CHAPTER 4 TRANSPORTATION

Clockwise from upper left: surface cracking on Town House Road, Hobbs Road, shoulder work on Town House Road, and Pine River Road

4.1 INTRODUCTION

NH Route 25 runs across the northern portion of Effingham; it is a primary east-west corridor connecting Portland, ME with New Hampshire's Lakes Region as well as connectivity to the White Mountains and the I-93 corridor. Effingham's Town Offices and elementary school are located just north of NH Route 25. Along the eastern edge of town, NH Route 153 runs north and south, providing connectivity to the Mount Washington Valley to the north. NH Route 16 also provides access to Mount Washington Valley as well as the Seacoast to the south. With Green Mountain dominating the landscape, a network of local roads connects residents and visitors to goods and services. Effingham has one designated scenic road, Hobbs Road.

In Effingham the Selectmen work with local contractors to maintain and plow the town's 40 miles of roads. The Master Plan Survey pointed to several areas where respondents felt there are maintenance needs. The Survey also identified strong recreational interest in hiking and biking paths.

This chapter was developed with guidance and input from the Effingham Master Plan Transportation Committee, which had representation from the Selectboard, Planning Board, and several citizens. Input also came from participants at the May 6, 2011 Public Forum and June 14, 2011 Selectmen's meeting. The chapter explores the existing transportation network in Effingham, provides an update to past master plan recommendations, and makes some recommendations for additional improvements.

4.2 MODES OF TRANSPORTATION

According to the 2000 Census, 23% of Effingham workers also lived in Effingham, 69% commuted to another NH community, and 8% commuted out of state. The primary mode of transportation in Effingham is the automobile. Of those commuting to work, nearly 80% drove alone, with 8% carpooling. The average commute was 31 minutes.

Due to the scattered pattern of housing, municipal facilities, and employment, opportunities to walk or bicycle to work or local activities are limited. Both NH Routes 25 and 153 are identified as Recommended Bicycle Routes on the New Hampshire Bicycle Map along with Town House Road and Elm Street. Numerous Class VI roads offer the potential for off-road walking and bicycling opportunities.

Effingham's changing demographics, in line with statewide trends showing a projected increase in the elderly population, will increase future demands for public transportation services, volunteer driving networks, and other alternatives to driving. Like other rural New Hampshire communities, a fully developed public transportation system complemented by a choice of private transportation providers does not exist. A Regional Coordinating Council is being developed to identify local and regional transportation needs.

Some nearby communities have well established "Caregiver" programs, with volunteer organizations that provide transportation for doctor and dentist appointments, lab tests, pharmacy pick-ups, shopping, hair appointments, and when possible extended-area trips (e.g., Manchester, Lebanon, etc) for medical appointments. Transportation is provided at no cost by volunteers in their personal vehicles, and thus the service is dependent on volunteers and donations.

During the past year, Carroll County Transit began on-demand service with their "Blue Loon" busses for riders throughout parts of Carroll County. The project anticipates the start up of three fixed service routes in the upcoming year – Route 1: North Conway to West Ossipee, Route 2: West Ossipee to Wolfeboro, and Route 3: West Ossipee to Laconia. Currently Effingham is not on a main route; however, residents indicated that they have been able to get on-demand service from the Blue Loon. Data from Carroll County Transit indicates that between February and June 27 of the year 2011trips have been provided, with more scheduled for the upcoming months. The majority of the trips were for medical or physical therapy appointments in Wolfeboro and Conway, others were for employment or social outings.

