

**IMPACT FEE ANALYSIS
Town of Litchfield, NH**

2014 Impact Fee Options:
Public Schools and
Town Roads

July 2, 2014

Prepared for:

**Town of Litchfield, NH
Planning Board**

Prepared by:



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Purpose of Analysis

This study was prepared to update the basis for the schedules used by the Litchfield Planning Board for the assessment of impact fees to new development for public school facilities the municipal public road system. Options for proportionate impact fee assessment are presented for both of these facility categories. The process of impact fee assessment will be governed by the impact fee provisions of the Litchfield zoning ordinance; this report is solely focused on computing a fee that is proportionate to the demand exerted by new development on the capital facilities owned and operated by the Town and School District.

Conditions for Impact Fee Assessment

In New Hampshire, impact fees may be assessed to pay for a portion of the cost of specific categories of capital facilities. The amounts assessed must be reasonably proportionate to the demands placed on the capacity of those facilities by new development.

Where a municipality has already invested in capital facilities that have adequate capacity to serve the needs of new development, an impact fee may be assessed to recoup the cost to provide that capacity. If there is no surplus capacity available, the impact fee may be based on the anticipated investment in capital facilities required to accommodate development.

The most important part of an impact fee assessment is the determination of a proportionate cost based on reasonable standards (demand per unit of development) for various capital facilities. Impact fees may not be computed based on maintenance or repair expense. The cost to improve or expand facilities (quality or capacity) may be reflected in the impact fee in proportion to a measure of proportionate demand that associates the development with the quantity and cost of facilities that it consumes.

Impact Fee Assessment and Application

The assessment of an impact fee may take place at the subdivision approval and/or building permit stage of development. “Assessment” constitutes an assignment of a fee amount to a unit of development; the actual collection of the impact fee takes place as a condition to receiving a certificate of occupancy. This practice allows the development to anticipate the amount of the fee, but to pay it at the time that the development is completed.

Once collected, impact fees can be held for a period of up to six years, at which point they must either be appropriated for the use for which they were initially assessed, or refunded (generally to the current owner of record). Impact fees may also be applied to debt service for related capital facilities; this effectively reduces the debt service impact on the tax rate.

The revenue received from impact fee assessment is a function of the pace of new construction. When development is occurring at a slow pace, impact fee generation will be minimal. But during stronger economic periods, the revenue stream will increase in proportion to the scope of building permits issued for new development. When more rapid periods of growth occur, the impact fee assessment allows the Town to capture those revenues at the same pace that development is adding to the service base and contributing to a demand on facilities.

Chapter I: School Impact Fee

The Town of Litchfield first adopted impact fees, including a school impact fee, based on an impact fee methodology prepared in 1990. At that time The Litchfield School District supported facilities only for elementary and middle school students, with high school pupils attending Alvirne High School in Hudson under a tuition agreement. The impact fee system developed at that time was designed to assess fees for the average impact on the elementary and middle schools provided by the local district.

In 2000, an impact fee update was prepared based on the specific construction cost of two particular schools: (1) a new school to replace the Griffin Memorial Elementary School and (2) the Campbell High School (constructed in 2000). The fee calculations in the 2000 update exclude the middle school grades and related facilities. The assumption inherent in the 2000 update appears to be that only newly developed school space could be used as a basis for impact fee assessment. While a series of plans for a new school were advanced since that update, no expansion or replacement of the Griffin Memorial School has been undertaken.

In this 2014 analysis of impact fee options, fee computations for all grade levels and related facilities are included, and based on average demand on facilities per unit of housing. Under NH RSA 674:21, V, impact fees may be based either on the cost to expand or construct new facilities in the future, or on the recoupment of a portion of the capital investment already made to provide existing capacity sufficient to serve new development.

1. Rationale and Assumptions of 2014 Fee Basis

- Public school enrollment is expected to continue to decline under the most recent projections. Net long term enrollment growth is not likely to be the primary driver of improvements to Litchfield School District facilities for the foreseeable future.
- Facility improvements are more likely to be related to the improvement of quality in existing facilities, or the enlargement of educational spaces per pupil (as proposed in the past for the replacement or improvement of the Griffin Memorial School.)
- Under current conditions, a school impact fee is only supportable only must be based on the premise of recouping the cost of school facility investments based on the average demand from new housing units.
- Despite the projected decline in enrollment, new development will continue to contribute pupils to the system; average enrollment in newer single family homes (built 1990 or later) is considerably higher than the average for older units.
- The school facilities now in place have available capacity to support enrollment generated by new development. New development will derive a benefit from the availability of surplus capacity in the school facilities of the Litchfield School District. The creation of that capacity represents a considerable capital investment by the District.
- The Town may recoup the cost of capital facilities in proportion to the consumption of those facilities by new development that occurs in Litchfield.
- New development is expected to have the same average resident enrollment impact per unit as average dwelling units in the community.
- Average enrollment per housing unit times average school facility pace per pupil times cost of space per square foot defines a reasonable capital cost for the spatial demand associated with an average residential unit.

- Credit allowances against the total capital cost are provided to recognize the value of property taxes paid by the development for debt service required to construct or expand school facility space.
- The net impact fee assessed is the total capital cost associated with the facility demand of an average housing unit, less the past and future property tax cost associated with debt service for construction of school facilities.
- Over the past 10 years, concept plans have been prepared for the replacement, repair or improvement of the Griffin Memorial School (elementary). However, voters have thus far failed to endorse a new K-5 school.
- At present, the District's outstanding debt service on facility development is limited to two remaining years of amortization (2014-2015) for the construction of Campbell High School. Impact fees are often used to offset the cost of debt service on capital facilities.
- While there is statutory authorization for the recoupment of a proportion of past capital investments from new development in the form of an impact fee, the absence of long term debt service raises the question of the appropriate use of the impact fees received. Only two years of debt service remain to be paid on existing facilities.
- The school fees explored here are based on recoupment of a proportionate amount of a past investment. It is assumed that in the absence of new debt service for school construction projects, the fee income may be devoted to other school capital needs. Such use of recoupment fees should be conditional on maintaining adequate capacity within the school system to continue to accommodate the needs of new development.

2. Summary of School Fee Options and Recommendations

Options for the assessment of school impact fees include fees per unit for two to five structural categories, fees per square foot for two structural categories or all (average) housing units, and fees for single family homes that vary by number of bedrooms. Another option shown is that of a cost basis that reflects facilities for all grade levels, or for Middle School and High School Facilities only.

BCM Planning, recommends that the school impact fee assessment should exclude the K-4 component of allocated costs, unless the Town anticipates that a major improvement project is forthcoming for elementary school facility expansion and improvement. Such improvements would need to remedy spatial and other deficiencies facilities while providing some reserve capacity for enrollment. At the present time, the site lacks sufficient capacity to accommodate existing enrollment needs, and there are no plans to remedy this situation. While there have been several plans presented in the past for the improvement or replacement of the Griffin Memorial School in the past, none have come to fruition.

While all of the alternatives are proportionate methods of assessment, BCM Planning recommends either the school impact fee per unit (with five structural categories) or the schedule of fees per square foot of living area.

To avoid a disproportionate assessment for large homes using the square foot option, *it is recommended that the maximum living area subject to impact fee assessments be capped at 2,500 square feet.*

Because it is likely that enrollment per dwelling unit will decline in the future, a discounted fee should be considered. As an example, Table I-1 shows the result of applying a 20% discount to the fees as calculated.

Below is a summary of the school impact fee options developed in this analysis.

Table I-1: Summary of School Impact Fee Options

SCHOOL IMPACT FEE OPTIONS - LITCHFIELD 2014				
Type of Structure	Fees as Calculated		Discounted Fee Schedule	
	Maximum Capital Cost Basis: All K-12 Facilities	Capital Cost Basis: Middle & HS Facilities Only	K-12 Maximum with 20% Discount	Middle-HS Facilities Only with 20% Discount
Fee Per Unit By Structure Type				
Single Family Detached	\$7,234	\$5,092	\$5,787	\$4,074
Townhouse	\$2,966	\$2,010	\$2,373	\$1,608
Duplex & 2-Unit	\$2,630	\$1,779	\$2,104	\$1,423
Multifamily 3+ Units	\$1,630	\$1,123	\$1,304	\$898
Manufactured Housing	\$2,668	\$1,855	\$2,134	\$1,484
Fee Per Unit for Two Structural Groupings				
Single Family Detached	\$7,234	\$5,092	\$5,787	\$4,074
All Other Structure Types	\$3,807	\$2,585	\$3,046	\$2,068
Fee Per Square Foot Living Area Two Structural Groupings				
Single Family Detached	\$4.12	\$2.91	\$3.30	\$2.33
All Other Structure Types	\$3.85	\$2.64	\$3.08	\$2.11
Fee Per Unit by Bedrooms (Single Family)				
Two Bedrooms	\$2,058	\$1,263	\$1,646	\$1,010
Three Bedrooms	\$7,115	\$5,156	\$5,692	\$4,125
Four or More Bedrooms	\$8,581	\$5,615	\$6,865	\$4,492

3. School Impact Fee Structure

Options for school impact fee assessment were derived from the following general model:

- Average resident pupils per housing unit in Litchfield
- x school space required per pupil by grade level
- x cost per square foot (using replacement cost of existing facilities)
- (-) 30% of principal paid by State Building Aid (historic)
- = Cost of facility capacity attributable per housing unit
- (-) Debt service credit allowances for school construction
- = School impact fee per dwelling unit

The variables of the fee (which may be adjusted over time) are the public school enrollment ratios defining proportionate demand on school facilities, the facility capital value assumptions, and the application of credit allowances. The proportionate enrollment ratios by type of dwelling unit have been computed based on average units, units by year built, number of bedrooms, and square feet of living area. This provides for a range of alternatives for proportionate impact fee assessment. Since this fee basis reflects the recoupment of investment in existing facilities, the historic State share of principal costs (30% State Building Aid) is applied to estimate local capital cost. For future facilities, the State's determination of building aid eligibility for the local district may differ from the historic ratio.

4. Enrollment Ratios in Litchfield

As part of the impact fee update, BCM Planning used data provided by the School District to match enrolled pupils by grade and address to property tax assessment data for the same locations. This provides a means of estimating proportionate enrollment impacts by type of dwelling unit, floor area, and year built as well as the valuation characteristics of those units.

Note that the assessment data reflects “effective area” used for property appraisal formulas, which in most cases exceeds the actual living area of a residence. This means that the enrollment per square foot measured by effective area will yield enrollment ratios that are lower than ratios based on living area.

BCM Planning developed a sampling of the living area of Litchfield dwelling units for comparison to effective area. Where calculation of impact fees per square foot are shown in this report, the values have been adjusted to rates per square foot of living area.

All enrollment ratios were computed by excluding age-restricted units (rental housing for the elderly or “55 and over” developments) from the calculations. These units are excluded because they are not subject to school impact fee assessment.

The results of the enrollment tabulations showed the following:

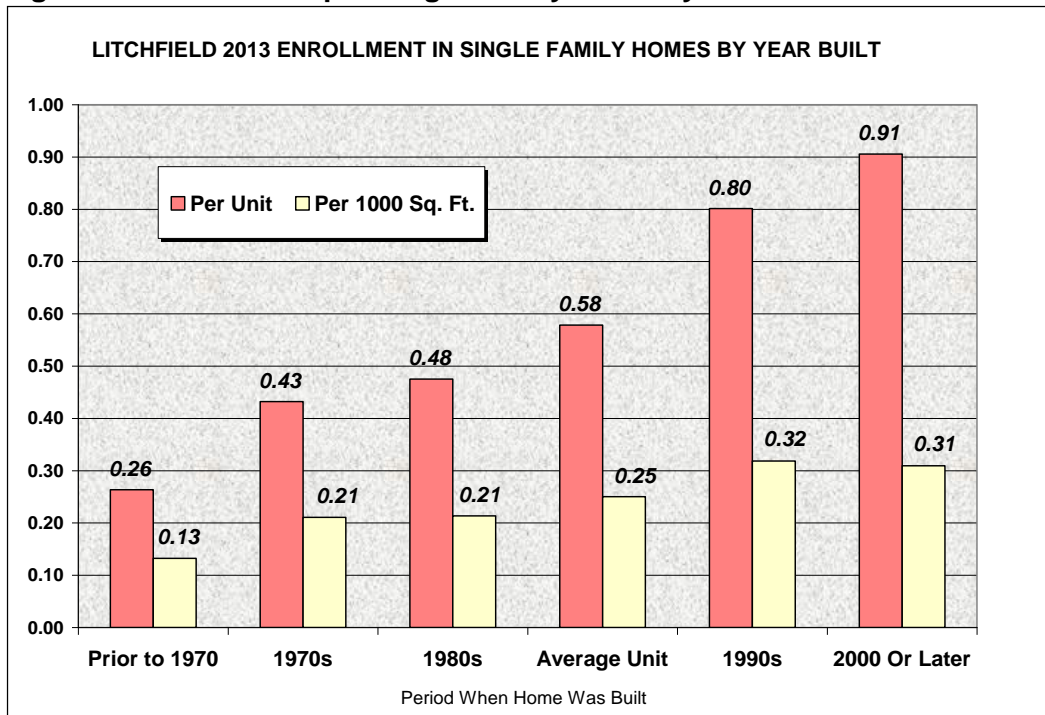
- Average K-12 enrollment for single family homes in Litchfield is 0.578 pupils per unit. This reflects a reliable large sample of over 2,200 units.
- Newer single family homes had much higher enrollment ratios. Homes built in the 1990s had an average enrollment of 0.80 per unit, and those constructed in 2000 or later had an average of 0.91 pupils per unit. Older units constructed prior to 1990 have lower enrollment ratios than the Litchfield average.
- Average enrollment per unit for all single family detached units in Litchfield averages 0.578 per home, while the average for all other structure types averages about 0.303 per unit.
- Computations for single family homes by number of bedrooms showed higher ratios for units with 4 bedrooms (0.686 per unit) vs. those of three bedrooms (0.571). Two bedroom single family units averaged only 0.165 pupils per unit, but the ratio is based on a small number of dwelling units (115).
- Figures I -1 and I - 2 and Tables I - 2 through I - 7 summarize demographic data and the enrollment per unit tabulations for Litchfield.

