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## Analysis of Per Capita Expenditures of Suburbanizing Communities in Maine

New England Environmental Finance Center

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# **ANALYSIS OF PER CAPITA EXPENDITURES OF SUBURBANIZING COMMUNITIES IN MAINE**

**A Study Conducted by the New England  
Environmental Finance Center under a Cooperative  
Agreement with the Maine State Planning Office**

**September 2005**



**New England  
Environmental  
Finance Center**

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## **I. EXECUTIVE SUMMARY**

The per capita expenditure trends of 10 “suburbanizing” communities in Maine were analyzed over a 35-year period from 1970 to 2004. The focus of the study was to determine (1) whether the resulting expenditure profiles of these towns exhibit a U-shape that has emerged for other fast-growing communities, and (2) whether a discernable upswing in spending per capita occurs at some point in the early suburbanization process. The most significant findings of this analysis are summarized below:

- A U-shaped per capita expenditure curve, with a discernable downslope, trough and upslope, is exhibited by some, but not all, of the study communities. Six of the 10 communities show a clear U-shape curve. Two more show a U-shaped pattern, but not for the entire study period;
- The per capita expenditure profile for several communities more closely resembles a stepped pattern – a series of up and down “stairs” and plateaus, with an overall upward trend. This pattern generally lacks an extended period of decreasing values, and the upward trend is more erratic than the typical U-shaped profile;
- Almost all of the study communities exhibit a clear upswing point, which follows a period when per capita expenditures appear to bottom out or plateau. This point signals a shift to an upward trend that continues to the present time (2004);
- A strong correlation exists between when this upswing occurs and the population (and population densities) of these communities. For population, the range is 2,485-6,053, with a median value of 3,571. For population density, the range is 55-159 per mile, with a median value of 85; and
- Independent of population characteristics, a strong correlation exists between upswing points and the year in which they occur. Upswings clearly occurred for five communities in 1986 and for two towns in 1988.

In explaining these results, the report offers the following observations:

- Suburbanizing towns may exhibit different expenditures curves: some U-shaped, some not. The U-shaped pattern seems to be prevalent among suburbanizing towns, but it may occur among other communities as well. The shape of the profile should be viewed in the context of the growth of actual expenditures (inflation-adjusted) and population;
- The stepped expenditure pattern exhibited by several towns may represent a second “model” for the per capita growth of expenditures in suburbanizing towns. For these towns, periodic increases in per capita spending may satisfy growing demand for a period of time (reflected as a plateau), before additional major investments are needed (reflected as an upward step);
- Ultimately, the particular shape of a town’s expenditure curve may be a less significant indicator of suburbanizing communities than the presence of a clear upswing point that signals steadily rising per capita costs, even as populations increase;
- The strong correlation between these upswing points and the population/density ranges of these towns supports the hypothesis that when suburbanizing communities reach populations between 2,500 and 6,000 (or a population densities of 50-150 persons per square mile), a threshold point is reached when growth in municipal/school spending accelerates to the extent that per capita values turn upward;
- Town-by-town differences, both in expenditure profiles and the timing of upswing points relative to their population growth, may be attributable to multiple factors, some having to do with each community’s unique characteristics. One strong influence may be the historically rooted but evolving attitude of residents toward local spending increases. Some communities may have an established

tradition of resisting new staffing or capital improvements – resulting in a deference of some these costs for as long as possible. Other towns may have a history of supporting expanded services and facilities;

- The strong correlation among these upswing points and their occurrence during the mid-1980s may point to other time-specific factors involved in these trends. Four possible factors may warrant additional consideration: (1) new State requirements enacted during this period that may have imposed significant costs on municipalities; (2) increased service demands from the front-end of the baby boom generation which had began settling in rural communities in the early 1980s; (3) the significant changes in municipal accounting practices that occurred in mid-1980s; and (4) the extent to which expenses incurred by Maine communities during this time frame are accurately reflected in the regional Consumer Price Index; and
- While this study has focused on the per capita spending profiles exhibited by suburbanizing communities, the information collected for this study provides a valuable foundation for additional study and analysis that should further understanding of municipal costs and their relationship to growth.

The report poses a number of recommendations for additional study. Of these, the most significant are:

- Continue to track expenditures for these study towns in the 2005-2010 period in order maintain an informational baseline and to view and analyze trends. In particular, expenditure trends should be periodically observed to see if the upswings identified in this study sustain themselves as populations continue to increase;
- Investigate what time-specific factors might be operating in creating upswings in the mid-1980s, including the four possible considerations described above;
- Conduct a more in-depth analysis of several study towns: ideally, one an SAD town, and the other with either its own district or a member of a school union. This more in-depth study might involve looking more closely at what investments in services and facilities accounted for increasing expenditures; and
- Develop a hypothetical multi-community service area model, projecting likely per capita costs assuming shared services and facilities, and comparing those costs with the actual per capita expenditures of the individual communities that comprise the service area. As three of the study towns – Raymond, Gray New Gloucester – are adjacent to one another, it may possible to create a service area of these three towns, using the combined expenditure data from these three towns as a basis of comparison.