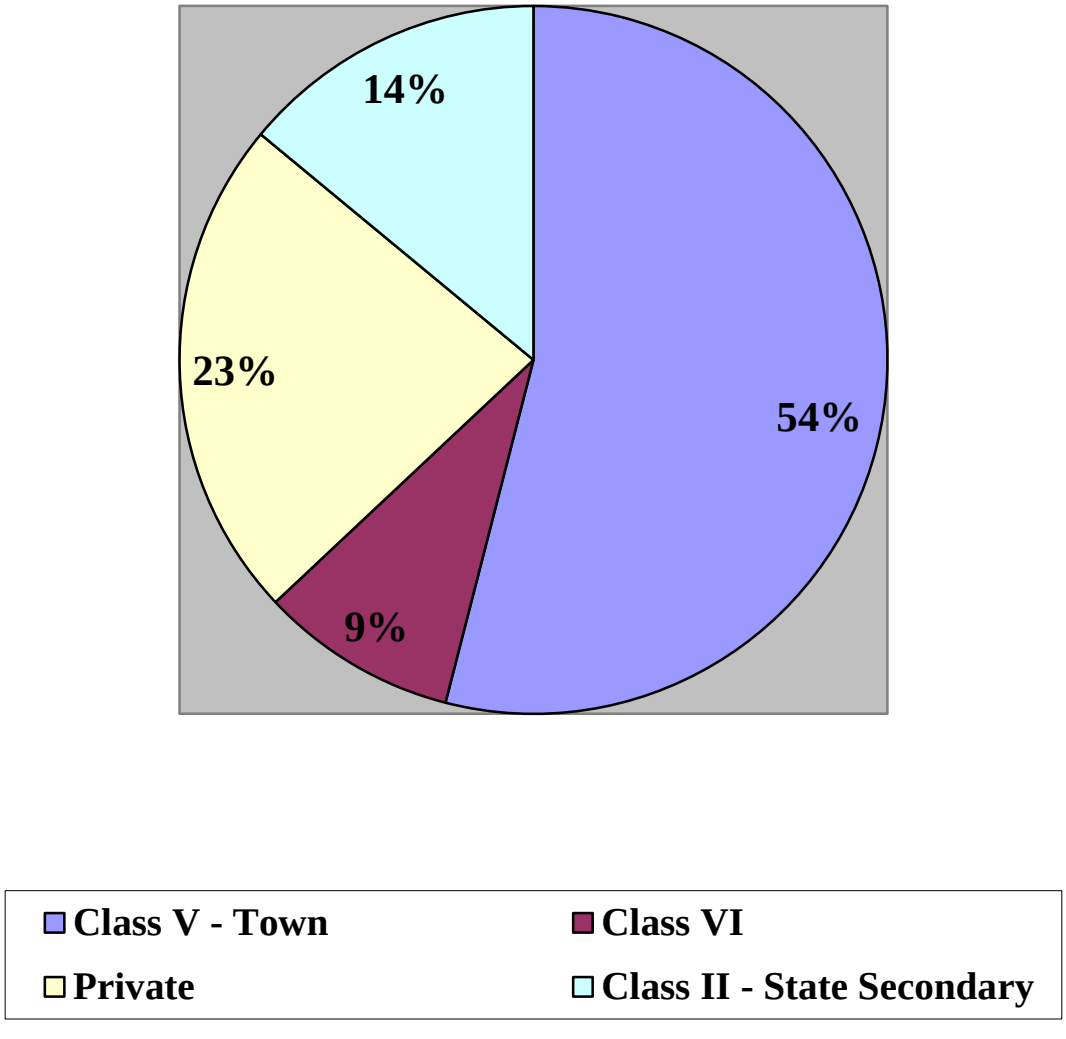
Concord Coach Lines offers coach bus service seven days each week from Berlin, NH to Boston's Logan International Airport. The route goes through West Ossipee twice each day. The coach makes scheduled stops in Tilton, Concord, and Manchester.

4.3 LOCAL TRANSPORTATION NETWORK

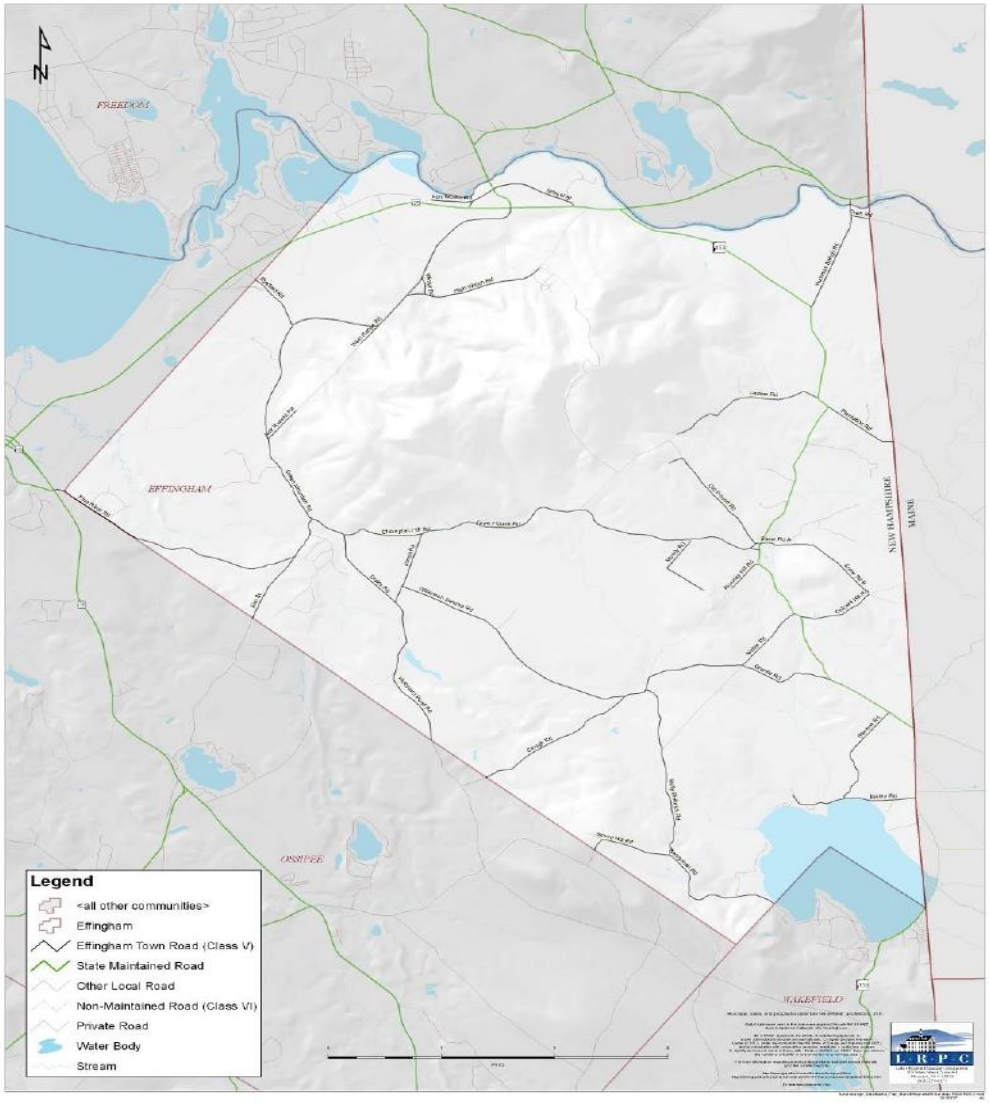
4.3.1 Administrative Classification of Roads