Table I-2: Demographic History 1990-2010

LITCHFIELD NH	1990	2000	2010	Change 1990-2010
Population	5,516	7,360	8,271	2,755
Households	1,725	2,357	2,828	1,103
Housing Units	1,845	2,389	2,912	1,067
Pre-School Population (<5)	575	682	442	(133)
School Age Population (5-17)	1,260	1,774	1,853	593
ADM in Residence	1,057	1,519	1,517	460
School Age Pop. Per Household	0.730	0.753	0.655	-0.08
Enrollment (ADM) Per Household	0.613	0.644	0.536	-0.08
Households by Age				
Under 35	585	508	277	(308)
35 to 44	630	871	684	54
45 to 54	291	590	869	578
55 to 64	126	244	591	465
65 or Older	93	144	407	314
Total Under 55	1,506	1,969	1,830	324
Total Under 65	1,632	2,213	2,421	789
Pop. 5-17 Ratio to Households <55	0.84	0.90	1.01	0.18
Pop. 5-17 to Hosueholds <65	0.77	0.80	0.77	-0.01

Source: Decennial U. S. Census 100% count data

Figure I-1: Enrollment per Single Family Home by Year Built



Note: Figures I-1 and I-2 include raw tabulations per 1000 square feet of “effective area” (used for assessed valuation purposes). These ratios are converted to “living area” in Table I-4. When expressed as a function of enrollment per square foot of living area, the ratios are higher than shown in these exhibits.

Figure I-2: Enrollment Ratios Single Family vs. Other Units

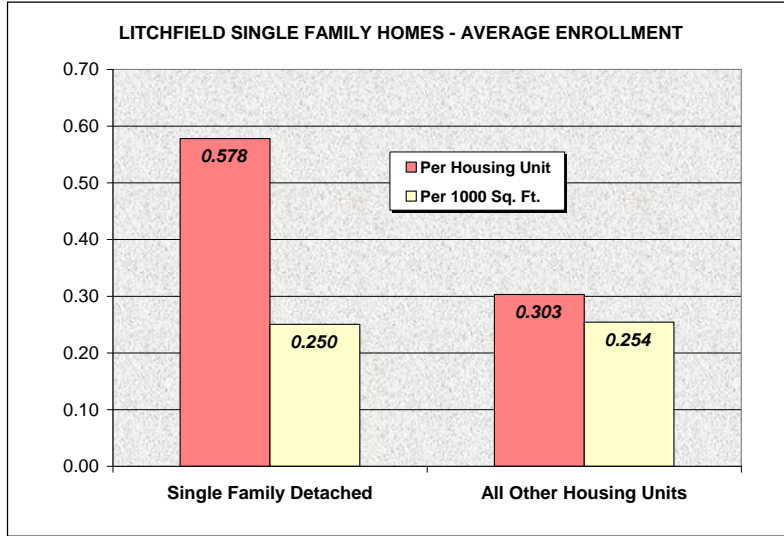


Table I - 3: Enrollment per Dwelling Unit by Structure Type

Structure Type	Enrollment Per Unit				Units in Sample	Housing Unit Averages		
	K-4	5-8	9-12	K-12		Sq. Ft. Effective Area	Est. Sq. Ft. Finished Area Above Grade	Assessed Valuation
SF Detached	0.188	0.194	0.196	0.578	2,256	2,311	1,850	\$284,786
Townhouse	<i>0.167</i>	<i>0.167</i>	<i>0.167</i>	0.500	6	<i>1,025</i>	950	<i>\$139,650</i>
Two Unit Structure	0.130	0.130	0.130	0.389	239	1,563	1,250	\$151,811
3+ Unit Structure	<i>0.133</i>	<i>0.048</i>	<i>0.133</i>	0.314	105	733	700	<i>\$61,876</i>
Manufactured Housing	<i>0.033</i>	<i>0.025</i>	<i>0.057</i>	0.115	122	868	950	<i>\$44,192</i>
Total (Excluding Age-Restricted Units)	0.174	0.175	0.181	0.531	2,728	2,118	1,711	\$253,477
Single Family Detached	0.188	0.194	0.196	0.578	2,256	2,311	1,850	\$284,786
All Other Housing Units	0.106	0.085	0.112	0.303	472	1,192	1,046	\$103,833
Average All Units	0.174	0.175	0.181	0.531	2,728	2,118	1,711	\$253,477

Data in italics represent relatively small numbers of units and may not be reliable for broad application

Table I - 4: Enrollment per 1000 Square Feet (Living Area)

Structure Type	Enrollment Per 1000 Square Feet Living Area				Total Units	Housing Unit Averages		
	K-4	5-8	9-12	K-12		Sq. Ft. Effective Area	Est. Sq. Ft. Living Area Above Grade	Est. Valuation Per Sq. Ft. Living Area
SF Detached	0.1018	0.1049	0.1059	0.3127	2,256	2,311	1,850	\$154
Townhouse	<i>0.1754</i>	<i>0.1754</i>	<i>0.1754</i>	0.5263	6	<i>1,025</i>	950	<i>\$136</i>
Two Unit Structure	0.1038	0.1038	0.1038	0.3113	239	1,563	1,250	\$121
3+ Unit Structure	<i>0.1905</i>	<i>0.0680</i>	<i>0.1905</i>	0.4490	105	733	700	<i>\$84</i>
Manufactured Housing	<i>0.0345</i>	<i>0.0259</i>	<i>0.0604</i>	0.1208	122	868	950	<i>\$51</i>
Total (Excluding Age-Restricted Units)	0.1018	0.1024	0.1061	0.3102	2,728	2,118	1,711	\$120
Single Family Detached	0.1018	0.1049	0.1059	0.3127	2,256	2,311	1,850	\$123
All Other Housing Units	0.1012	0.0810	0.1073	0.2896	472	1,192	1,046	\$87
Average All Units	0.1018	0.1024	0.1061	0.3102	2,728	2,118	1,711	\$120

Data in italics represent relatively small numbers of units and may not be reliable for broad application

5. Adjustment of Effective Area to Living Area

The standard property assessment variables available to BCM Planning in a database format included only gross floor area and “effective area”. Neither of these measures consistently reflects the habitable area, finished space or living area of housing units. To estimate living area, it was necessary to examine individual assessment records.

BCM Planning, LLC developed a sample of assessment records in Litchfield which included 10% of all single family homes, and 100% for other structural types which are relatively small in number. Resulting adjustment ratios are shown below.

Structure Type	Est. Living Area as % of Effective Area
SF Detached	80%
Townhouse	93%
Two Unit Structure	80%
3+ Unit Structure	95%
Manufactured Housing	109%
Total (Excluding Age-Restricted Units)	81%
Single Family Detached	80%
All Other Housing Units	88%
Average All Units	81%

Using these ratios as an adjustment factor, the data in Tables I-3 and I-4 have been converted to estimated enrollment ratios per 1000 square feet of living area based on the sample of assessment data, and assessed valuation per square foot of living area for the calculation of credit allowances.

In the case of mobile homes (manufactured housing) the living area to effective area ratio is over 100%. This occurs because many units are listed with construction on piers rather than a full foundation, which is discounted in the assessment process when effective area is computed for assessment purposes.

Table I - 5: Enrollment per Dwelling Unit by Bedrooms (Single Family Homes)

Single Family Homes By Bedrooms in Unit	Enrollment Per Unit				Units in Sample	Housing Unit Averages	
	K-4	5-8	9-12	K-12		Sq. Ft. Effective Area	Assessed Valuation
<i>One Bedroom</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	0.000	11	1,426	\$253,618
<i>Two Bedrooms</i>	<i>0.052</i>	<i>0.052</i>	<i>0.061</i>	0.165	115	1,739	\$238,068
Three Bedrooms	0.174	0.199	0.198	0.571	1,525	2,165	\$273,966
Four or More Bedrooms	0.253	0.213	0.220	0.686	605	2,804	\$321,506
Average All SF Detached	0.188	0.194	0.196	0.578	2,256	2,311	\$284,786
<i>Data in italics represent relatively small numbers of units and may not be reliable for broad application</i>							

Table I - 6: Single Family Enrollment per Unit by Year Built

Single Family Homes By Year Built	Enrollment Per Unit				Units in Sample	Housing Unit Averages	
	K-4	5-8	9-12	K-12		Sq. Ft. Effective Area	Assessed Valuation
Prior to 1970	0.086	0.082	0.095	0.263	243	1,991	\$248,057
1970s	0.134	0.148	0.151	0.432	657	2,053	\$258,919
1980s	0.137	0.162	0.176	0.475	482	2,227	\$277,072
1990s	0.215	0.274	0.312	0.801	609	2,516	\$305,858
2000 Or Later	0.449	0.287	0.170	0.906	265	2,928	\$348,198
Average All SF Detached	0.188	0.194	0.196	0.578	2,256	2,311	\$284,786

Note: Tables I-5 and I-6 above report average effective area of housing units for comparative purposes. These values are not equivalent to the average living area, which is smaller for most housing units.

Data for townhouse, multifamily, and manufactured housing units in Litchfield are based on small numbers of units which may not be reliable for long term application. Therefore the actual impact fee computations for these units have been based on larger samples reflected in statewide statistical data from the American Community Survey (ACS).

For the fee computations that are based on five structural categories, the multipliers used are the actual Litchfield averages by grade for single family detached homes (Town average). Ratios for the other unit types, due to small local sample size, were derived from ACS data (2005-2009 Public Use Microdata Sample - PUMS) tabulated by the NH Housing Finance Authority as K-12 ratios. The distribution of enrollment by grade for non-single family units is assumed to proportionate to the distribution for single family homes. For detailed fee categories, the applied ratios are shown in Table I - 7.

Table I - 7: Enrollment per Unit Assignments for Five Structure Types

Structure Type	Public School Enrollment Per Unit			
	Grade K-4	Grade 5-8	Grade 9-12	Total Public Schools
Single Family Detached	0.188	0.194	0.196	0.578
Townhouse	0.108	0.111	0.109	0.328
Two Unit Structure	0.104	0.107	0.109	0.320
Multifamily 3+ Units	0.056	0.057	0.058	0.171
Manufactured Housing	0.083	0.086	0.087	0.256

The other fee computations shown for two structural divisions, or for fees per square foot, reflect the actual Litchfield averages by grade for single family detached units vs. all other housing types combined.

6. School Facility Standards

The facility standards used in the impact fee assessment are based on the average floor area of schools per pupil, computed according to the capacity assigned to the facility. At present the Litchfield schools rely on both permanent buildings and modular classrooms to provide school facilities for all Kindergarten pupils and some fifth grade students.

Table I-8 shows the existing configuration of the schools, their estimated maximum capacity, and October 2013 enrollment. Overall, existing elementary school enrollment exceeds the capacity of the Griffin Memorial School site. Kindergarten is housed in freestanding modular classrooms. For the main building only, enrollment in grades 1-4 represents 114% of the estimated classroom capacity, and with the Kindergarten portables, the site is at 106% of capacity when applying a 90% utilization ratio.

At the Litchfield Middle School, the main building has a classroom capacity estimated at 448, and with modular included a total capacity of 540. October 2013 enrollment at the Middle School is at 91% of capacity.

Campbell High School enrollment represents 74% of its estimated capacity (weighted for core and classroom space).