## II. INTRODUCTION

This study analyzes per capita expenditure trends among selected fast-growing Maine towns from 1970-2004. The ten communities studied are termed as “suburbanizing” towns. This term is used to describe towns that over the past 30-40 years have been in the process of transition from rural to suburban – in terms of their population and housing densities, their forms of government, and the services they provide, as well as other characteristics.<sup>1</sup> Such towns are of particular interest because they have been absorbing a healthy percentage of the state’s population growth during this time period, often at the expense of Maine’s service center communities. Study of these suburbanizing towns, therefore, has potential to provide valuable insights as to the cost and dynamics of sprawl – at least as it unfolds at the local level.

Maine’s suburbanizing towns were the subject of a 2004 article entitled *The Creeping Costs of Sprawl*<sup>2</sup>. This article highlighted a significant increase in the number of towns in Maine with populations over 2,500. Whereas in 1960 only 80 of Maine’s 489 organized municipalities had populations over 2,500, by the year 2000, the number had risen to 131 – a 64% jump. The article suggests that these towns are vulnerable to rising municipal costs, although these costs may be initially masked. During the early years of population growth, towns typically stretch the capacity of their existing rural governmental structures for as long as possible, avoiding new services and maintaining volunteer and part-time staffing. This has the effect of creating a time lag before higher costs begin to kick in, and even results in a period of decreasing expenditures per capita (when adjusted for inflation) with more residents available to share costs and opportunities for economies of scale. At some point, however, per capita costs begin to trend upward as towns respond to deferred service demands and other needs. Once this “upswing point”<sup>3</sup> is reached, the trend shifts to steadily rising spending per capita – and usually to growing taxpayer dissatisfaction. The overall effect, when put into chart form, is a U-shaped per capita expenditure curve with a discernable downslope, trough and upslope corresponding to these stages of early suburbanization.

For the town of Standish, which is profiled as a case study in the *The Creeping Costs of Sprawl* article, this pattern does emerge. The per capita expenditure curve for the period from 1970-2000 is a pronounced U-shape, with a downslope during the 1970s, a bottoming in the early and mid-1980s that forms a distinct trough, and a swing upward in the latter years of that decade (as population surpasses 6,000) which has continued since.

Whether this trend repeats itself in other suburbanizing Maine communities is the focus of this study. The expenditure patterns of the 10 communities will be profiled, and compared for similarities and differences. In addition to documenting trends, the study will explore what forces might be contributing to them, both within and outside these communities. Finally, a series of recommendations will be posed regarding additional study.

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<sup>1</sup> The term is more clearly defined in Section IV: Methodology.

<sup>2</sup> *The Creeping Costs of Sprawl*, GrowSmart Maine Education Brief, 2004.

<sup>3</sup> The term “tipping point” has sometimes been used to refer to this threshold. This report instead uses the term *upswing point*, as tipping point may overstate the extent or significance of the upturn, at least for some communities.

### III. METHODOLOGY

The towns targeted for this study are fast-growing “suburbanizing” Maine towns. The following criteria were used to select these towns:

- Proximity to a service center or Standard Metropolitan Statistical Area (no more than 30 minutes commuting distance);
- A growth rate of more than 70% between 1970 and 2000; and
- A population of no less than 1,200 and no more than 8,000 during the study period.

Within the pool of towns meeting the above criteria, the actual study towns were selected based on geographic diversity, availability of data, and the absence factors that might skew population estimates or otherwise make the community less than typical regarding an emerging suburbanizing pattern (e.g. major base or plant closings).

The following chart provides information on the communities that were selected relative to the established criteria.