All public roads and highways in New Hampshire are grouped into six administrative categories which relate to the governmental jurisdiction of roads. Class I, II, and III roads are owned by the state. Neither Class I – State Primary highways nor Class III – State Recreational roads exist in Effingham. State owned roads in Effingham consist solely of Class II – State Secondary highways. The last three administrative classes of roads are town roads or roads the town has the right to use: Class IV – Urban Compact roads (these only exist in the Lakes Region in Gilford, Franklin, and Laconia), Class V – Town roads owned and maintained by the town and Class VI Town roads that are unmaintained. The administrative classifications of roads in Effingham are displayed in Map 1. In addition there are a number of Class VI roads and more than forty private roads.

Figure 1: Proportion of Roads in Effingham by Classification



Map 1: Roads in Effingham by Class



4.3.2 Paved and Unpaved Roads

Effingham has a total of 40.1 miles of town maintained roads, split almost evenly between paved (19.8 miles) and unpaved (20.3 miles). At the Public Forum it was noted that the volume of traffic along Elm Street seemed to have increased. At other public meetings residents felt that the large proportion of unpaved roads was part of Effingham's rural/seasonal character.

4.3.3 Traffic Volumes

The NH Department of Transportation (NH DOT) receives data from a number of permanent traffic counters statewide. Additional traffic counts are conducted by the regional planning commissions and are seasonally adjusted by NHDOT to reflect annual average daily traffic counts (AADTs).

Table 1 displays AADT counts from several Effingham locations. Typically these counts are conducted on a three-year rotation. This illustrates an interesting traffic pattern along NH Route 25 in Effingham and the north-south flow of traffic along NH Route 153; many residents felt that NH Route 153 is a popular route for accessing the Conway area. The increasing traffic counts on Elm Street give some credence to the transportation subcommittee's characterization of Elm Street as becoming more of a commuter route and a cut-through from NH Route 16 to NH Route 153 north.