Based on estimates of existing facility capacity and floor area of the schools, the spatial requirements per pupil are assigned at the following values:

Elementary School:	136 square feet per pupil (Grade K - 4)
Middle School:	133 square feet per pupil (Grade 5 - 8)
High School:	182 square feet per pupil (Grade 9 -12)

Table I - 8: Capacity and Floor Area of Litchfield School Facilities

LITCHFIELD SCHOOL DISTRICT: FACILITY INVENTORY AND CAPACITY 2013									
School Facilities	Acres	Grades Served	Building Notes	Building Area Gross Square Feet 2014 Facilities	Capacity Estimates for Current Grade Configuration	Square Feet Per Pupil Capacity	October 1, 2013 Enrollment (NHDOE Data)	Enrollment as % of Capacity	
Elementary & Middle Schools									
Griffin Memorial School 1930 original construction 1955 classrooms 1958 classrooms 1960 classrooms & restrooms 1972 offices, gym, classrooms 1978 cafeteria, library, classrooms 1983 classrooms	15.0	Pre-K to 4	Main building Grade 1-4 <i>Exclude unusable 2-story 1930s section of building</i>	57,800 (4,000)	375 gross @ 90% Util. Ratio: 338	154			
			Usable Space/Capcity	53,800	338	159	Grades 1-4	384	114%
			Modulars for Kindergarten	2,128	2 sessions/day @ 90% 72	30	Kind.	51	71%
			Total K-4 Space/Capacity	55,928 <i>(Useable space)</i>	410	136	Total	435	106%
							Add Pre-K Total Site	25 460	
Litchfield Middle School 1988 original construction 1998 classrooms, library, exp. cafeteria	47	Grades 5 to 8	Main building	67,760	448				
			Modular for Grade 5 - 2 clsrms	1,904	46				
			Modular for Grade 5 - 2 clsrms	1,904	46				
			Total Grades 5-8	71,568	540	133	5-8	490	91%
High School									
Campbell High School 2000 original construction	29.5	Grades 9-12	Classroom Space	73,500	550	134	Classrooms	469	85%
			Core & Circulation	41,000	850	48	Core & Circ		55%
			Total Grade 9-12	114,500	Avg per pupil:	182	Total	Weighted	74%
Total District Facilities	91.5	Pre-K to 12	Main buildings only	236,060	Classroom Based Capacity	Weighted Average			
			Modulars	5,936					
			Total K-12 with Pre-K	241,996	1,500	152		1,394 1,419	93%
Source: Building history and floor area from Litchfield School District Maintenance Plan, June 16, 2010. Capacity estimate for High School based on 2002 Litchfield Master Plan. Capacity of Griffin Elementary School and Litchfield Middle School based on number of regular classrooms as of 2014 at District maximum class size policy by grade, with elementary school capacity computed at 90% utilization ratio.									

7. Capital Cost Basis

The impact fee assessment is based on capital values that reflect the estimated replacement cost of existing facilities based on insured values. This method will capture on the value of buildings and contents, and will not reflect the value of land or site work costs involved in original construction. The following average values per square foot are assigned in the impact fee computations to represent the cost of school facility space per square foot. Note that these average values include portable classroom space now in service, which provides a portion of the classroom capacity available.

Elementary School: \$ 142 per sq. ft.
 Middle School: \$ 161
 High School: \$ 145

The full development and furnishing cost of new schools would likely be considerably higher than these values.

Table I - 9: Litchfield School Facility Replacement Costs

School Site and Facility	Insured Value of Litchfield School Facilities - May 16, 2014				
	Building	Contents	Total	Sq. Ft. Per Insurance Schedule	Indicated Replacement Cost Per Sq. Ft.
Griffin Memorial School	\$7,089,000	\$1,277,000	\$8,366,000	57,877	\$145
Double Portable Classroom	\$118,000	\$50,000	\$168,000	2,128	\$79
Total Griffin Memorial	\$7,207,000	\$1,327,000	\$8,534,000	60,005	\$142
Litchfield Middle School	\$10,340,000	\$1,468,800	\$11,808,800	71,896	\$164
Double Portable Classroom 1	\$140,500	\$49,900	\$190,400	1,904	\$100
Double Portable Classroom 2	\$140,500	\$49,900	\$190,400	1,904	\$100
Total Litchfield Middle School	\$10,621,000	\$1,568,600	\$12,189,600	75,704	\$161
Total K-8 Facilities w/Portables	\$17,828,000	\$2,895,600	\$20,723,600	135,709	\$153
Total K-8 Facilities w/o Portables	\$17,429,000	\$2,745,800	\$20,174,800	129,773	\$155
Campbell High School	\$13,859,000	\$2,622,000	\$16,481,000	114,000	\$145
All School Facilities	\$31,687,000	\$5,517,600	\$37,204,600	249,709	\$149

Source: Primex - NH Public Risk Management Exchange, 2014 Schedule of Exposures, Litchfield School District. Above chart excludes storage sheds and outbuildings

8. Credit Allowances for Debt Service on Capacity Development

In Table I - 10, credit allowances are computed per thousand assessed valuation for past and future debt service payments for the original construction of Campbell High School. Only two years of debt service payments remain at this time (2014-2015). Past payments are credited by estimating the present worth of past payments, computing that as a tax rate equivalent based on assessed valuation, and applying it later to an assigned value for vacant land.

The premise of the past payment credit is that vacant land (on which new development is constructed) has in the past paid a portion of the debt service required to construct facility capacity of the high school. In the future, there will be some tax payments also required from new homes for remaining (future) debt service costs.

Table I - 10: High School Debt Service

CREDITS FOR PAST & FUTURE PAYMENTS: HIGH SCHOOL					
ASSUMPTIONS					
Principal Amount:	\$11,685,000	Campbell HS Construction			
Term In Years:	15				
Interest Rate On Bonds:	4.5-5.25%				
State Aid To District:	30.0%	Of Principal Due on Bonds			
Discount Rate:	5.0%				
Calendar Year	Principal Payment	Interest Payment	Total Payment	Less State Aid	Net Debt Service Of District Paid By Taxes
Past Payments					
2000	\$0	\$293,731	\$293,731	\$0	\$293,731
2001	\$800,000	\$569,463	\$1,369,463	(\$240,000)	\$1,129,463
2002	\$800,000	\$533,463	\$1,333,463	(\$240,000)	\$1,093,463
2003	\$800,000	\$495,463	\$1,295,463	(\$240,000)	\$1,055,463
2004	\$800,000	\$455,463	\$1,255,463	(\$240,000)	\$1,015,463
2005	\$800,000	\$415,463	\$1,215,463	(\$240,000)	\$975,463
2006	\$800,000	\$375,463	\$1,175,463	(\$240,000)	\$935,463
2007	\$800,000	\$335,463	\$1,135,463	(\$240,000)	\$895,463
2008	\$800,000	\$295,463	\$1,095,463	(\$240,000)	\$855,463
2009	\$800,000	\$255,463	\$1,055,463	(\$240,000)	\$815,463
2010	\$800,000	\$214,463	\$1,014,463	(\$240,000)	\$774,463
2011	\$800,000	\$172,463	\$972,463	(\$240,000)	\$732,463
2012	\$800,000	\$130,463	\$930,463	(\$240,000)	\$690,463
2013	\$800,000	\$88,463	\$888,463	(\$240,000)	\$648,463
Future Payments					
2014	\$800,000	\$46,463	\$846,463	(\$240,000)	\$606,463
2015	\$485,000	\$12,731	\$497,731	(\$145,500)	\$352,231
Total	\$11,685,000	\$4,689,938	\$16,374,938	(\$3,505,500)	\$12,869,438
PAST PAYMENT CREDIT					
2000-2013 PW of Past Payments @ 5%					\$16,865,005
Litchfield Net Local Assessed Valuation (Fall 2013)					\$820,097,054
PV Credit Per Thousand Valuation of Raw Land					\$20.56
FUTURE PAYMENT CREDIT					
2014-2015 NPV of Future Payments @ 5%					\$897,067
Litchfield Net Local Assessed Valuation (Fall 2013)					\$820,097,054
PV Credit Per Thousand Valuation of Housing Unit					\$1.09

A second credit allowance (see Table I-11) is also incorporated based on the estimated cost to replace existing portables with permanent facility space. While portables now provide part of the classroom capacity of the school system, they are generally viewed as a temporary measure, with the goal of replacing them with permanent space. This credit allowance is computed under the assumption that state building aid would be applied, and that the replacement cost per square foot would be equivalent to the costs assigned to the capital value of existing permanent facilities in Litchfield.

Table I - 11: Credit Allowance Deficiency in Capacity And Space in Portable/Modular Classrooms

Credit for Deficiencies: Capacity Deficit and Portable Classrooms					
School	Portables and Deficiencies Main Building	Replacement Cost Per Sq. Ft. for Permanent Structure	Deficiency Cost	Elementary	Middle
Griffin Memorial	9,450	\$145	\$1,370,250	\$1,370,250	
Middle School	3,808	\$164	\$624,512		\$624,512
Total	13,258	\$150	\$1,994,762	\$1,370,250	\$624,512
Assume 30% State Building Aid			(\$598,429)	(\$411,075)	(\$187,354)
Net Local Cost			\$1,396,333	\$959,175	\$437,158
Net Local Assessed Valuation 2013			\$820,097,054	\$820,097,054	\$820,097,054
Credit Per \$1,000 Valuation			\$1.70	\$1.17	\$0.53

In Table I - 12 the credit allowances per thousand taxable valuation are applied to average assessed values per unit (or per square foot) in Litchfield at the time of this analysis. Raw land value per unit (pre-development) has been assigned at a ratio of 12% of the total valuation applicable to a completed housing unit. Past estimates developed by the National Association of Home Builders have indicated indicate that raw land value averages between 10% to 12% of the final selling price of a prototypical new home.

Table I - 12: Credit Assignments incorporated Impact Fee Computation

CREDIT CALCULATIONS FOR LITCHFIELD SCHOOL IMPACT FEES					
Type of Structure	Average Assesed Value Per Housing Unit	Raw Land Value @ 12%	Past Payment Credit - Payments from Vacant Land	Credit Allowance Future Debt Payments - Completed Unit	Total Credit Allowance Per Unit
Average Per Unit By Structure Type					
Single Family Detached	\$348,000	\$41,760	(\$859)	(\$972)	(\$1,831)
Townhouse	\$206,000	\$24,720	(\$508)	(\$575)	(\$1,083)
Duplex & 2-Unit	\$227,000	\$27,240	(\$560)	(\$634)	(\$1,194)
Multifamily 3+ Units	\$100,000	\$12,000	(\$247)	(\$279)	(\$526)
Manufactured Housing	\$128,000	\$15,360	(\$316)	(\$357)	(\$673)
Average Per Unit for Two Structural Groupings					
Single Family Detached	\$348,000	\$41,760	(\$859)	(\$972)	(\$1,831)
All Other Structure Types	\$184,000	\$22,080	(\$454)	(\$514)	(\$968)
Average Per Square Foot of Living Area - Two Structural Groupingsge Unit					
Single Family Detached	\$148	\$18	(\$0.37)	(\$0.41)	(\$0.78)
All Other Structure Types	\$136	\$16	(\$0.33)	(\$0.38)	(\$0.71)
Per Unit by Bedrooms					
Two Bedrooms	\$283,000	\$33,960	(\$698)	(\$790)	(\$1,488)
Three Bedrooms	\$319,000	\$38,280	(\$787)	(\$891)	(\$1,678)
Four or More Bedrooms	\$398,000	\$47,760	(\$982)	(\$1,111)	(\$2,093)

In the impact fee calculations, the credit allowances are deducted from the estimates of the District's capital cost per dwelling unit to arrive at the impact fee to be assessed.

9. Results: Impact Fee Alternatives

Tables I - 13 to I -16 summarize the alternative impact fee calculations resulting from the model and the assumptions described above. It is recommended that either a per dwelling unit fee be assessed, based on five structural categories (5 structure types), or that a fee per square foot of living area be assessed based on two structural divisions, or as an average amount per square foot for all units. Either alternative should produce a proportionate assessment amount.

K-12 vs. Partial Assessment. The school impact fee options in Tables I - 13 to I -16 are shown per dwelling unit for K-12 facilities, with a breakout of the elementary, middle school, and high school components. This would enable the option of an impact fee that covers all facilities, or selected grade levels only.

The fee calculations are based on recoupment of the value of existing facilities and the proportionate demand on capacity per unit of development. At the present time, the Griffin Memorial School lacks available capacity at District standards to provide for existing enrollment demands, and past efforts to address these deficiencies have failed.

There are no current plans to remedy the elementary school space shortage. Consequently, BCM Planning does not recommend the inclusion of the K-4 portion of the impact fee unless the Town believes that substantial improvements including expansion of classroom capacity are forthcoming. The other existing school facilities have the basic capacity to accommodate new development for the foreseeable future.

Discounts from Calculated Fee. Discounted fees should also be considered. With a likely decline in enrollment projected for the next ten years, and with some increase in the number of housing units, average enrollment per unit will probably trend down. The average enrollment ratio is the principal proportionate measure used to assign an average cost per housing unit. The Town may want to apply a discount to the calculated fee by a fixed percentage (20% for example) and/or amending the enrollment ratio within the fee calculation more frequently to capture this trend so that a proportionate assessment basis is maintained.

10. Updating the School Fee

It is recommended that updates of the fee consider adjustment to all of the principal variables involved:

- Average enrollment per unit (excluding age-restricted housing)
- Facility space per pupil capacity
- Capital cost (replacement cost) per square foot for school facilities
- Allowance for historic State Building Aid
- Updated credit allowance adjustments for deficiency in space and portables
- Further discounts from calculated fee depending on Board policy

Under the provisions of the original impact fee ordinance, automatic adjustments (increases) were made based on construction cost multipliers only. However, for the reasons evaluated above, it is also possible for the proportionate impact fee to decline or to increase based on the combination of variables comprising the methodology. An automatic cost escalator will generally not reflect the full cost basis of the impact fee. The ordinance should enable adjustments to each individual fee to be made within the parameters of the particular fee basis used to calculate it.