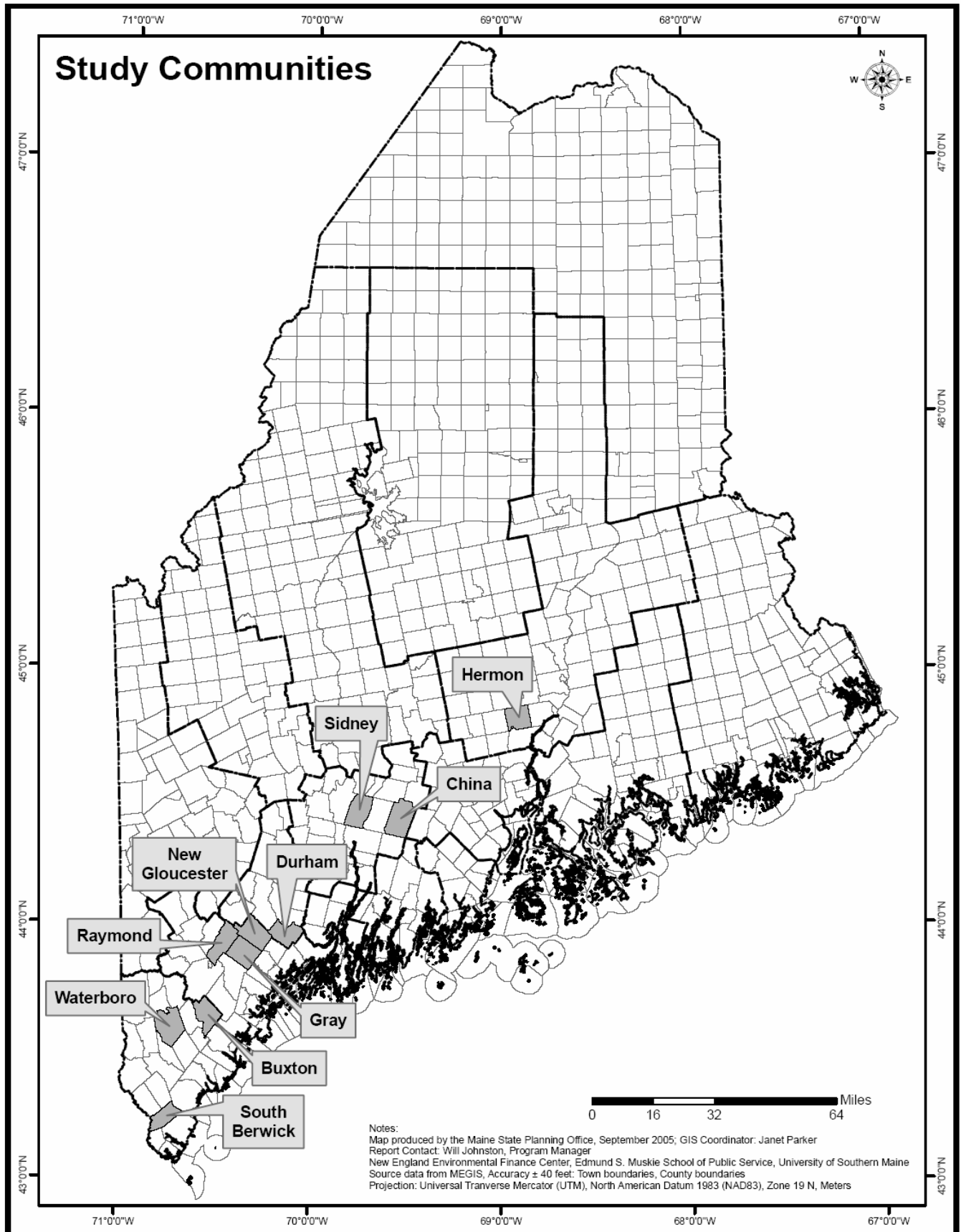
Community	County	Service Centers within 30-minute drive	Population		
			1970	2000	Growth Rate (1970-2000)
Waterboro	York	Sanford, Biddeford/Saco	1,208	6,214	414%
Raymond	Cumberland	Portland SMSA, Lewiston/Auburn	1,328	4,299	224%
Durham	Sagadahoc	Brunswick, Lewiston/Auburn	1,264	3,381	167%
Sidney	Kennebec	Augusta, Waterville	1,319	3,514	166%
Buxton	York	Biddeford/Saco, Portland SMSA	3,135	7,452	138%
Gray	Cumberland	Portland SMSA, Lewiston/Auburn	2,939	6,820	132%
China	Kennebec	Augusta, Waterville	1,850	4,106	122%
South Berwick	York	Portsmouth, other NH Service Centers	3,488	6,671	91%
Hermon	Penobscot	Bangor/Brewer	2,376	4,437	87%
New Gloucester	Cumberland	Biddeford/Saco, Portland SMSA	2,811	4,803	71%

For the all selected towns, the following data were collected, for the 1970-2004 study period:

- Total annual expenditures;
- Total annual education expenditures (except for SAD towns, in which local contribution to SAD was used); and
- Decennial Census counts for 1970, 1980, 1990 and 2000, and land area information.

Additional data were selectively collected pertaining to characteristics of each town such as its type of government, school district and staffing levels.