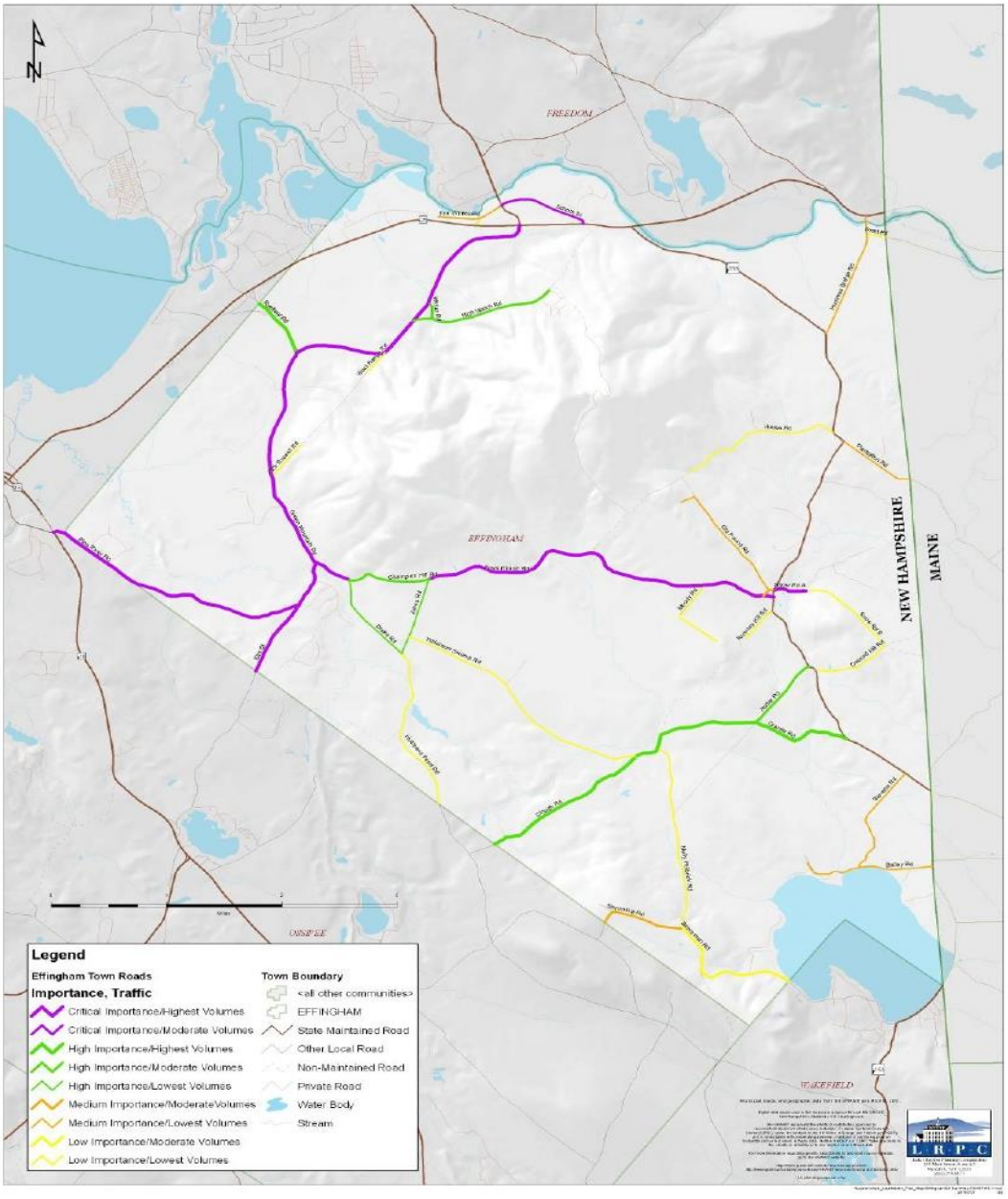
Table 1: Historic Annual Average Daily Traffic Counts 2003 - 2010

Location/Year	2003	2004	2005	2006	2007	2008	2009	2010
NH 25 at Ossipee town line	5,200	*	*	4,300	*	4,300	*	*
NH 25 over Ossipee River at Freedom town line	*	*	2,700	*	*	2,900	*	*
NH 153 over Ossipee River at Freedom town line	3,300	*	*	2,800	*	*	3,400	*
NH 153 south at NH 25	630	*	630	*	*	680	*	*
NH 153 south of Hobbs Road	670	*	*	670	*	*	600	*
NH 153 south River (between Nutter and Colcord Roads)	770	*	*	790	*	*	660	*
Elm Street over the Pine River	1,000	*	*	1,400	*	*	1,200	*
Snow Road over the South River	70	*	*	70	*	*	70	*
Bailey Road over the South River	*	*	90	*	*	80	*	*

As part of the Road Surface Management System inventory the Transportation Subcommittee gave relative scores for traffic volume to each segment of town road (Map 2). Using this, the Subcommittee and the residents at the Public Forum discussed present and anticipated travel patterns along Effingham's roads. Several current patterns of connectivity were identified:

- The southern section of Green Mountain Road to NH Route 16 via Elm Street and Pine River Road and to NH Route 25 via Ryefield Road.
- Town House Road to NH Route 16 via Champion Hill Road and Elm Street and Pine River Road.
- From NH Route 153 to NH Route 16 via Granite Road and Clough Road.
- On a seasonal basis from NH Route 153 to NH Route 16 via Bonnyman Road and Simon Hill Road.
- Many people felt that Elm Street and Green Mountain Road are becoming a cut through from NH Route 16 to NH Route 153 heading north to Conway.

Map 2: Road Importance and Traffic Volumes: Effingham



4.3.4 Scenic Roads

Hobbs Road is Effingham's one designated Scenic Road. The town uses the requirements outlined in RSA 231:157 when managing this designated road. These requirements include Planning Board approval prior to roadway repairs, maintenance, reconstruction or paving that

necessitates cutting, damage, or removal of trees (15" inch circumference or greater) or removal or destruction of stone walls. While these standards apply to the state, municipality, and utility companies, land owners are not affected.

4.3.5 Bridges and Culverts

All of the bridges in Effingham are of concern to the committee, especially the ones on Granite, Drake, and Stevens Roads. The state bridge built in 1924 over the South River on NH Route 153 near Nutter Road, is in "poor" condition and is on NH DOT's Red List of State Bridges, slated for rehabilitation in 2013. The three town-owned bridges on the NH DOT's Red List of Municipal Bridges are the bridges on Stevens Road and on Drake Road over Wilkinson Brook (both built in 1930) and the bridge on Granite Road over the South River built in 1920 and rebuilt in 1950.