Table I - 13: Impact Fee per Unit – Five Structural Divisions

LITCHFIELD SCHOOL IMPACT FEE - FEE BY DWELLING UNIT TYPE - 2014												
Type of Housing Construction	School Facility Spatial Demands of Average Housing Units								Replacement Cost Existing Facilities			
	Public School Enrollment Per Unit				Floor Area Per Pupil Capacity				\$142	\$161	\$145	Total Public School Development Cost Per Housing Unit
	Grade K-4	Grade 5-8	Grade 9-12	Total Public Schools	Grade K-4	Grade 5-8	Grade 9-12	Weighted Avg K-12	Grade K-4	Grade 5-8	Grade 9-12	
Single Family Detached	0.188	0.194	0.196	0.578	136	133	182	151	\$3,642	\$4,140	\$5,169	\$12,951
Townhouse Structure	0.108	0.111	0.109	0.328	136	133	182	150	\$2,092	\$2,378	\$2,862	\$7,332
Two Unit Structure	0.104	0.107	0.109	0.320	136	133	182	151	\$2,016	\$2,292	\$2,862	\$7,170
Multifamily 3+ Units	0.056	0.057	0.058	0.171	136	133	182	151	\$1,077	\$1,225	\$1,529	\$3,831
Manufactured Housing	0.083	0.086	0.087	0.256	136	133	182	151	\$1,613	\$1,833	\$2,289	\$5,735
Type of Housing Construction	District Cost Per Housing Unit (Capital Cost Less State Building Aid %)				Credit Allowances				Impact Fee Per Dwelling Unit			
	Grade K-4	Grade 5-8	Grade 9-12	Total Public Schools	(See Worksheets for Details)							
	30%	30%	30%		K-4	5-8	9-12	Total				
Single Family Detached	\$2,549	\$2,898	\$3,618	\$9,065	(\$407)	(\$186)	(\$1,238)	(\$1,831)	\$7,234			
Townhouse Structure	\$1,464	\$1,665	\$2,003	\$5,132	(\$508)	(\$575)	(\$1,083)	(\$2,166)	\$2,966			
Two Unit Structure	\$1,411	\$1,604	\$2,003	\$5,018	(\$560)	(\$634)	(\$1,194)	(\$2,388)	\$2,630			
Multifamily 3+ Units	\$754	\$858	\$1,070	\$2,682	(\$247)	(\$279)	(\$526)	(\$1,052)	\$1,630			
Manufactured Housing	\$1,129	\$1,283	\$1,602	\$4,014	(\$316)	(\$357)	(\$673)	(\$1,346)	\$2,668			

Type of Housing Construction	Impact Fee Components by Grade Level			
	Elementary	Middle	High School	Total
Single Family Detached	\$2,142	\$2,712	\$2,380	\$7,234
Townhouse Structure	\$956	\$1,090	\$920	\$2,966
Two Unit Structure	\$851	\$970	\$809	\$2,630
Multifamily 3+ Units	\$507	\$579	\$544	\$1,630
Manufactured Housing	\$813	\$926	\$929	\$2,668

Table I - 14: Impact Fee Per Unit: Two Structural Divisions

LITCHFIELD SCHOOL IMPACT FEE - FEE BY DWELLING UNIT - TWO STRUCTURAL GROUPS - 2014												
Type of Housing Construction	School Facility Spatial Demands of Average Housing Units								Replacement Cost Existing Facilities			
	Public School Enrollment Per Unit				Floor Area Per Pupil Capacity				\$142	\$161	\$145	Total Public School Development Cost Per Housing Unit
	Grade K-4	Grade 5-8	Grade 9-12	Total Public Schools	Grade K-4	Grade 5-8	Grade 9-12	Weighted Avg K-12	Grade K-4	Grade 5-8	Grade 9-12	
Single Family Detached	0.188	0.194	0.196	0.578	136	133	182	151	\$3,642	\$4,140	\$5,169	\$12,951
Other Structure Types	0.106	0.085	0.112	0.303	136	133	182	152	\$2,053	\$1,814	\$2,954	\$6,821
Type of Housing Construction	District Cost Per Housing Unit (Capital Cost Less State Building Aid %)				Credit Allowances				Impact Fee Per Dwelling Unit			
	Grade K-4	Grade 5-8	Grade 9-12	Total Public Schools	(See Worksheets for Details)							
	30%	30%	30%		K-4	5-8	9-12	Total				
Single Family Detached	\$2,549	\$2,898	\$3,618	\$9,065	(\$407)	(\$186)	(\$1,238)	(\$1,831)	\$7,234			
All Other Housing Units	\$1,437	\$1,270	\$2,068	\$4,775	(\$215)	(\$98)	(\$655)	(\$968)	\$3,807			

Type of Housing Construction	Impact Fee Components by Grade Level			
	Elementary	Middle	High School	Total
Single Family Detached	\$2,142	\$2,712	\$2,380	\$7,234
All Other Housing Units	\$1,222	\$1,172	\$1,413	\$3,807

Table I - 15: Impact Fee per Square Foot – Two Structural Divisions and Average All Units

[Note – use of a square foot fee should be accompanied by a ceiling on floor area assessed or a maximum dollar limit]

LITCHFIELD SCHOOL IMPACT FEES PER SQUARE FOOT OF LIVING AREA - 2014												
Type of Housing Construction	School Facility Spatial Demands of Average Housing Units								Replacement Cost Existing Facilities			
	Enrollment Per 1,000 Sq. Ft. Living Area				Floor Area Per Pupil Capacity				\$142	\$161	\$145	Total Public School Development Cost
	Grade K-4	Grade 5-8	Grade 9-12	Total Public Schools	Grade K-4	Grade 5-8	Grade 9-12	Weighted Avg K-12	Grade K-4	Grade 5-8	Grade 9-12	
Single Family Detached	0.1018	0.1049	0.1059	0.3126	136	133	182	151	\$1.97	\$2.24	\$2.79	\$7.00
All Other Housing Units	0.1012	0.0810	0.1073	0.2895	136	133	182	152	\$1.96	\$1.73	\$2.83	\$6.52
Type of Housing Construction	District Cost Per Housing Unit (Capital Cost Less State Building Aid %)				Credit Allowances				Impact Fee Per Square Foot Living Area			
	Grade K-4	Grade 5-8	Grade 9-12	Total Public Schools	(See Worksheets for Details)							
	30%	30%	30%		K-4	5-8	9-12	Total				
	Single Family Detached	\$1.38	\$1.57	\$1.95	\$4.90	(\$0.17)	(\$0.08)	(\$0.53)	(\$0.78)	\$4.12		
All Other Housing Units	\$1.37	\$1.21	\$1.98	\$4.56	(\$0.16)	(\$0.07)	(\$0.48)	(\$0.71)	\$3.85			

Type of Housing Construction	Impact Fee Components by Grade Level			
	Elementary	Middle	High School	Total
Single Family Detached	\$1.21	\$1.49	\$1.42	\$4.12
All Other Housing Units	\$1.21	\$1.14	\$1.50	\$3.85
All Housing Units	\$1.21	\$1.45	\$1.45	\$4.11

Table I - 16 – Bedroom Based Fee Based on Single Family Home Characteristics

LITCHFIELD SCHOOL IMPACT FEE - PER UNIT BY NUMBER OF BEDROOMS (SINGLE FAMILY) - 2014												
Type of Housing Construction	School Facility Spatial Demands of Average Housing Units								Replacement Cost Existing Facilities			
	Public School Enrollment Per Unit				Floor Area Per Pupil Capacity				\$142	\$161	\$145	Total Public School Development Cost Per Housing Unit
	Grade K-4	Grade 5-8	Grade 9-12	Total Public Schools	Grade K-4	Grade 5-8	Grade 9-12	Weighted Avg K-12	Grade K-4	Grade 5-8	Grade 9-12	
Two Bedrooms	0.083	0.057	0.085	0.225	136	133	182	153	\$1,608	\$1,216	\$2,242	\$5,066
Three Bedrooms	0.172	0.194	0.193	0.559	136	133	182	151	\$3,332	\$4,140	\$5,090	\$12,562
Four or More Bedrooms	0.253	0.213	0.220	0.686	136	133	182	150	\$4,901	\$4,545	\$5,802	\$15,248
Type of Housing Construction	District Cost Per Housing Unit (Capital Cost Less State Building Aid %)				Credit Allowances				Impact Fee Per Dwelling Unit			
	Grade K-4	Grade 5-8	Grade 9-12	Total Public Schools	(See Worksheets for Details)							
	30%	30%	30%		K-4	5-8	9-12	Total				
	Two Bedrooms	\$1,126	\$851	\$1,569	\$3,546	(\$331)	(\$151)	(\$1,006)	(\$1,488)	\$2,058		
Three Bedrooms	\$2,332	\$2,898	\$3,563	\$8,793	(\$373)	(\$170)	(\$1,135)	(\$1,678)	\$7,115			
Four or More Bedrooms	\$3,431	\$3,182	\$4,061	\$10,674	(\$465)	(\$212)	(\$1,416)	(\$2,093)	\$8,581			

Type of Housing Construction	Impact Fee Components by Grade Level			
	Elementary	Middle	High School	Total
Two Bedrooms	\$795	\$700	\$563	\$2,058
Three Bedrooms	\$1,959	\$2,728	\$2,428	\$7,115
Four or More Bedrooms	\$2,966	\$2,970	\$2,645	\$8,581

Appendix: Discussion of School Facility Space Needs

The Litchfield School District has provided additional perspective on space limitations within the Griffin Memorial School and the Litchfield Middle School. In a March 18, 2014 memorandum to the Planning Board, Superintendent Brian Cochrane notes that both of these schools have require the addition of portable classrooms to support their educational programs and the use of storage and meeting spaces within the main buildings for support services, the demands of which have changed due to factors independent of enrollment growth.

The Superintendent has noted that, subject to changes in Federal and State regulations, both schools provide psychological services, occupational, physical, and speech therapy as well as support services to English Language Learners (ELL students). The system also supports a higher level of effort in support services such as reading and tutoring services. These increased requirements have placed demands on building areas to support special use functions that consume space that was originally designed for general classroom and basic core facility space.

Therefore, it is possible for a school to become “overcrowded” whether or not it is accommodating growing enrollment, because more of its existing facility floor area is consumed by these support needs. With respect to impact fee assessment, as changes in program requirements lead to higher ratios of facility space needed per pupil, the fee basis should reflect that evolving standard over time. The impact fee cost basis will therefore assign a capital cost based on the total facility area required per pupil at District’s policy for maximum class size and the cost of the facilities placed in service.

If portable classrooms are part of the area needed to support adequate total space, then that floor area has been included within the spatial standard used to compute the fee. The replacement cost of the facility is estimated at the combined value replacement cost) of the facilities placed in service. The impact fee seeks to reimburse the School District for the total cost of these facilities per pupil at the current ratio of total space per pupil capacity.

Classroom Capacity Estimate – Griffin Memorial School

In the 2002 Master Plan, the total capacity of the Griffin School was estimated at 500 (the main building only; no portables in place).

A 2003 architectural study by Team Design estimated a gross capacity for 498 pupils or net capacity of 453 at 90% utilization, based on the total number of pupils stations (classrooms). Applying State Department of Education guidelines to adjust for all space within the building, the gross capacity was estimated at 401 and the net capacity at 365 with 90% utilization.

In consultation with Principal Scott Thomson, BCM Planning developed an updated estimate of the classroom capacity of the Griffin Memorial School as of 2014. The classroom capacity is based on assumptions similar to those used in a 2003 evaluation by Team Design in an architectural study of the building. As in the 2003 study, pre-K and specialized classrooms are excluded from the capacity estimates. The capacity of core facilities in the main building has not been evaluated as part of the estimate, though adequate space for core facilities is known to be lacking.

The revised capacity estimates are shown separately for the main building (based on general purpose classrooms for grades 1-4) and for the Kindergarten separately (housed in a freestanding modular building). In one column the classroom capacity is estimated using all general purpose classrooms in use for grades 1-4 (used in the impact fee report). A second estimate is shown excluding two undersized classrooms that have less than 800 square feet.

The main building has a maximum capacity for grades 1-4 of 375 (or 338 at 90% utilization efficiency). If the smallest classrooms of under 800 square feet are excluded, the gross capacity would drop to 335 and net capacity to 302. However, since these classrooms remain in active use and are necessary to the

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educational program, the higher figures are assumed as the available classroom capacity in the impact fee analysis. Even at the higher number, the building does not have adequate capacity for the current number of pupils at District class size standards. For the purpose of this impact fee study, the total site (including Kindergarten modular classrooms) is estimated to have a capacity for grade K-4 pupils of 455 (gross) or 410 (net with 90% utilization).