The source of expenditure data came from the audited financial statements of the towns. In most cases, this information was available from annual town reports; in some instances the original audited reports were used. For reasons explained under *Limitations*, General Fund expenditures are used throughout the study period. To minimize the effects of spikes and dips in an given year, expenditures were averaged on two-year increments, and attributed to even years (for instance, the expenditures listed for 1970 are the average of 1970 and 1971 data).





To account for inflation over the study period, the Consumer Price Index (CPI) for New England is used, adjusted to 2004 dollars. Use of another index, the Gross Domestic Product Price for State and Local Government (also referred to as Implicit Price Deflator), was considered because it is based on purchases made by governmental units. The widely accepted deflator index maintained by the U.S. Bureau of Economic Analysis, however, is based on national averages, and it was felt that the use of the New England-based CPI was more appropriate.

To estimate population for these towns for years between the Censuses, a straight-line projection is used. For years since the 2000, a straight line extrapolation of the 1990-2000 trend is used. After some consideration, it was determined that this approach, while perhaps not as accurate as some methodologies, offers the advantages of consistency across all study towns, and seems appropriate for the type of generalized analysis proposed for the study.

### **Limitations and Qualifications**

Collection of accurate and well-documented data was a major goal of this study, and the researchers strived to maintain a high degree of quality control regarding what information was used. It is important, however, to highlight several limitations and qualifications regarding both the data and the conclusions drawn from them.

#### Accounting Changes

Over the course of the 35-year study period, most towns changed their accounting practices several times (or perhaps more correctly, the accounting firms doing their audits changed practices in response to evolving standards). Whereas financial reports in the early 1970s are likely to have a simple tally sheet of General Fund debits by municipal department, the audits have become progressively more sophisticated and comprehensive. Near the end of the study period, audits began to reflect additional changes in responses new federal requirements (called GASB 34).

Also during the study period, most towns shifted from a calendar to a July-based fiscal year. For instance, in 1970, all the towns used a fiscal year beginning January 1 and ending December 31 (except for three towns that used a February 1-January 31 fiscal year). By 2000, nine of the 10 study community had shifted to a July 1-June 30 fiscal year. The transition for most of these communities occurred sometime in the 1980s, when a 6 (or 5) month long fiscal “year” was used to create to proper stagger.

Amidst this shifting accounting landscape, maintaining consistent information is a challenge. In an effort to minimize “apples and oranges” comparisons, the study generally avoids comparing departmental breakdowns such as “General Government” or subcategories such as “Public Works,” as what these terms encompass vary significantly over time and from town to town. Transitional fiscal years (less than 12 months) are omitted from the analysis. The use of 2-year averages also helps to soften the discrepancies between communities whose expenditure accounting for a particular listed year may be 6 month apart, at least a some point in time.

#### Use of General Fund Data

A particular issue that needed to be addressed for this study was whether to limit the analysis to General Fund expenditures. While financial reports in the 1970 were composed mostly of a department tally sheet of General Fund expenses, in the 1980s audits began to include expenses under other accounts such as “Special Funds,” “Capital Funds,” “Proprietary Funds” and “Fiduciary Funds.” These audits typically contain a total expenditure column labeled as “Memorandum Only” aimed at fully capturing all municipal spending activities over the fiscal year. The use of these numbers, however, is typically qualified by language in the reports stating that the total is for “analysis purposes only” and should not be used to evaluate financial condition or used for comparisons.

It was determined that use of General Fund data was the approach that would yield the most consistency over the study period. It was felt that the inclusion of funds from trusts and other accounts that were non-existent or not documented in older reports would make fair comparison difficult. Despite the presence of a capital fund category in more recent reports, a number of the study communities continue to fund and account for capital expenditures primarily through their general fund. With a few exceptions, most of the study towns have not accounted for significant dollars in the capital funds category – or at least enough to change the general trends exhibited over the study period.

In light of the changes in accounting practices, the length of the study period, and other differences among towns, the primary qualification of this study is that the expenditures numbers in any given year are adequate for general comparison and trend identification, but they should not be used for other purposes without caveats or additional review. To gain an accurate and comprehensive picture of a town's spending for a given year, review of the complete audited statement for that year is strongly advised.

### School funding

Six of the study communities are members of School Administrative Districts (SADs). Two towns administer their own school districts, and two are members of School Unions. In a number of respects, comparative analysis would have easier if it were limited to towns with their own school districts. That is because the expenditures of these towns more accurately reflect the true cost of providing public education. For SAD towns, some of these costs are masked because state and federal monies flow through the SAD offices. Only the town's contribution to the district shows up as an expenditure in the town's budget and in the audited report. The audited reports of towns with school district or school unions, on the other hand, generally show all expenditures – even those supported with state and federal funds.