As part of the Natural Resources Inventory, the Conservation Commission inventoried all of the culverts in town. This can serve as a starting point for an inventory for transportation maintenance. Effingham's 2005 Hazard Mitigation Plan noted that, "The committee identified several areas where flooding poses a threat to the town; most impacts are on roads, although one area could impact several homes. Drake, Jones, and Hutchins Pond Road, the northern portion of Green Mountain Road, as well as portions of High Watch Road (the only avenue to Lakeview [NeuroRehab Center]) regularly suffer from washout and erosion, requiring repeated repairs. This is due to a combination of inadequate drainage and runoff from adjacent properties, especially logging operations. Flooding can restrict access to residences along Symmes Road (private) and Snow Road."

4.3.6 Road Conditions

One of the questions on the Master Plan Survey asked whether NH Route 153 should be rebuilt. There was strong support for doing this. As this road is a state route, the town would need to work with NH DOT to identify the most critical needs and find ways of getting this work done.

The Lakes Region Planning Commission evaluated the road surface of all town roads in June 2010. The data collected, along with road importance and traffic information provided by the Transportation Subcommittee, was modeled using a program called Road Surface Management Systems (RSMS). Based on a snapshot of the town road network, RSMS compares and prioritizes road improvements. The results provide supporting information for a local road improvements program. When updated on a 2-3 year basis, RSMS provides future road improvement budgeting information and a way to track and re-prioritize road improvements over time.

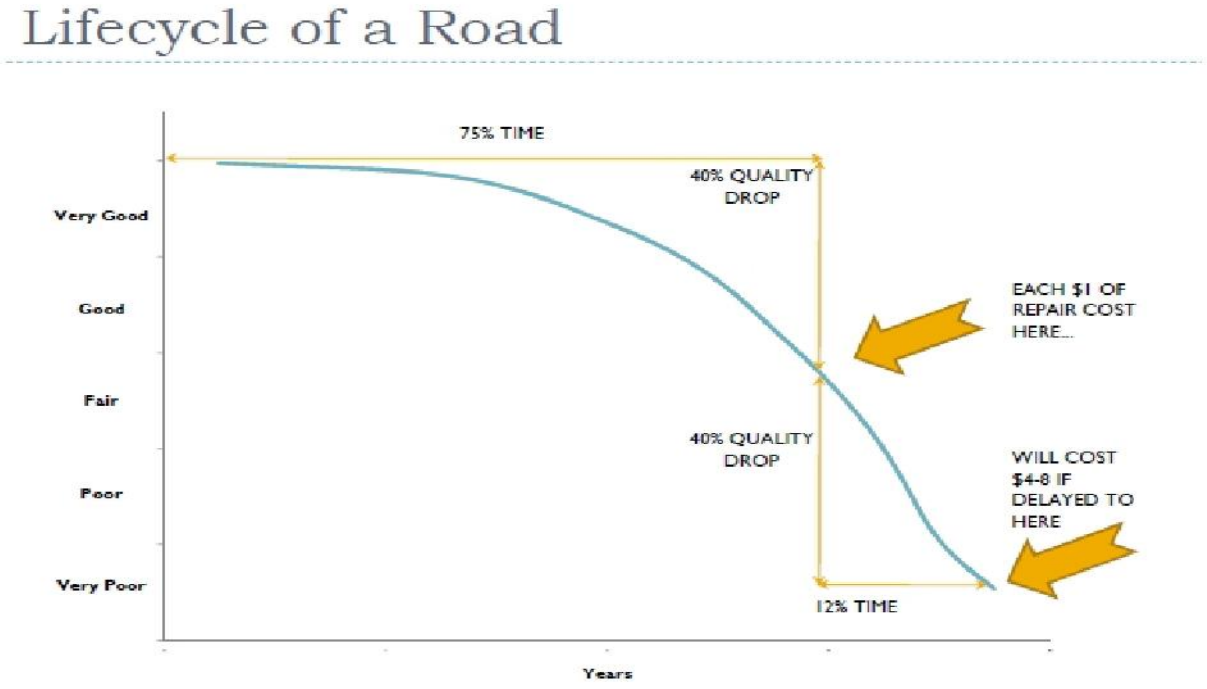
The UNH Technology Transfer manual instructs, "*Road costs increase dramatically if delayed beyond a certain point."* Figure 2 illustrates the relationship between pavement service life, pavement condition and rehabilitation costs. After the first 75% of a pavement's service life, the performance level drops from excellent to fair - a 40% drop in quality. In other words, after 10-12 years, the pavement is still in satisfactory condition and, to the untrained eye, it looks good. Significantly however, within only the next two years, pavement quality degrades dramatically an additional 40%, dropping to very poor performance level. Translated into economic terms,

pavement that would cost $1 to renovate at 75% of its life will cost $5 to $8 to renovate at 87% of its life. The lesson here is that allowing pavement condition to deteriorate from fair to very poor increases repair costs by five times what it would have cost to preventatively maintain road conditions.