Table I-17 – Estimated Classroom Capacity Griffin Memorial School

GRIFFIN MEMORIAL SCHOOL GENERAL CLASSROOM CAPACITY ESTIMATE				
Room	2014-2015 Usage	District Guideline Max Per General Clsrm	Estimate Excluding Classrooms <800 Sq. Ft.	Notes on space utilization
Kindergarten Modular Free-Standing Bldg				
	Kindergarten Classroom	20	20	One building wity 2 Kindergarten classrooms; 2 sessions each per day
	Kindergarten Classroom	20	20	
Griffin Memorial School Main Building:				
Rm 25	Pre-K Classroom	--	--	Pre-K Classroom not included in capacity est.
Rm 10	Grade 1 General Clsrm	20	---	Undersized <800 sq. ft.; current State min. of 900 sq. ft.
Rm 09	Specialized Clsrm	---	---	Reading specialist & Spec. Ed. teacher
Rm 07	Grade 1 General Clsrm	20	20	
Rm 06	Grade 1 General Clsrm	20	20	
Rm 05	Specialized Clsrm	---	---	Spec. Ed. office, PreK classroom up to 5, storage
Rm 12	Grade 3 General Clsrm	20	20	
Rm 04	Grade 1 General Clsrm	20	20	
Rm 03	Grade 2 General Clsrm	20	20	
Rm 02	Grade 2 General Clsrm	20	20	
Rm 01	Grade 2 General Clsrm	20	---	Undersized <800 sq. ft.; current State min. of 900 sq. ft.
Rm 08	Special Ed. Resource Rm	---	---	Spec. Ed. Reource Room
Rm 16	Specialized Clsrm	---	---	3 Spec. Ed. case managers
Rm 15	Grade 2 General Clsrm	20	20	
Rm 14	Grade 3 General Clsrm	20	20	
Rm 30	Grade 3 General Clsrm	20	20	
Rm 29	Grade 3 General Clsrm	20	20	
Rm 28	Grade 3 General Clsrm	20	20	
Rm 18	Computer Lab	---	---	Grade 2 classroom in 2013-14; computer lab 2014-15
Rm 19	Specialized	---	---	Reading Tutors
Rm 20	Grade 4 General Clsrm	23	23	
Rm 21	Grade 4 General Clsrm	23	23	
Rm 22	Grade 4 General Clsrm	23	23	
Rm 23	Grade 4 General Clsrm	23	23	
Rm 24	Grade 4 General Clsrm	23	23	
Kindergarten Modular Classrooms (2)				
		80	80	One Building, 2 rooms with total area of 2,128 sq. ft. Maximum 20/room per session. Two sessions per day.
	<i>Net Kindergarten Capacity @ 90% Util.</i>	72	72	
Griffin Memorial School Main Building				
				(Pre-K room is not included in capacity estimate)
	Gross Capacity Grades 1 to 4	375	335	Gross capacity at District guideline for max. class size
	Net Capacity Gr 1-4 @ 90% Util.	338	302	Net capacity of main building
Gross Site Capacity @ District Stds				
		455	415	Gross capacity at District guideline; 2 Kind. sessions/day
	Net Site Capacity @ 90% Utilization	410	374	Net capacity of total site@ 90% utilization

Classroom Capacity Estimate – Litchfield Middle School

The following estimates of general classroom capacity are based on the number of regular classrooms by grade and the District policy on maximum pupils per room.

Portables:	4 Grade 5 classrooms @ maximum 23 pupils per room	= 92
Main Building:	1 Grade 5 classroom @ maximum 23 pupils per room	= 23
	17 Grade 6-8 classrooms @ maximum 25 pupils per room	= 425
	<u>Main Building total</u>	<u>448</u>
	LMS Site Total: 22 Regular Classrooms	540

Space Limitations Assessment by School Principals

Other limitations cited by the Principals of the Griffin School and the Litchfield Middle school center on space shortages within their main building, including many related to storage or the need for better separation of functions now sharing the same space.

At the Griffin Memorial School, the Principal’s review cites space issues related to:

- Original “1930 section” of building no longer usable for instruction or storage
- Kindergarten classrooms in portables
- No Pre-K bathrooms in main building
- No music room
- Space shortages or overlapping space usage for:
 - Physical Education
 - Support programs: tutors, language & speech therapy
 - Teacher copier room
 - Library/media center
 - Cafeteria storage / maintenance staff space
 - Conference room
 - Speech and language shared spaces
 - Record storage
 - Facility director/custodial staff office & closets
 - Garage storage

A more complete listing of space deficiencies is found in a March 2014 memorandum by the Principal to the Litchfield Planning Board.

The Principal of the Litchfield Middle School has cited the following in a March 2014 memo regarding space limitations at the LMS:

- Four portable classrooms in use for grade 5 students due to insufficient space in main building
- Library Media Center storage area used to assess and service students
- Conference room used to service students instead of intended purpose as a meeting space.
- One of two music/sound rooms being used as an office space for District technology support.

Chapter II: Road Impact Fee

RSA 674:21, V lists the specific facilities for which impact fees may be assessed. With respect to highways, this list includes “road systems and rights of way” only; there is no mention of other related maintenance facilities. The statute also requires that impact fees may be assessed only for facilities which are “owned or operated” by the municipality (or by a school district of which the Town is a member). Therefore, improvements to State highways cannot be used as a basis for local road impact fees. The road impact fee basis discussed in this chapter is limited to improvements occurring within the Class V road system and the related right of way.

1. Litchfield Highway Inventory

The table below shows the most recent breakdown of the Litchfield road network available from the New Hampshire Department of Transportation (NHDOT).

Table II - 1

NHDOT Highway Inventory - Litchfield - 2012		
State Classification	Linear Miles	Lane-Miles
I - State Primary	0.921	1.842
II - State Secondary	10.811	21.622
III - State Recreation	0	0
IV - Compact	0	0
V - Local	62.29	124.394
VI - Local Not Maintained	0	0
VII - Federal	0	0
Private	5.46	10.436
Total Public and Private	79.482	158.294
Public Maintained	74.022	147.858
Class V % of Public Maintained	84.2%	84.1%
<i>Source: NH DOT inventory January 2012</i>		

According to the NHDOT inventory, Litchfield Class V roads comprise approximately 62.3 linear miles¹ or about 124.4 lane miles of highway. The Class V highways maintained by the Town represent about 84% of the publicly maintained roads in Litchfield.

2. Litchfield Road Surface Management System (RSMS)

a. 2002 Road Condition Survey

A detailed study was prepared for the Town of Litchfield in August 2002 by Bedford Design Consultants of Londonderry, NH. That analysis included a comprehensive inventory of road conditions and recommendations for improvements. The study rated the condition of road segments and suggested a strategy to extend the life of the Town’s roads based on annual actions to repair and improve roads and drainage.

The overall program was the consequence of a Road Surface Management System (RSMS) analysis that rated road segments that included the grading of each road segment using a Pavement Condition Index (or PCI). The overall road network was found to be in good condition with an average PCI of 85 (with

¹ Using the Town’s current RSMS inventory (with corrections to some of the included road lengths) we estimate a total of about 65.6 miles of Class V roads.

100 representing a road in excellent condition). Cost estimates were prepared for various levels of future improvements ranging from crack sealing to major reconstruction of the roads including drainage.

Under the RSMS strategy, early action on crack sealing, shim and overlay work may help defer the need for more expensive treatments such as full reconstruction of the roadway. The strategy recommended was for an annual road repair budget averaging \$265,000 per year for a 10-year period. (If this 2002 value is adjusted using the Engineering News Record (ENR) construction cost index, the equivalent value for October 2013 is about \$352,000 per year.) The report also indicated that, even with this annual expenditure, the road surface could degrade to levels below the baseline condition over a 10-year period. At the time of the study, the average PCI for the road network was estimated at 85, or in good condition.

Between 2008 and early 2013, the Town has completed many of the projects listed in the original schedule (at least the first 5 to 5.5 years of projects listed in the 10-year plan have been addressed, comprising improvements to about 12.5 miles of roadway).

b. 2013 Road Conditions and Draft Road Improvement Plan

The Town Administrator provided BCM Planning with a spreadsheet analysis of Litchfield roads with updated PCI values, and a program of improvements based on priority work indicated by the ratings. The updated average PCI rating, weighted for the surface area of each rated segment, indicates a current network average score of 85. The current rating would suggest that overall network average condition has been maintained at the 2002 level as a result of the actions taken to implement the RSMS recommendations.

The pavement condition index (PCI) provides a relative rating of the surface condition of the roads, with a score of 100 representing a road in ideal condition. Pavement in increasingly deteriorated condition will have progressively lower PCI ratings. In general, the roads with the lowest PCI ratings are candidates for full reconstruction or reclamation, while those with higher PCI ratings may need only minor improvements to retain them in adequate condition. The components of the improvement plan, based on the Town's 2013 road condition assessment, are summarized in Table II – 2.

Table II – 2: RSMS Components - 2013 Draft Plan

ROAD IMPROVEMENT PROGRAM - 2013 DRAFT - CLASS V ROAD RECONSTRUCTION PLAN				
Class V Road Importance & Planned Improvement	Linear Miles	Estimated Road Surface Area	Average PCI of Surface Area (Existing)	Cost of Scheduled Improvements
Major Roads - Class V				
Overlay	1.01	129,441	75.5	\$186,270
Reclaim	3.20	393,134	58.6	\$1,604,170
Unscheduled	21.73	2,760,129	89.8	\$0
Major Roads Subtotal	25.93	3,282,704	85.5	\$1,790,440
Other Class V Roads				
Overlay	4.22	532,884	74.1	\$780,535
Reclaim	7.53	905,572	61.8	\$3,775,300
Unscheduled	27.93	3,479,918	91.2	\$0
Other Roads Subtotal	39.68	4,918,374	83.9	\$4,555,835
Total Class V Roads	65.61	8,201,078	84.6	\$6,346,275
Total Improvements				
Overlay	5.23	662,325	74.4	\$966,805
Reclamation	10.72	1,298,706	60.8	\$5,379,470
Total Planned Improvements	15.96	1,961,031	65.4	\$6,346,275
Level of Improvement				
Overlay Only	32.8%	33.8%	--	15.2%
Reclamation (reconstruct)	67.2%	66.2%	--	84.8%
Source: BCM Planning, LLC tabulation of data within August 2013 draft RSMS plan. Subcategory of "major roads" estimated by Consultant, subject to change per review by staff.				

As indicated by Table II - 2, priority for future improvements centers on the roads with lower PCI ratings. The roads for which no reclamation or paving overlays are scheduled are on average in very good condition with an average PC rating of about 90. Roads scheduled for overlay work have an average PCI of 74, while those scheduled for reconstruction (using reclamation) have an average PCI rating of about 60.²

BCM Planning estimates that about 26 miles of roadway in the Class V system (about 40% of the system) could reasonably be considered “major roads” which function as localized collector or feeder roads that link parts of the Town together and provide travel paths to the state highway network. Typically, these paths will generally carry higher traffic volumes than minor roads that access relatively few properties.

An unofficial list of the roads estimated to comprise “major” Class V roads in Litchfield is shown in Table II-3. This preliminary list is based on a conversation with the Highway Superintendent, and BCM Planning review of a map of Litchfield roads.

Table II – 3 List of “Major” Class V Roads (Unofficial)

Road Name	Linear Ft	Linear Miles	Estimated Surface Area (Sq. Ft.)
Albuquerque Av	30,920	5.8561	803,920
Brenton St	7,976	1.5106	191,424
Brick Yard Dr	3,711	0.7028	89,064
Century Ln	6,196	1.1735	148,704
Colby Rd	2,133	0.4040	51,192
Corning Rd	2,361	0.4472	56,664
Cummings Dr	1,713	0.3244	42,825
Cutler Rd	6,123	1.1597	116,337
Lance Av	4,089	0.7744	98,136
Meadowbrook Ln	2,001	0.3790	48,024
Nakomo Dr	1,520	0.2879	36,480
Naticook Av	6,839	1.2953	177,814
Nesenkeag Dr	6,200	1.1742	148,800
Page Rd	12,570	2.3807	276,540
Pearson St	2,763	0.5233	66,312
Pilgrim Dr	5,640	1.0682	135,360
Pinecrest Rd	12,566	2.3800	301,584
Roberts Rd	1,998	0.3784	47,952
Robyn Av	3,774	0.7148	90,576
Talent Rd	12,522	2.3716	275,484
Wood Hawk Way	3,313	0.6275	79,512
Total	136,928	25.9336	3,282,704

These roads are of common benefit to all development, while shorter access streets and roads are of more limited benefit to a small number of parcels. While improvements supported by impact fees may occur throughout Litchfield, the use of impact fees may be more concentrated on these roads, which would be expected to be impacted by higher traffic flow.

c. RSMS Improvement Plan as Rationale for Impact Fee

In communities that are implementing a comprehensive RSMS plan for road improvements, there is a stronger rationale for including all Class V roads in the impact fee basis because there is greater assurance of widespread benefits across the entire community in the form of continuous improvement and preservation of the pavement condition of the entire road network.

² The average PCI shown in the table was computed by applying the Town's PCI rating for each road segment to its estimated surface area, resulting in an average PCI value for aggregate surface area in each subtotal.

The RSMS approach is to prioritize road improvements to slow the rate of deterioration of the road surface and avoid more costly treatments in the future such as full reconstruction. A program of regular improvements helps to maintain the value of the Town's investment in its roads, and preserves and enhances roadway capacity for both existing and new development. Because of past improvement efforts guided by the 2002 RSMS plan, a significant portion of the Town's roads have relatively high PCI ratings.

The improvements shown in Table II - 2 would comprise the future improvement of about 16 miles of Class V roadway, with about 85% of the cost found in road reconstruction (reclamation and repaving), and about 15% in pavement overlay only. Altogether, the planned improvements would represent a cost of about \$6.35 million, with about \$5.38 million in reconstruction (reclamation) work.