Since most towns in Maine, however, are members of SADs – including a good share of so-called suburbanization communities – this study would be incomplete if it excluded these towns. While there are some cons in mixing SAD and non-SAD towns in the study, it was felt that the pros outweighed the cons, particularly in providing balance. The per capita expenditures of SAD communities also are more reflective of what taxpayers actually see in their respective town budgets and proposed tax rates, and therefore these spending levels may be more “real” from the standpoint of what the public is likely to support or oppose.

As part of the study, consideration was given to trying to calculate what the actual cost of public education would be for SAD towns. This involves factoring in the state and federal dollars received by the districts, and trying to apportion these expenses to SAD towns. A basic methodology for accomplishing this task was developed, and preliminary data were collected. After additional consideration, it was determined that performing this task – at least for all the SAD communities – was not feasible within the budget of this project. Appendix B provides additional information on the methodology that was developed, data for one study town, and some preliminary conclusions about the significance of these data.

### Per Capita Versus Actual Expenditures

This study focuses on per capita expenditures as the basis for analysis and comparison. Unlike use of actual expenditures which do not factor in the effect of population changes on the cost of providing municipal services, use of per capita figures provides a “fairer” indicator of a community's spending trends that does account for growth. It also provides a basis of comparison among towns with varying populations.

Per capita expenditures, however, are generally not the focus of the municipal budget setting and approval process, nor the political discourse that accompanies those processes. These discussions are often centered on actual expenditures, particularly on their increase relative to the previous year and the extent to which the tax rate is affected.

Per capita expenditure analysis may provide a rough indicator of how a town's spending levels are borne by individual residents, but it may be less helpful as a comparative barometer for tax burden and citizen dissatisfaction. In a town with significant seasonal housing or commercial/industrial development, a particular level of per capita spending may be tolerated with little opposition or hardship. In a year-round residential community with little local commerce, that same per capita spending level may arouse considerable opposition.

Another cautionary note regarding per capita expenditure analysis is the danger of viewing increases in a similar fashion to increases in actual expenditures. In growing towns, annual increases in actual expenditures (adjusted for inflation) are to be expected, and the focus of fiscal management is often on avoiding dramatic spending spikes. For per capita expenditures, the expectation is that these levels should either drop as economies of scale are realized or remain the same, as new residents are served at the same "unit cost." Increases in per capita spending, therefore, should be viewed more critically – even relatively modest upswings may indicate a profound shift in the costs of meeting service demands.

Per capita spending is best considered in the context of actual expenditures. While analysis of per capita spending remains the focus of this report, it provides data on actual expenditures for each study town.

### Use of Terms and Abbreviations

This study involves the study of expenditure trends viewed on a per capita basis and adjusted for inflation. For convenience, use of the abbreviation "pc" for per capita is used throughout the report. Where previous context makes it clear that per capita expenditures are being referred to, no additional qualifications are made.

In general, the reader is to assume that expenditures, per capita or otherwise, have been adjusted to reflect inflation, using 2004 values as the benchmark. Although the terms "real dollars" or "2004 dollars" are used throughout the report, absence of these terms should not be taken to suggest that adjustment for inflation has not been made. Where unadjusted expenditures are used, the reader is informed by text or footnote.

While a town's school-related expenses are technically a component of its overall municipal budget, this report treats the terms *municipal expenditures* and *school expenditures* as exclusive of one another. The term *municipal expenditure* is used to describe all expenses involved in local government other than school-related costs, and is calculated by subtracting the education expenses from total expenditures (as opposed to totaling departmental line items).

Unless qualified by the terms "school" or "municipal," the terms *per capita expenditures*, *per capita expenses* or *per capita spending* refer to total expenditures (schools plus municipal). The terms *per capita expenditure profiles/curves* or *upswing points* also are intended to encompass total expenditures, unless otherwise noted.