Repair of fair pavement condition requires only preventive maintenance, such as an overlay. If the town neglects to maintain pavement until the 16-year mark, the pavement requires reconstruction, which is much more expensive. Therefore, the primary goal of any pavement management system is to keep the good streets in good shape.

It is wise for municipalities to rehabilitate roads in very poor condition with special funds and to plan for expenditure of normal funds for routine and preventive maintenance. Many communities plan for special rehabilitation funds through a Capital Improvements Plan.

Figure 2



Source: UNH Technology Transfer Center.

Additionally, it was noted by the Transportation Subcommittee that the standards to which Effingham's roads were constructed have been inconsistent, leading to variations in the road subsurface. Roads with inadequate foundations will require more frequent surface maintenance and ultimately will need to be reconstructed.

4.3.7 Challenges

A number of challenges were raised during Transportation Subcommittee meetings as well as at the Public Forum. These included:

- the age, quality, and maintenance of NH Route 153,
- the light at the intersection of Green Mountain Road and NH Route 25,
- bridge maintenance,
- the fact that there is no regular transit system serving the town,
- the inconsistent use of road names in published resources,
- the need for proactive planning, to mitigate dangerous intersections such as between Drake and Jones Roads, and
- the desire to make efficient use of the town's resources - for example alternating paved and unpaved road sections require frequent switching of maintenance equipment along the same road.

The overarching concern was for comprehensive road maintenance planning to provide a long-term cost-effective road work schedule to ensure and sustain a safe and reliable road network. When there is not a comprehensive road development and maintenance plan and a town does not have a Road Agent, as in Effingham, a good deal of institutional knowledge can be lost whenever there is transition on the Board of Selectmen.

4.4 TOWN ROAD STANDARDS

It is recommended that the Board of Selectmen establish guidelines for the construction of town roads. By having and enforcing road standards, a community ensures that roads which are constructed or undergoing reconstruction are built to meet or exceed certain engineering thresholds. This ensures a consistent foundation for the roadbed and leads to fewer maintenance issues. Typically town road standards address road dimensions, arrangement of streets and intersections, base materials, surface materials, drainage, as well as inspection and testing practices.

Effingham has incorporated road standards into its subdivision regulations. Not only does this provide the town with written guidelines for the construction of new town roads and rebuilding of existing town roads but it also enables the Planning Board to hold anyone planning to build a road as part of a subdivision to these standards. Should the town be asked to adopt a road, it could be more confident that those built to town road standards would lead to fewer maintenance issues and costs.

4.5 TRANSPORTATION IMPROVEMENT PLANNING

As noted above (Section 4.3.6) road surfaces require maintenance. Whether it is the regular grading of gravel roads, periodic patching and filling of asphalt, upgrading of drainage, or the entire rebuilding of road segments, this work needs to be carried out on an on-going basis. The town invests a great deal of taxpayer money in the development of roads; it should protect its investment with appropriate maintenance. It is much more cost effective to address road surface

concerns while the road is in 'good' condition as opposed to allowing it to drop into 'poor' condition.

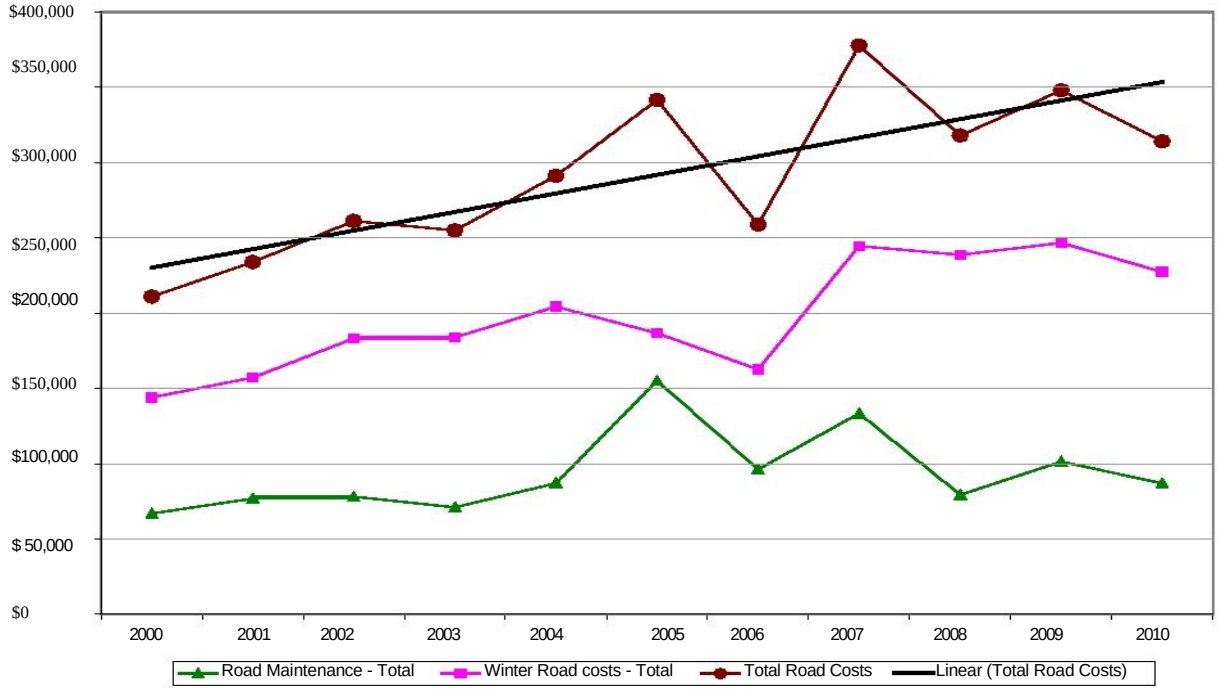
A Transportation Improvement Plan is a tool for budgeting the costs of road work so that the work gets done in a timely fashion, so that costs can be balanced out over time, and so that the anticipated work can be known to all well in advance. Additionally, the town may wish to think about a Roads Management Plan as a comprehensive assessment and long term maintenance schedule for the entire road system.