In recent years, the level of investment in the RSMS program has averaged only about \$200,000 in major per year. At that annual funding level, directed at reconstruction plans, it would take over 27 years to complete the outlined improvements. A higher level of investment should probably be made in order to support a road impact fee. Otherwise, the impact fee may effectively assess an amount for road improvement that is not proportionate to the actual investments being made. In 2014, the Town approved a program that would provide about \$340,000 for the road improvement program, with about half of that amount to be drawn from the Town's State Highway Block Grant.

For the road impact fee to be equitable, the cost of improvements allocated to new development should be reasonably related to proportionate demand on the infrastructure involved. But in addition, the amount assessed should also be commensurate with a demonstrable level of investment being made in the related improvement program. If these principles are observed, a portion of related improvement costs will be of benefit to new development in the form of a higher quality road network and the preservation of the capacity of the road surface to accommodate increased traffic.

Two models are discussed below as means of computing an impact fee for roads. The first follows the basic approach used by the Town in the past, with some adjustments. The second approach illustrates a means of calibrating the amount of the fee to a specific annual investment in the road system, with a portion of improvement costs recovered from new development in relation to its proportionate trip generation over the improvement period.

3. Impact Fee Model A: Lane-Mile Model

The lane-mile model seeks to define the unit cost for the development of a road of sufficient surface area to accommodate average travel demand generated by the land use. This approach is an outgrowth of models used to compute the cost of adding new lane-miles to a roadway to achieve target levels of service. It is also used to compute the replacement cost of existing roadway capacity and a proportionate impact fee based on the capacity of the road encumbered by traffic generated by new development. A form of this method has been used in Litchfield since its original adoption of impact fees.

The intent of the model is to estimate an average cost of roadway capacity per vehicle lane-mile, and to assign a cost per trip that represents a share of the cost of the capacity used. However, the costs shown in the model reflect the average cost of reconstruction of roadways using reclamation techniques with repaving of the road surface with a binding course and wearing course of asphalt, rather than the full cost of developing a new roadway from raw land.

a. Differences in Approach from 2000 Fee Basis:

The Model A approach discussed below incorporates some changes relative to the existing (2000 update) approach to the road impact fee:

- An average trip length for all trip purposes (national data) is assumed rather than applying various trip lengths by land use. Average trip length has increased since the original road fee model was developed.
- The structure of the existing road fee model effectively presumes that the entire length of each trip generated in Litchfield takes place solely within the Town. For the purpose of this analysis, an adjustment factor is introduced to modify the trip length variable.
- The original methods used for road fees in Litchfield deducted from the capital cost basis the percentage of Class V mileage originally constructed by developers. This adjustment is not included in the Model A assumptions. The capital cost basis reflects the cost of future road improvements. Once a new road has been accepted by the Town, future improvements to preserve surface conditions and related capacity are an ongoing responsibility of the Town.
- The capacity of Class V roadways assumed in the fee basis has been changed to reflect the more recent data contained in Litchfield Master Plan Transportation Chapter. The capacity of local roads at level of service C is estimated as capable of accommodating average daily traffic of 7,500 average vehicles per day, or 3,750 per lane.
- The cost basis in Model A reflects the Town's estimated cost for road reconstruction with new pavement, using reclamation techniques at an average comprehensive reconstruction cost of \$100 per linear foot.³ The original model and 2000 update were based on recovering the full construction and design cost of a new roadway.⁴ Use of the reclamation cost figure is intended to reflect the actual level of investment to be made by the Town in future road improvements.
- The original model included a credit deduction that appears to be based on the estimated portion of State gas tax payments and vehicle registration fees that flow back to municipalities in the form of Highway Block Grants. The proposed model does not incorporate a similar credit. Block grant receipts can be applied to a number of highway department expenses and are specifically required to be dedicated to road improvements.
- In Model A, the fees for non-residential uses are shown for three general categories of development to simplify number of categories of assessment. Others could be added to represent additional classifications. Consideration of a discount of the commercial - industrial road impact fees has been illustrated in the model.

³ This road reconstruction cost estimate includes allowances for pavement reclamation (milling, grading and compacting, and grading) bituminous pavement for a binder course and surface course, and allowances for ditching/drainage, erosion and sediment control. References to road reconstruction or reclamation include all of these components. Surface course paving often takes place the year following binder course installation.

⁴ The cost basis of the 2000 road fee model reflected the full cost to reconstruct a 2-lane roadway using new materials at \$167 per linear foot, plus a design allowance of 15%, resulting in total cost basis of \$192 per linear foot (or over \$1 million per mile). If that cost were adjusted using the ENR construction cost index from its year 2000 average to June 2014, the cost basis of the road fee would now be \$302 per linear foot or nearly \$1.6 million per mile.

b. 2014 Cost Basis for Road Reconstruction

The basis assumption of the lane-mile model is that each unit of new development should be assessed for the cost to provide the Class V highway capacity that it encumbers based on its relative impact on average daily vehicular travel. Preserving that capacity will require periodic replacement of the roadway over its lifetime. New development’s share of the cost to create that capacity (based on reconstruction costs) is recovered in the road impact fee. As the Town recovers this amount from new development, it can be invested into an ongoing road improvement program.

Table II-4 illustrates a range of estimates of the cost to reconstruct Class V highways based on recommended NH DOT standards for Class V roads with 22 to 24 feet of paved lane width plus shoulders and allowances for drainage. Most of the Town’s reconstruction work is expected to involve reclamation techniques. The average cost of the reclamation alternatives is about \$100 per linear foot. Note that this cost includes full depth reclamation (milling and grading) plus the cost of both an asphalt binder course, and a subsequent asphalt surface course, as well as allowances for ditching (drainage) and erosion and sediment control.

Table II-4: Average Estimated Costs for Reconstruction

Estimated Cost Per Linear Foot - Class V Highway Reconstruction by Level of Improvement					
Average Daily Traffic (Veh/Day) Design	Width of Paved Travel Lanes	Fully Reconstruct & Pave (with Paved Shoulders)	Fully Reconstruct & Pave (with Gravel Shoulders)	Reclamation & Pave (with Paved Shoulders)	Reclamation & Pave (with Gravel Shoulders)
750-1500	2-lane 22 ft.	\$137	\$121	\$100	\$80
1500 & Over	2-lane 24 ft.	\$198	\$168	\$127	\$88
Average Cost 22-24 Ft. Road		\$167	\$145	\$114	\$84

Source: Update of October 2007 cost model prepared for BCM Planning, LLC by engineering firm Wright-Pierce. Unit costs in the model were updated in October 2013, and an ENR cost adjustment applied to estimate costs as of June 2014.

c. Revised Lane-Mile Model Assumptions

Because impact fees in NH may be assessed only for municipal infrastructure, the cost basis should reflect only the lane-mile demands on the local (Class V) road network. In most cases, only a portion of average trip length will take place within a given municipality, and only a portion of the travel within the municipality will occur on locally maintained roads.

The lane-mile model is often used in government jurisdictions outside of New England where municipal or county governments span much large geographic areas. Typically, this approach applies an average trip length assumption based on a national average of about 9.7 miles per trip. But without an adjustment, this technique would assume that the entire length of an average trip takes place entirely within the jurisdiction assessing the fee.

In northern New England, where local governmental units are quite small, some adjustment to trip length seems necessary to reflect the portion of total trip length that will occur within the community. This model applies a factor of 57% as an adjustment to estimate the portion of each trip that would affect roads within the Town. (The proportion of total vehicle trips that are not more than 6 miles in length, based on a national average). While not a local empirical measure, the factor serves to reduce the potential assessing a fee that reflects travel distance within other communities.

Table II-5: Lane-Mile Model Using Road Reconstruction Cost Basis

LITCHFIELD ROAD RECONSTRUCTION COST BASIS FOR IMPACT FEE - LANE MILE IMPROVEMENT COST		
Demand Factor	Quantity	Source or Purpose of Factor
Single Family Home trips per day	9.57	Average daily trips generated
Percent New Trips	100%	Ratio for single family home, new development
Average Vehicle Trip Length - All Purposes	9.72	National Household Transportation Survey (NHTS) - U. S. Avg. 2009
Local Portion of Trip Length - Adjustment Factor	57%	Portion of trips < 6 miles length (U. S. Avg, NHTS, 2009)
Class V Roads % of All Publicly Maintained	84.2%	NHDOT inventory 2012 all roads publicly maintained
Miles Per New Trip on Class V Roads	4.7	Miles per trip on all Town-maintained roads
Total Vehicle Miles Per Day	45.0	Total vehicle miles traveled per day - Class V roads
Allowance for Two-Way Travel	50%	Adjustment to compute vehicle lane-miles/day
Vehicle lane miles used per day - Class V roads	22.5	Vehicle lane miles used per day on Town maintained roads
Cost of Roadway Improvements	Recoupment Cost Basis: Full Depth Reclamation & Paving, Class V Roads	Description and Assumptions
Total Improvement Cost Per Linear Foot 2014	\$100	Average estimated cost for Class V road - 2 lanes 22-24 width, plus shoulders. Cost includes cost of reconstruction using reclamation techniques, plus binder course paving, wearing course paving, and drainage.
Reconstruction or reclamation cost per mile (2-lanes) [Or, cost per lane-mile @ 50%]	\$528,000 \$264,000	Cost per linear mile for 2 lane road (5,280 ft) Cost per lane-mile
Cost Per Vehicle Lane Mile		
Assumed ADT Capacity Typical for Network (Class V Road)		See Litchfield Master Plan (2002) - Chapter V - Transportation - page V-9
LOS C - Max Daily Traffic Capacity - Local Road	7,500	Vehicles per day - average, 2-way travel
One Lane @ 1/2 of ADT capacity = (ADT Per Lane-Mile At Indicated LOS)	3,750	Vehicles per day per lane, average
Capital Cost Per Vehicle Lane Mile (v/m)	\$70.40	Road improvement cost per vehicle lane mile encumbered
Proportionate Capital Cost Allocation	Impact Fee Assigned	Fee Basis
Single Family Home	\$1,584	Cost for roadway capacity encumbered by single family home based on full depth reclamation
Average Daily Trips	9.57	
Cost Per New Trip (Avg SFU @ 9.57 daily trips)	\$166	

Of the total trip length that takes place within the community, a portion will be traveled on State highways rather than the local Class V road network. Within the Town, the NHDOT road inventory indicates that that 84% of all publicly maintained roads are Class V local roads. For within-Town travel, it is assumed that this percentage represents the proportionate impact on Town-maintained network.

The application of these factors, as well as the product of average trip generation and average trip length to a single family home, indicate an estimated 4.7 miles per trip affecting the local road system, or a total of 45 vehicle miles per day. Since trip generation rates represent trip ends (in or out of a site), the result is divided by two to estimate 22.5 vehicle lane miles per day on Town roads.

The replacement cost of a lane-mile of roadway is computed in the middle section of Table II - 5 at an average capital cost of \$100 per linear foot of roadway for full depth reclamation and paving of a binder course and wearing course of asphalt, plus allowances for drainage work, loam and seeding.⁵ The capacity of a vehicle lane-mile of roadway is estimated based on the Litchfield Master Plan estimated average capacity for Class V roads at level of service (LOS) C.

The resulting cost assignment for a single family home is 22.5 vehicle lane miles at \$70.40 per v/m or \$1,584 for a single family home. The average cost per trip for the single family home equals \$1,584 divided by the ADT trip rate of 9.57 per day = \$165.52 per new average daily trip. The same average cost per trip is then assigned to other residential uses as shown in Table II-6 based on the average daily

⁵ This cost estimate is reasonably consistent with a 2014 ENR-adjusted cost per foot when applied to the 2002 Road Condition Survey cost estimates for major reconstruction of a road segment with open drainage.

trip rate for that type of dwelling.⁶ The impact fee can be expressed per dwelling unit by type of home, or per square foot of living area based on the average living area of housing units in Litchfield

Table II-6: Residential Uses Road Fee Schedule

ITE Ref. No. (1)	Residential Road Impact Fee Per Unit	Avg Daily Trips per Unit (1)	Unit of Assessment	Fee Per Unit - ADT Basis	Avg Living Area - Litchfield Units	Alternate Fee Per Sq. Ft. Living Area
210	Single Family Detached Home	9.57	Dwelling Unit	\$1,584	1,850	\$0.86
230	Townhouse	5.86	Dwelling Unit	\$970	950	\$1.02
221	Two Family Structure	6.59	Dwelling Unit	\$1,091	1,250	\$0.87
221	Three or More Family Structure	6.59	Dwelling Unit	\$1,091	700	\$1.56
210	Manufactured Housing on Own Lot (use SF rate)	9.57	Dwelling Unit	\$1,584	950	\$1.67
240	Manufactured Housing in MH Park	4.99	Dwelling Unit	\$826	950	\$0.87

(1) Institute of Transportation Engineers (ITE), Trip Generation, 7th edition, 2003. Rate for manufactured housing on its own lot not reported by ITE, but assumed here to be equivalent to single family detached. ITE rate for "mobile homes" reflects sample of mobile home parks only.