## IV. STUDY TOWN ANALYSES

### SIDNEY

County: Kennebec

Nearby Service Centers

Augusta

Waterville

Population

1970: 1,319

2000 3,514

Growth: 166%

Form of Government

3 Selectmen

Land Area: 42.2 square miles

Police Dept? No

Population Density

1970: 31 persons per sq. mile

2000: 83 persons per sq. mile

Town Planner? No

Public Sewer: No

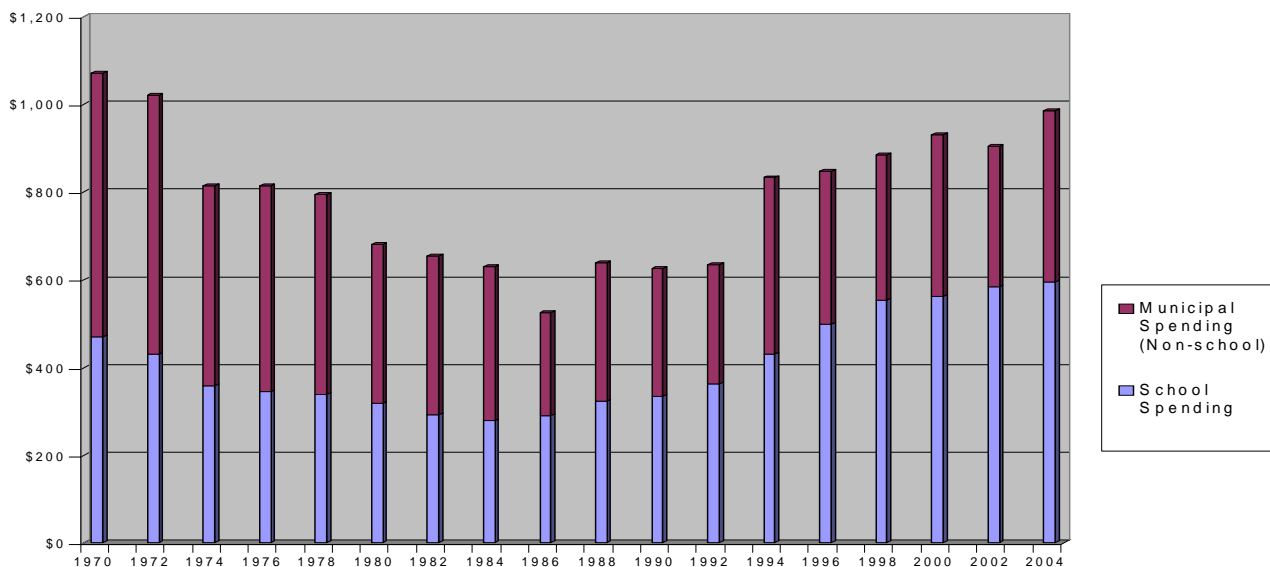
Public Water: No

School District: SAD 47 (with Oakland and Belgrade)

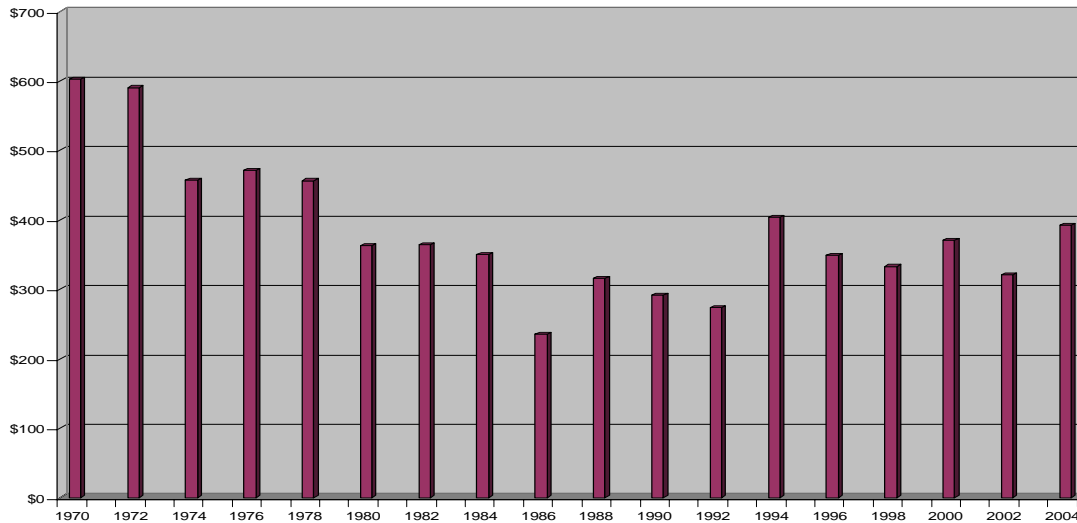
### Expenditure Summary (in 2004 Dollars)

	Total Expenditures	Percentage increase since 1970	Population	Total Expenditures Per Capita	School Expenditures Per Capita	Municipal Expenditures Per Capita
1970	\$1,465,524		1,319	\$1,072	\$470	\$602
1980	\$1,440,522	-2%	2,052	\$682	\$319	\$363
1990	\$1,635,267	12%	2,593	\$625	\$334	\$291
2000	\$3,201,513	118%	3,514	\$932	\$562	\$370
2004	\$3,833,362	162%	3,882	\$987	\$595	\$392

### Total Expenditures Per Capita in 2004 dollars



## Municipal Expenditures (Non-School) Per Capita in 2004 Dollars



### Relevant Findings

- U-Shaped Expenditure Curve? Yes
- Upswing Point for Total Expenditures? Yes  
 Year: 1988  
 Population: 2,485  
 Population density: 59 persons per sq. mile  
Average Per Capita Expenditures, 2000-2004 (2004 dollars)  
 Total: \$932  
 School: \$578  
 Municipal: \$355
- School expense represents local contribution to SAD 47, and does not include expenditure of state subsidy dollars.
- On low end of study populations regarding population and population density.
- Total 2000 per capita expenditures still below 1970 levels in real dollars. School share has gone up, but municipal spending per capita is well below 1970 levels.
- In the early 1970s, local school expenses represented 43% of total expenditures; in early 2000s, the school share rose to 62%.