Data provided by the Selectmen show two categories of town road expenses - Road Maintenance and Winter Road work (Table 2). Over the last ten years, Winter Road work has consumed 65 to 70% of the total roads budget (Figure 3). A major factor driving the Winter Road work is the severity of the winter weather; the past four years have been substantially more expensive than previous years.

Table 2: Road Costs in Effingham: 2000 - 2010.

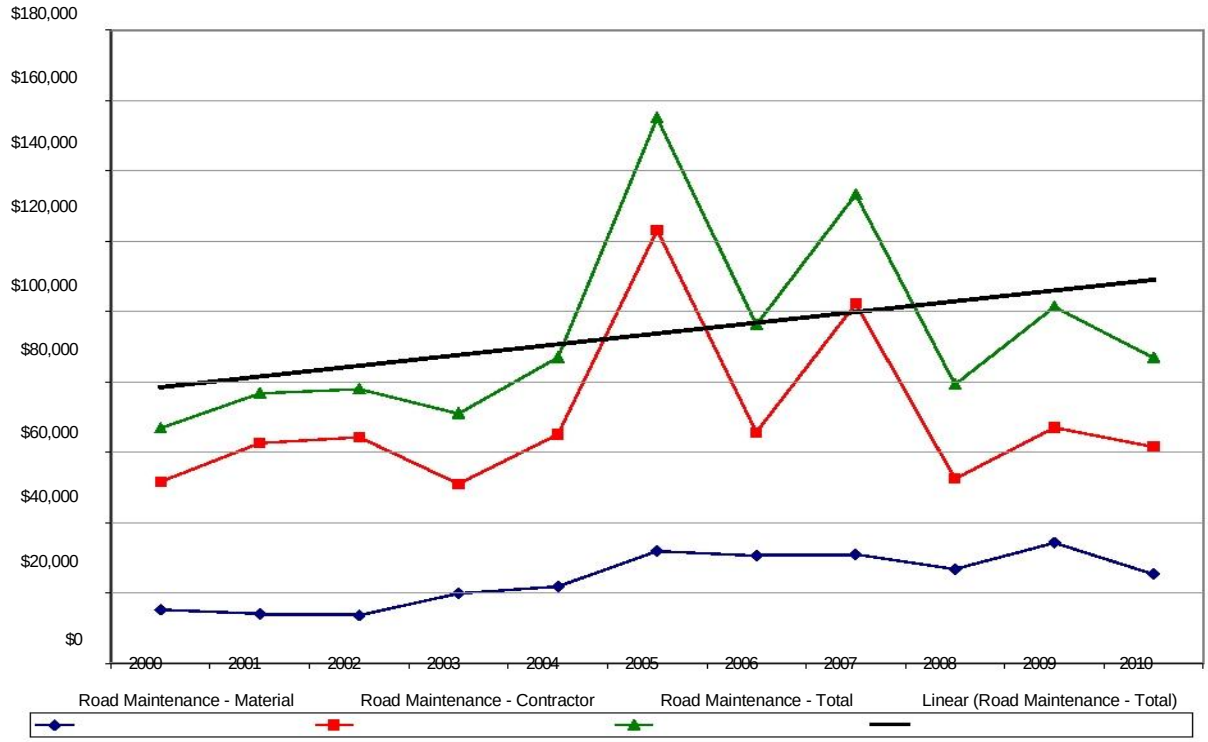
Effingham Road Work	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Road Maintenance Material	15,255	14,091	13,687	19,907	21,860	31,887	30,568	31,005	26,809	34,276	25,317
Road Maintenance Contractor	51,620	62,635	64,245	51,050	65,067	123,111	65,680	102,238	52,471	67,007	61,505
Road Maintenance Total	66,875	76,726	77,932	70,957	86,927	154,998	96,248	133,243	79,280	101,283	86,822
Winter Road costs Material	36,174	40,226	42,358	42,633	56,546	68,412	30,990	55,800	61,674	71,381	53,457
Winter Road costs Delivery	4,172	12,890	9,810	10,305	11,330	8,705	8,595	3,437	10,482	7,725	0
Winter Road costs Contractor	103,665	103,997	131,000	131,000	136,335	109,500	125,000	185,250	166,500	167,500	173,833
Winter road costs Total	144,011	157,113	183,168	183,938	204,211	186,617	164,585	244,487	238,656	246,606	227,290