Table II - 7 shows the same rate per new trip applied to three categories of non-residential development. For the retail sector, only 50% of trips are assumed to be “new” as such uses are associated with incidental pass-by trips that include some other primary trip purpose.

Table II-7: Commercial Uses Road Fee Schedule

Commercial Uses - Road Impact Fees - Three Use Categories					
Use Category and Trip Rates 1000 Sq. Ft.	Avg Daily Trips per 1000 Square Feet	Adjustment Factor for Pass-By (Estimated % Primary Trips)	Fee Per 1000 Sq. Ft. Based on Avg. Trip Rate	Cost Per Sq. Ft. @ Avg. Trip Rate	With 50% Discount
Retail (ITE 820 - Shopping Center)	42.94	50%	\$3,554	\$3.55	\$1.78
Office & Commercial (ITE 710 - Gen. Office Bldgs)	11.01	100%	\$1,822	\$1.82	\$0.91
Industrial & Whse (ITE 130 - Industrial Park)	6.96	100%	\$1,152	\$1.15	\$0.58

The costs are computed per square foot, and an alternative rate with an additional 50% discount is also shown. While all land uses will produce trips, it is likely that commercial uses in Litchfield will generate a greater proportion of their travel demand on State-maintained highways than residences. Therefore, a discount may be appropriate for such development.

As shown in Figures II – 1 and II - 2, about 75% of the commercial-industrial floor area in Litchfield is located on a State-maintained highway, compared to only 7% for residential uses.

The Town may want to consider either a general discount such as the 50% ratio shown in Table II – 6 for commercial uses, or to apply such discounts case by case if the use is located on a State maintained highway in Litchfield.

⁶ In roadway design and capacity analysis, the weekday PM peak trip rate and associated capacity estimates are often used as the measure of LOS at key intersections. In this model, however, which is based on average daily traffic and vehicle lane miles traveled, the appropriate allocation measure is the average daily trip rate.

Figure II - 1: Percent of Developed Building Area on State Roads

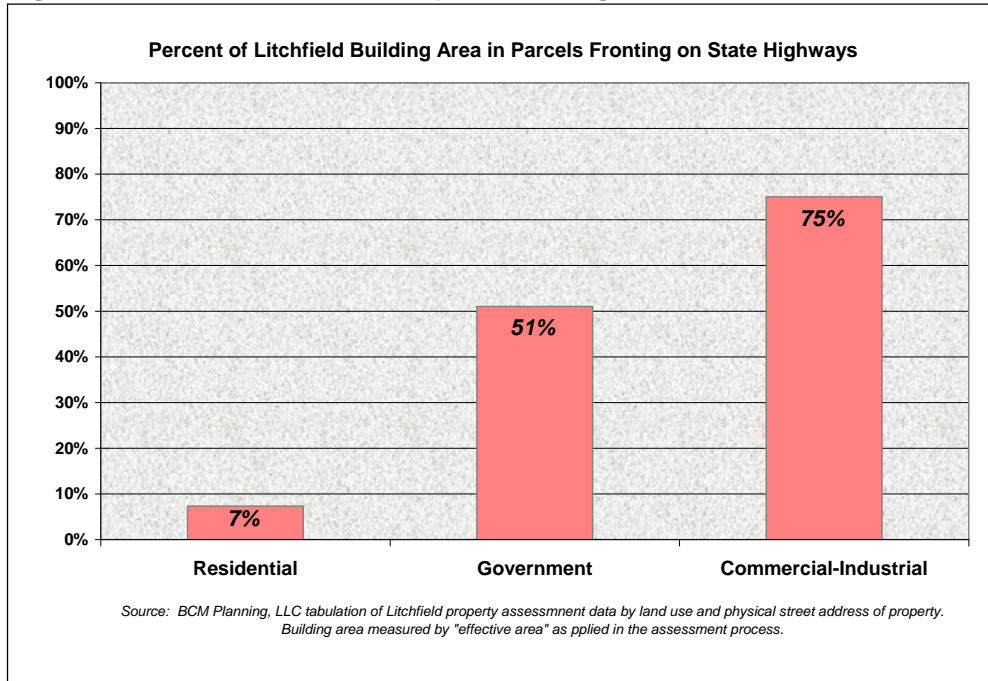
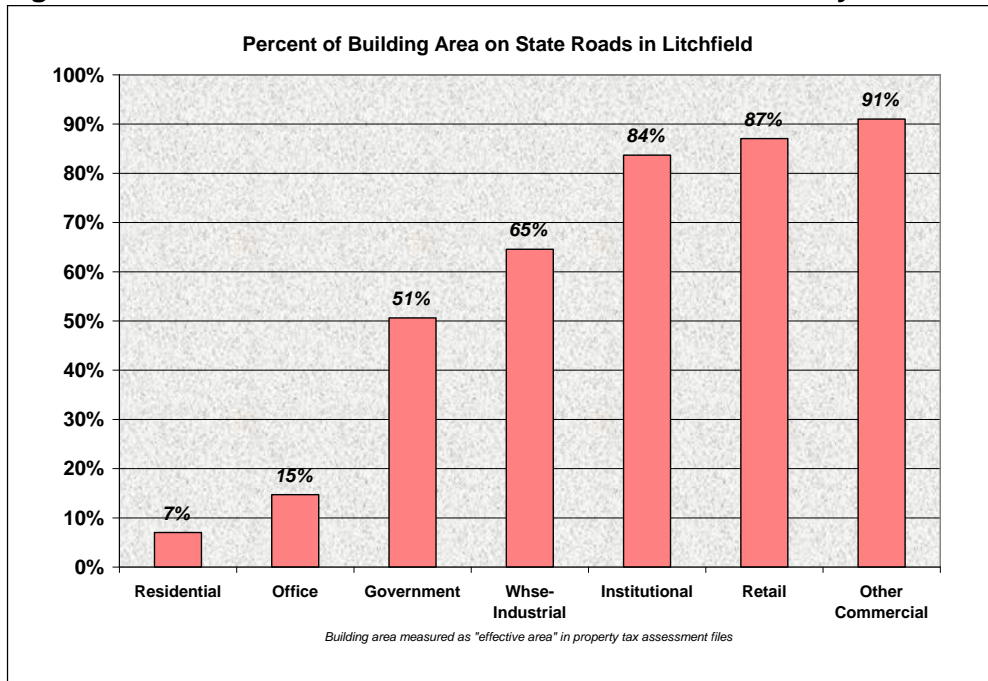


Figure II - 2 Detailed Percent of Floor Area on State Roads by Land Use



4. Impact Fee Model B: Road Impact Fee Cost Allocation per New Trip

A second method of developing an average capital cost per new trip is to assume an annual improvements budget, and allocate part of the road investment for a given period to the increase in trips generated by new development. In this model, an annual level of investment is assumed for a period of time, and a proportion of that investment is allocated to new development. The allocation to new

development is based on the projected increase in new trips indicated by the model’s trip generation assumptions and the socioeconomic variables for the base year and projection year. The model illustrated in this section is a variation of the road impact fee model contained in the 1999 Impact Fee Handbook developed by the Southern NH Planning Commission as a guide for New Hampshire municipalities.

The principal inputs to this model include:

- Trip generation formula (generic to the model)
- Base year and projection year data for housing, population, employment
- Average vehicles per household in community
- Average trips per household in community
- Road improvement costs to be allocated over the period

Under the growth assumptions applied in the model, the new trips occurring between the base year and the projection year will be attributable to new development from housing and commercial growth and related changes in employment change. The new trips generated over the period, as a percentage of the future year trip volume, is used to allocate a portion of the total capital investment in road improvements to new development. The amount is expressed per trip (average daily rate) and is then assigned to new development based on its trip generation rate.⁷

In Table II - 8 an average daily trip rate per household in Litchfield is estimated based on the number of housing units in the Town and a trip generation rate per unit based on ITE data by structure type. The result indicates an average blended rate of about 8.9 trips per housing unit per day for the residential sector.

Table II – 8: Estimated Average Trips per Household in Litchfield

Residential Category	Estimated Housing Units (ACS 2007-2012)	Housing Units Est. 2013 Assessment Data	ITE Category & Use Code Assigned	ITE Avg Daily Trips	ADT @ 100% Occupancy	ADT @ 100% Occupancy
Single Family Detached	2,354	2,381	Single Family -210	9.57	22,528	22,786
Condominium (TH)	295	44	Townhouse - 230	5.86	1,729	258
Two or More Family	136	463	Low Rise Apartment - 220	6.59	896	3,051
Manufactured Housing	88	122	Mobile Home in Park - 240	4.99	439	609
Total	2,873	3,010		---	25,592	26,704
Average daily trips per unit:					8.91	8.87

Table II - 9 is an estimate of total trip generation within Litchfield based on selected ITE trip rates applied to each land use category and the count of units and floor area of non-residential space. This approach estimates a total of 33,746 average daily trips generated within the Town, of which 78% is related to residential units and 22% to non-residential uses (including government). This estimate is on the same order of magnitude as the base year trip generation estimates used in the cost allocation models (B-1 and B-2) that follow.

⁷ The average daily trip rate has been used rather than the PM peak trip rate to assign costs in this model so that its cost basis is consistent with the lane-mile approach.

Table II - 9 Estimated Trips Generated in Litchfield

Estimate of Average Daily Trip Generation in Litchfield Based on Trip Rate and Use Category			
SF Detached	9.57	DU	22,786
Townhouse	5.86	DU	290
Two Unit Structure	6.59	DU	2,098
3+ Unit Structure	6.59	DU	692
Manufactured Hsg	4.99	DU	609
Subtotal Residential			26,475
Retail	42.94	1000 sf	889
Office	11.01	1000 sf	271
Commercial	12.76	1000 sf	1,154
Whse-Industrial	6.96	1000 sf	382
Government - Municipal	11.01	1000 sf	336
Government - Schoools	14.00	1000 sf	3,805
Institutional	9.11	1000 sf	434
Subtotal Non-Residential			7,271
Total Estimated ADT Generated			33,746
<i>Residential Uses</i>			<i>78%</i>
<i>Non-Residential Uses</i>			<i>22%</i>

Table II – 10 illustrates the assumptions and results of application of the trip growth model to a 2010-2030 growth period. Residential growth is based on projected housing units based on the 1990-2010 trend. Non-residential growth is based on employment change projected by the average of linear projections based on the 1980-2012 and 1990-2012 periods.

- Under these assumptions, trip growth between 2010 and 2030 would represent about **28%** of the year 2030 total.
- The anticipated level of investment in the Town’s road improvement program, supported by its RSMS analysis, is projected at an average of \$350,000 per year (based on the most recent budget for highway improvements).
- The average investment per new average daily trip under this scenario would be **\$151** per new average daily trip. That amount is then applied to create the fee tables that follow. An average single family home would pay **\$1,455** as a road impact fee under these assumptions, or **\$0.78** per square foot if assessed based on the average living area of a single family home in Litchfield.

Table II – 10 Road Fee Model B-1

Road Impact Fee for Improvement Program - Cost Allocation Based on Estimated Trips Generation - 2010 Base Year and Horizon Year					
Line No.	Socioeconomic Variables	2010	2030	Change	
A	TOTAL POPULATION	8,271	10,372	2,101	Projected population based on future housing units, occupancy and household size assumptions
B	DWELLING UNITS	2,912	4,000	1,088	Total units 2010 from Census; projected to 2030 using avg of linear trend for 1980-2010 and 1990-2010.
C	EMPLOYMENT IN RETAIL and ACCOMMODATION & FOOD SERVICE SECTORS	88	149	61	Assumes that 2010 share of total jobs in these sectors will pertain to horizon year
D	EMPLOYMENT IN ALL OTHER SECTORS	738	1,251	513	Balance of jobs (total less retail estimate). Future projection of total based on linear trend analysis.
E	TOTAL EMPLOYMENT	826	1,400	574	Future projection of total based linear projections of private and government employment in Litchfield using 1980-2012 and 1990-2012 data.
F	TRIP PRODUCTION	22,763	30,811	8,048	Estimated using SNHPC trip generation equations in 2008 <u>Regional Transportation Plan</u>
G	TRIP ATTRACTION	10,940	15,858	4,917	Estimated using SNHPC trip generation equations in 2008 <u>Regional Transportation Plan</u>
H	TOTAL TRIP GENERATION	33,703	46,668	12,966	Total of trip production and trip attraction
I	ESTIMATED PEAK TRIPS @ 10%	3,370	4,667	1,297	Assumes peak trips @ 10% of average daily trips
J	PROJECTED SHARE OF HORIZON YEAR TRIPS GENERATED BY NEW DEVELOPMENT			28%	New trips generated 2010 to horizon year as percent of total trips in projection year
K	RSMS Improvement Program 20-Year Expenditure @	\$350,000 per year =		\$7,000,000	Total reconstruction cost for Class V roads at assumed average investment per year
L	Cost Allocated to New Development	28%		\$1,960,000	Portion of program allocated to impact of new development
M	Improvement Cost Allocation Per New PM Peak Trip			\$1,512	Average cost per new PM peak trip
N	Improvement Cost Allocation Per Avg Daily Trip			\$151	Average cost per new avg. daily trip

Table II - 11 Residential Road Impact Fee Schedule (Model B-1)