### Discussion

Sidney has a clear U-shaped expenditure curve, with a fairly symmetrical downslope and upslope, corresponding to decreasing expenditures pc in the 1970s and early 1980s, and rising expenses pc since then. The town began the study period with total expenditures pc of nearly \$1,100, which dropped to a low point of \$520 in 1986. Although expenditures pc have climbed significantly since that time, they have yet to exceed 1970 levels in real dollars.

Sidney's education spending pattern largely mimics the U-shape exhibited by total expenditures, although some leveling off of the upslope has occurred in recent years. The pattern on the municipal side is more erratic, with considerable fluctuations in the 1990s and 2000s. Whereas school expenditures pc now exceed 1970 levels, municipal expenditures are still well below those levels.

An upswing in total per capita expenditures occurs in 1988 after the low point in 1986. Although another plateau is evident from 1988-1992, the upswing in 1988 signifies a shift toward generally rising expenditures. Since the 1986 low point, expenditures pc have risen \$460.

The upswing point for school spending generally mirrors that for total expenditures. Municipal expenditures, however, do not show a clear upswing point. Although exhibiting a generally upward movement since a low point in 1986, these expenditures have undergone a number of spikes and dips since that time, and no predictable pattern.

Over the study period, Sidney was one of the few study communities that experienced a “flip-flop” regarding the proportional share of school versus municipal expenditures. Whereas in 1970, the school share comprised 43% of total expenditures, it now comprises 62%.

Sidney’s recent per capita spending levels (2000-2004 average) place it at the bottom of the six study communities that are members of SADs. Its recent municipal spending pc (\$355) is the lowest of the 10 communities. Interestingly, at the start of the study period, Sidney’s per capita municipal spending level was similar to Gray’s.

Sidney’s overall expenditure trends during the study period seem to be largely driven by its growing contribution to SAD 47. These expenses have resulted in a fairly consistent expenditure profile and evident upswing points, even as municipal expenditures have fluctuated. One could argue that the upswing in these costs would be even more pronounced if the town participated in an SAD that considered the growing populations of its member towns in apportioning local contributions to the district. As it is, the use of state valuation as the sole criterion results in apportioning a higher share of local costs to member towns Belgrade and Oakland than would be the case if population were factored in.

Sidney’s municipal per capita expenditures, have generally been on the increase since bottoming out in the mid-1980s, but have yet to show a steady upward trend. As community with limited services, the town has been able, perhaps, to stretch capacity without significantly expanding services, and its true municipal upswing point may be yet to come. The town is still administered by three Selectmen, with no town administrator or manager. As the Sidney’s population surpasses 4,000 in the 2005-2010 period and service demands increase, the town may find its per capita municipal costs on a more steady upswing.

# RAYMOND

County: Cumberland

Population

1970: 1,328

2000: 4,429

Growth: 224%

Land Area: 33.2 square miles

Population Density

1970: 40 persons per sq. mile

2000: 133 person sper sq. mile

School District: Own

Nearby Service Centers

Portland SMSA

Lewiston/Auburn

Form of Government

Town Manager & 5 Selectmen

Police Chief/Dept? No

Town Planner? None during study period.