Figure 3: Road Maintenance, Winter Road Costs, and Total Road Costs in Effingham: 2000 - 2010



The road maintenance expenses associated with the surface maintenance of Effingham's roads have been generally increasing over the past decade but the exact amount can vary by as much as 40% from year to year based on individual projects (Figure 4). The historical expenditure data indicates that in 2005 and 2007 there were "storm damage" projects, which likely contributed to the spikes in costs. While the cost of materials has risen over the past decade, materials have consistently been between 24 - 33% of the Road Maintenance expenses.

Figure 4: Annual variation of Road Maintenance Costs: Effingham



4.6 2003 MASTER PLAN RECOMMENDATIONS

The Transportation Subcommittee reviewed the transportation goals of the 2003 Master Plan (re-produced below). They determined that the goals and most of the objectives are still valid, but they felt that many of the strategies should either be eliminated or revised.

Goal I: ~~Provid~~e a safe and efficient transportation system in Effingham.

Objective 1: To continuously evaluate the transportation network to identify required maintenance and improvements.

Strategy 1: The Board of Selectmen should form a task force of knowledgeable people to review and assess all the roads in-depth to make comprehensive short term and long term recommendations for development of a Roads Management Plan to be updated annually.

Strategy 2: One aspect of a comprehensive Roads Management Plan, create and update annually a Transportation Improvement Program (TIP), integrating the State Road Inventory Data, Road Surface Management System (RSMS) Data, and gravel road analysis.

Strategy 3: Have the Board of Selectmen regularly monitor the best strategies and costs/benefits of appointing a Clerk of the Works or creating a Public Works Department to supervise the evaluation and maintenance of town lands, buildings, and roads.

Strategy 4: The town should consider consulting an engineering firm to review and monitor large road reconstruction projects, including review of proposals and periodic site visits.

Strategy 5: Town Officials should be encouraged to attend learning opportunities regarding maintenance and evaluation of town road conditions, such as those offered by the University of New Hampshire Technology Transfer Center.

Strategy 6: To ensure that Effingham's concerns regarding NH Routes 25 and 153 are represented in as many regional discussions as possible. Such discussions could include the Lakes Region Transportation Technical Advisory Committee (TAC), regular correspondence with the District III Engineer, and any other regional meetings regarding maintenance and traffic patterns along state routes in the area. These discussions might lead to identification of avenues for improving the condition and safety of NH Routes 25 and 153.

Objective 2: Review and follow recommendations from the Effingham Hazard Mitigation Plan that are applicable to this chapter of the Master Plan.

Strategy 1: Develop a program of scheduled culvert maintenance and repair reducing the likelihood of flooding during periods of heavy rain

Strategy 2: Replace and enlarge culverts along portions of Drake, Green Mountain, High Watch, Jones, Snow, and Symmes Roads to improve drainage reducing flooding, as well as the washouts and icy winter-time conditions associated with poorly drained roads.

Strategy 3: To reduce flooding and erosion on town roads during a heavy rain, the Planning Board should require logging operations to obtain a driveway permit

Objective 3: To implement required maintenance and improvements.

Strategy 1: Ensure the Roads Management Plan, TIP and Hazard Mitigations Plan are each implemented on an annual basis.

Strategy 2: Develop a Capital Improvements Program for the Town of Effingham.

Strategy 3: Explore state and federal funding options, such as bridge repair funding through the State Aid Bridge program.

Goal 2: Ensure that environmental resources are considered in all transportation efforts.

Objective 1: To promote good environmental practice and erosion control in all transportation efforts.

Strategy 1: Develop a snow removal and chemical application management plan for Effingham.

Strategy 2: Develop an erosion control and drainage improvement program to be integrated with Effingham's Transportation Improvement Program as well as its Capital Improvements Program.

Strategy 3: Encourage the use of Best Management Practices (BMPs) in all transportation efforts.

Goal 3: Ensure that cultural, historic, and scenic resources are considered in all transportation efforts.

Objective 1: To integrate Effingham's scenic resources in all new transportation improvements and projects.

Strategy 1: Explore potential roads for designation as Scenic Road as per RSA 231:157-158.

Objective 2: To recognize the importance of access to the Town Hall in future transportation efforts.

Strategy 1: Integrate the Town Hall and village needs in all transportation efforts.

Strategy 2 Promote the Town Hall as a center of activity in Town and the need to provide access to it year-round.

4.7 2011 MASTER PLAN RECOMMENDATIONS

See implementation chapter