency (delay) associated with the long round trip distance between ground and satellite.

Wireless

High-speed Internet connections via microwave radio transmissions may be available in certain areas of Jaffrey with a clear view to the summit of Mt. Pack Monadnock. This type of connection typically provides a maximum bandwidth of approximately 1000 kbps, but is limited to locations with a clear line-of-sight between the transmitter and receiver. Land-based wireless connections usually have less latency-related problems than satellite services.

Wireless networking is an area of particularly rapid technological innovation. In the future, the line-of-sight limitations may be reduced, thus making wireless services available to broader areas of town.

FUTURE ELECTRICAL NEEDS/RECOMMENDATIONS

In many areas of Jaffrey, street lighting utilizes technologies dating back 20-30 years or more. In some areas street lighting produces annoying glare by shining into pedestrian or driver fields of view. Excessive and unwanted light shines directly on property beyond the intended target and unwanted atmospheric lighting contributes to sky glow. Older lighting technologies utilizing mercury vapor lamps and high pressure sodium lamps offer poor color rendering qualities as compared to more modern metal halide systems.

Today's lighting systems employ design and efficiency features that were virtually unknown as little as 10 years ago such as optical controls that maximize lighting in targeted areas while minimizing undesirable glare and light "trespass". Modern lighting technologies are producing lamps that are more energy efficient by utilizing "pulse starting systems" and moving away from incandescent and mercury vapor lighting to more efficient and color balanced metal halide systems.

Returns on modern street lamping capital costs whether new or retrofitted are more quickly realized because of reduced energy usage and proper layout design reduces the frequency of lamps required for the same level of lighting in a targeted area.

A well planned street lighting program to replace and/or retrofit existing old technology lamping would be a desirable venue to pursue for Jaffrey and the accelerated return on investment would be well worth the initial capital cost.

FUTURE COMMUNICATIONS NEEDS/RECOMMENDATIONS

Digital content via the internet is rapidly demanding wider bandwidth than dial-up access can provide. While it is true that Satellite internet access is available to many in Jaffrey who cannot access the internet by any other means than dial-up, the service is expensive (on the order of \$600.00 up front to purchase necessary equipment and approximately \$60.00 minimum per month subscription fees). In comparison to DSL or cable, satellite internet is nowhere close in speed or reliability.

Availability of high speed Internet access is an important issue for Jaffrey because it directly impacts the town's economic vitality. Jaffrey's 2004 Economic Development Plan points out the need for encouraging a diverse base of economic activity. Towns traditionally use infrastructure services such as water, sewer, electrical, and communications services to lure new businesses. Given Jaffrey's current situation of having relatively high water and sewer rates, which is expected to extend into the future, these will no longer be positive incentives for a business looking to relocate or start up in Jaffrey. This increases the importance of providing good communications services, particularly for smaller entrepreneurial enterprises that might wish to locate outside of the main commercial centers in town, and for residents that could work from home as telecommuters.

Unfortunately, there appear to be no plans by cable or DSL providers to expand services to residences or small businesses beyond current limits of distribution in Jaffrey. It is becoming obvious that alternative means of internet access may be the only hope of providing high speed internet access at reasonable cost for outlying areas of the town.

Two alternative technologies are gaining acceptance nationally and internationally that might be applicable to providing service to underserved areas are Broadband-over-Power Line (BPL) and Wireless Broadband. Implementing Internet access over power lines utilizes the existing power distribution infrastructure, but the concept would require buy-in from PSNH, and would likely be a regional solution rolled out broadly across their service area. Wireless broadband access could be either a regional scale solution if implemented by a large communications provider, or could be implemented at the town level as a municipal utility. In either case, the town should continue to play a role in sparking conversations with surrounding towns and demonstrating an active interest in bringing these types of services to the Monadnock region.

Recent developments in our State Legislature also provide a basis for towns such as Jaffrey to expend public funds to expand broadband facilities.

HB653 was approved in the New Hampshire Senate on March 9, 2006 and went into effect on July 31, 2006. This bill grants bonding authority to municipalities wishing to implement broadband access as a public utility in areas where no commercial broadband access is available.