ROAD IMPACT FEES - RESIDENTIAL USES						
ITE Use Code Assigned	Residential Trip Rates and Fees Per Unit	Avg Daily Trips per Unit (1)	Unit of Assessment	Fee Per Unit - ADT Basis	Avg Living Area - Litchfield Units	Fee Per Sq. Ft. Living Area
210	Single Family Detached Home	9.57	Dwelling Unit	\$1,445	1,850	\$0.78
230	Townhouse	5.86	Dwelling Unit	\$885	950	\$0.93
221	Two Family Structure	6.59	Dwelling Unit	\$995	1,250	\$0.80
221	Three or More Family Structure	6.59	Dwelling Unit	\$995	700	\$1.42
210	Manufactured Housing on Owned Lot	9.57	Dwelling Unit	\$1,445	950	\$1.52
240	Manufactured Housing in MH Park	4.99	Dwelling Unit	\$753	950	\$0.79

Table II - 12 Non-Residential Road Impact Fee Schedule (Model B-1)

ROAD IMPACT FEES - NON-RESIDENTIAL USES					
Land Uses by Selected ITE Categories and Trip Rates at PM Peak and Average Daily			Fee Per Average Daily Trip End \$151	Fee Per Square Foot (ADT basis)	Alternative Fee @ 50% Discount
ITE Use Code Assigned	Land Uses and Trip Rates Per 1000 Square Feet	Avg Daily Trips per Unit (3)	Fee Per 1000 Sq. Ft. Based on Avg. Trip Rate		
RETAIL & SERVICES					
820	Shopping Center	42.94	\$3,242	\$3.24	\$1.62
OFFICE AND RELATED					
710	General Office Buildings	11.01	\$1,663	\$1.66	\$0.83
INDUSTRIAL AND STORAGE					
130	Industrial Park	6.96	\$1,051	\$1.05	\$0.53

A second model using the same basic assumptions is illustrated in Table II – 13 as Model B-2. In this scenario, the assumptions remain the same, with the exception that residential growth will reflect the most recent projections for 2030 issued by the NH Office of Energy and Planning. The NHOEP projections forecast a population of 9,436 for Litchfield in 2030. The projected number of households and housing units has been modified proportionately by BCM Planning to mirror that population growth assumption, assuming a trended decline in average household size.

Under these assumptions, **24%** of the year 2030 trip generation in Litchfield would be attributable to new development occurring between 2010 and 2030. Using the same annual expenditure estimate for major road improvements at \$350,000 per year, the cost per new trip is **\$159**. The resulting road impact fee for a single family home is computed at **\$1,522** per unit, or **\$0.82** per square foot of living area based on the average size of a residence in Litchfield.

5. State Highway Block Grants

In all of the road impact fee models above, the fees are calculated based on the assumption of an ongoing road improvement program, prioritized according to RSMS, within the Class V road system. Such improvements are considered those that exceed normal maintenance of the highway.

The Town periodically may use its State Highway Block Grant allotment to fund a portion of this program. The impact fee computations have not been reduced or discounted based on use of these State funds. The general rule for impact fees is that grant funds are deducted from the capital cost basis of the fee only where those funds are specifically dedicated to the particular improvements funded by the fee.

For example, State Building Aid for school construction is awarded and dedicated to specific projects only; the funds can be applied only to the specific projects to which they are awarded.

In contrast, the Highway Block Grant allocation is not dedicated by the State to a particular improvement, but to the general purpose of highway construction and maintenance. Thus, Block Grants might alternatively be used for winter or summer maintenance, or for required highway equipment or other department expenses, and applied by the Town at its discretion for highway costs in general.

According to an advisory contained in the NH Local Government Center 2004 publication [A Hard Road to Travel](#) (p. 185):

“RSA 235:25 requires that block grant funds must be “used solely for highway construction, reconstruction or maintenance purposes.” Thus, if any money is spent on equipment, such as trucks or backhoes, make sure that equipment will be used exclusively for highway purposes.”

Based on this this advisory, it would seem that the use of the Block Grant is available for discretionary application by Town to offset any part of its highway budget, *including basic highway maintenance functions as well as related trucks and equipment*. In contrast, the impact fee function is solely for road reconstruction costs, and *the capital basis is limited to the road and right of way*. The impact fee does not include highway equipment or the cost of normal highway maintenance. For these reasons, the impact fee calculation has not been reduced on the basis of anticipated Block Grant receipts.

Table II – 13 Road Impact Fee Model B-2

Estimated Trips Generated in Litchfield and Road Improvement Cost Allocation - 2010 to 2030 At NHOEP Projected Population					
Line No.	Socioeconomic Variables	2010	2030	Change	Source Notes
A	TOTAL POPULATION	8,271	9,436	1,165	Litchfield had no group quarters population in 2010 according to the Census count.
B	POPULATION IN HOUSEHOLDS	8,271	9,436	1,165	Projected population based October 2013 projections, NH OEP
C	HOUSEHOLDS	2,828	3,534	706	Computed based on estimated avg. household size and population in
D	Average Household Size	2.92	2.67	-0.25	Trended average based on projected change in average household size for
E	TOTAL DWELLING UNITS (Occupied and Vacant)	2,912	3,639	727	Total units 2010 from Census; projected to 2030 using as function of average
F	ESTIMATED PASSENGER VEHICLES	6,476	8,093	1,617	Estimated using number of passenger vehicles per household based on ACS
G	Passenger Vehicles Per Household	2.29	2.29	assume constant	Town average based on ACS (2007-2011) 5-yr sample) aggregate vehicles and
H	EMPLOYMENT IN RETAIL and ACCOMMODATION & FOOD SERVICE SECTORS	88	149	61	Assumes that 2010 share of total jobs in these sectors will pertain to horizon year
I	EMPLOYMENT IN ALL OTHER SECTORS	738	1,251	513	Balance of jobs (total less retail estimate).
J	TOTAL EMPLOYMENT	826	1,400	574	Future projection of total based linear projections of private and government
K	AVERAGE TRIP RATE PER DWELLING UNIT (ADJUSTED TO LITCHFIELD HOUSING INVENTORY)*	8.9	8.9		Average trip rate per unit estimated using ITE Trip Generation Manual, 7th edition.
L	TRIP END ESTIMATES				
1	Households x Avg Trip Rate Per Dwelling Unit *	25,169	31,453	6,284	With the exception of the average trip rate per unit (adjusted to Litchfield) the trip end multipliers are based on factors in the 1999 SNHPC road impact fee model
2	Households x 1.5	4,242	5,301	1,059	
3	Retail Employment x 12	1,056	1,790	734	
4	Non-Retail Employment x 3	2,214	3,753	1,539	
5	Total Employment x 1.7	1,404	2,380	976	
6	Total Daily Trip-Ends (Sum)	34,085	44,677	10,591	
7	P. M. Peak Hour Trip Ends est. @ 10% of Avg Daily	3,409	4,468	1,059	
8	Trip Growth as Percentage of Horizon Year Trips			24%	New trips generated from base year to horizon year as percent of total trips in projection year
M	RSMS Improvement Program 20-Year Expenditure @	\$350,000	per year =	\$7,000,000	Total road improvement program
N	Cost Allocated to New Development	24%		\$1,680,000	Allocated share of cost based on new trips as % of horizon year trips
O	Improvement Cost Allocation Per New PM Peak Trip			\$1,586	Average cost per new PM peak trip
P	Improvement Cost Allocation Per Avg Daily Trip			\$159	Average cost per new avg. daily trip

Table II – 14: Residential Road Impact Fee Schedule (Model B-2)

ROAD IMPACT FEES - RESIDENTIAL USES					
ITE Use Code Assigned	Residential Trip Rates and Fees Per Unit	Avg Daily Trips per Unit (1)	Fee Per Unit - ADT Basis	Avg Living Area - Litchfield Units	Fee Per Sq. Ft. Living Area
210	Single Family Detached Home	9.57	\$1,522	1,850	\$0.82
230	Townhouse	5.86	\$932	950	\$0.98
221	Two Family Structure	6.59	\$1,048	1,250	\$0.84
221	Three or More Family Structure	6.59	\$1,048	700	\$1.50
210	Manufactured Housing on Owned Lot (2)	9.57	\$1,522	950	\$1.60
240	Manufactured Housing in MH Park	4.99	\$793	950	\$0.83

Table II – 15: Non-Residential Road Impact Fee Schedule (Model B-2)

ROAD IMPACT FEES - NON-RESIDENTIAL USES						
Land Uses by Selected ITE Categories and Trip Rates at PM Peak and Average Daily				Fee Per Average Daily Trip End \$159	Fee Per Square Foot (ADT Basis)	Alternative Fee (Discounted 50%)
ITE Use Code Assigned	Land Uses and Trip Rates Per 1000 Square Feet	Avg Daily Trips per Unit	Estimated % Primary or Non-Pass By Trips	Fee Per 1000 Sq. Ft. Based on Avg. Trip Rate		
RETAIL & RESTAURANT						
820	Shopping Center	42.94	50%	\$3,414	\$3.41	\$1.71
OFFICE AND GENERAL COMMERCIAL						
710	General Office Buildings	11.01	100%	\$1,751	\$1.75	\$0.88
INDUSTRIAL AND STORAGE						
130	Industrial Park	6.96	100%	\$1,107	\$1.11	\$0.56

6. Road Impact Fee Options - Summary

Table II-16 below summarizes the road impact fees computed using the methods and assumptions described above. The fees for commercial uses are shown using an assumed 50% discount from the calculated fee in recognition of the higher concentration of these uses along State highways within the Town, and the probability of a higher proportionate impact from these uses on the State system.

Table II-16: Comparison of Road Fee Calculations

Road Impact Fee Options Litchfield 2014				
Improvement Cost Assumptions	Lane-Mile Method (A) - Reclamation Based Reconstruction	Model B-1 Annual RSMS Program @ \$350K	Model B-2 Annual RSMS Program @ \$350K	Average of Three Methods
Road Improvement Cost Per Linear Foot	\$100	n/a	n/a	
Residential Fee Per Dwelling Unit				
Single Family Detached Home	\$1,584	\$1,445	\$1,522	\$1,517
Townhouse	\$970	\$885	\$932	\$929
Two Family Structure	\$1,091	\$995	\$1,048	\$1,045
Three or More Family Structure	\$1,091	\$995	\$1,048	\$1,045
Manufactured Home (Owned Lot)	\$1,584	\$1,445	\$1,522	\$1,517
Manufactured Home (in MH Park)	\$826	\$753	\$793	\$791
Residential Fee Per Dwelling Unit				
Single Family Detached Home	\$0.86	\$0.82	\$0.78	\$0.82
Townhouse	\$1.02	\$0.98	\$0.93	\$0.98
Two Family Structure	\$0.87	\$0.84	\$0.80	\$0.84
Three or More Family Structure	\$1.56	\$1.50	\$1.42	\$1.49
Manufactured Home (Owned Lot)	\$1.67	\$1.60	\$1.52	\$1.60
Manufactured Home (in MH Park)	\$0.87	\$0.83	\$0.79	\$0.83
Commercial-industrial				
	@50% Discount	@50% Discount	@50% Discount	@50% Discount
Retail & Restaurant	\$1.78	\$1.62	\$1.71	\$1.70
Office & General Commercial	\$0.91	\$0.83	\$0.88	\$0.87
Industrial - Warehouse	\$0.58	\$0.53	\$0.56	\$0.56

It is probable that road improvements funded by the impact fee will focus more on the major roads of the community (see Table II-3) where higher traffic volumes are expected. In addition, road projects often occur in stages, and will require non-impact fee funds to be used along with the impact fee to support viable improvement projects.

The growth models (B-1 and B-2) suggest that an appropriate guideline would be to fund about 24% to 28% of a road improvement project with impact fees, the balance of 72% to 76% derived from other funds. Such a ratio would keep the use of impact fees from new development balanced with the funding of needs arising from existing uses.

7. Updating the Road Impact Fee

Updating of any of the road impact fee options could be done on a short term basis (say, up to five years from the 2014 base year) using the Engineering News Record (ENR) Construction Cost Index using June 2014 as the “base” represented in this impact fee study.

However, the ENR is a general construction cost index and may not be sensitive to the cost of asphalt, a significant component of road reconstruction expense and a cost that more volatile as a petroleum-based product. Unit costs within the capital cost basis include

To update the lane-mile method over a longer period of time the unit cost inputs to the model can be revisited periodically revised, or other outside estimates may be substituted for the typical road reconstruction cost (in our version, using reclaimed pavement in the process) of a Class V roadway. In this report, the estimated total cost has been assigned at \$100 per linear foot as the comprehensive cost of road reconstruction using reclamation, as well as subsequent paving of a binder course and surface course of asphalt, along with associated costs for ditching (drainage)

Updating the alternative trip-growth models would require adjusting the socioeconomic data within the model for a given base year and a long-term projection year. The socioeconomic variables include base year and projected population, housing units, households and household population, vehicles per household, and employment in two sectors (retail, food & accommodations vs. all other employment).

The trip growth models also require the assumption of an annual total dollar amount for major improvements within the Class V road network, set initially in this report at an estimate of \$350,000 per year. If actual annual improvements proceed substantially above or below that amount, adjusted for time, the Town may substitute a revised forecast of the average annual budget for the road improvement program to arrive at a new cost allocation.