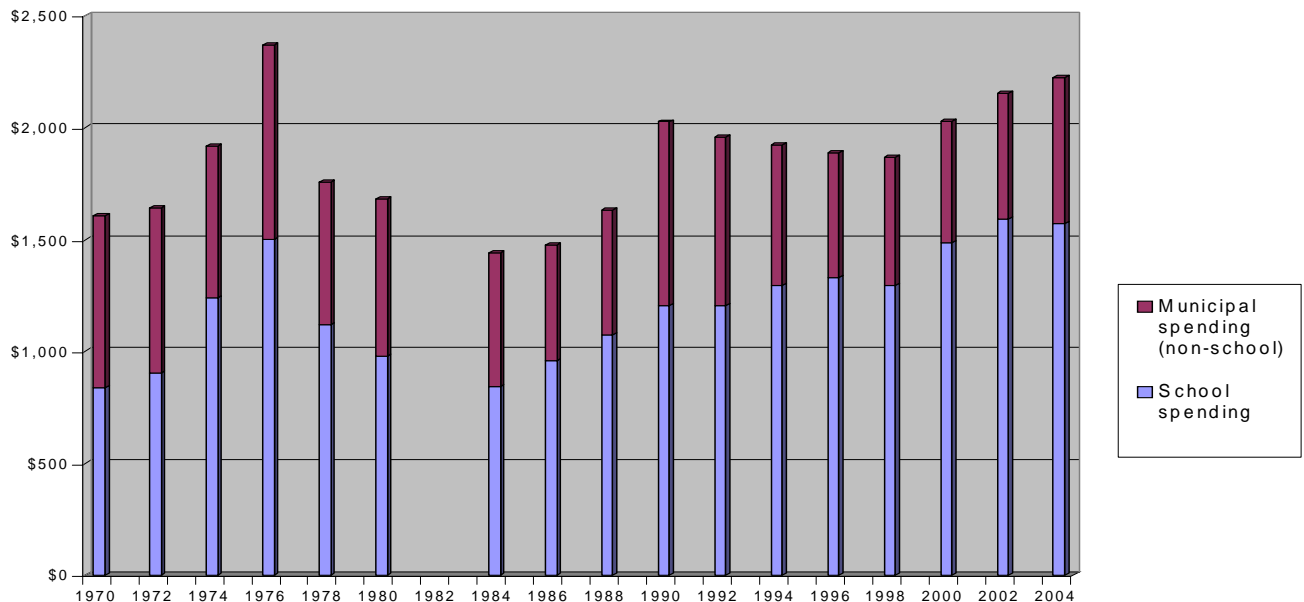
Public Sewer: No

Public Water: Yes

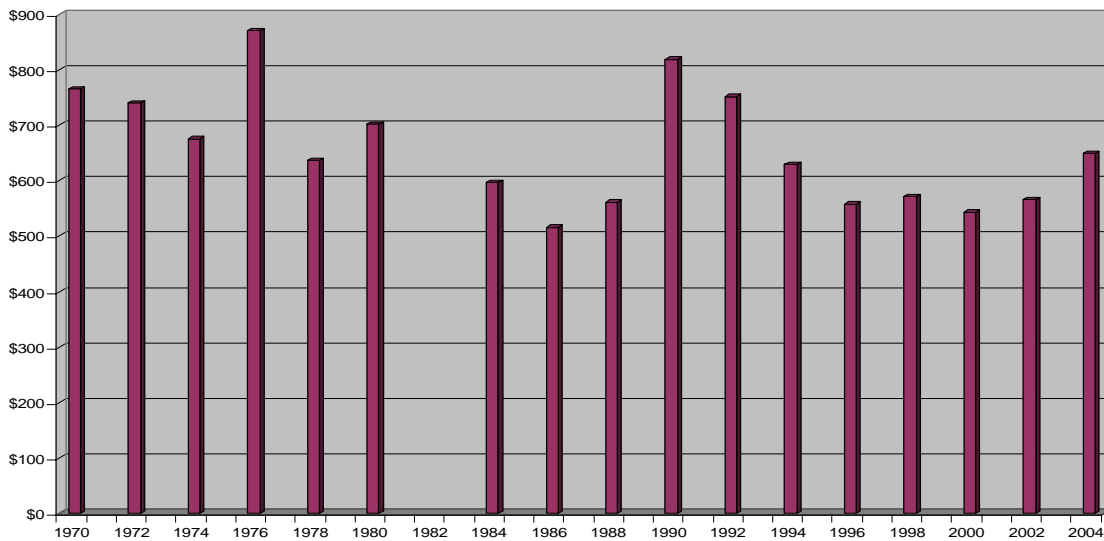
## Expenditure Summary (in 2004 dollars)

	Total Expenditures	Percentage increase since 1970	Population	Total Expenditures Per Capita	School Expenditures Per Capita	Municipal Expenditures Per Capita
1970	\$1,995,824		1,328	\$1,605	\$839	\$766
1980	\$3,686,953	85%	2,251	\$1,680	\$977	\$702
1990	\$6,684,640	235%	3,311	\$2,025	\$1,206	\$820
2000	\$8,713,553	337%	4,429	\$2,029	\$1,485	\$543
2004	\$10,833,788	443%	4,876	\$2,222	\$1,572	\$650

## Total Expenditures Per Capita in 2004 Dollars



## Municipal Expenditures Per Capita (Non-School) in 2004 Dollars



### Relevant Findings

- U-Shaped Expenditure Curve? No, unless early 1970s are excluded.
- Upswing Point for Total Expenditure? Yes  
 Year: 1988:  
 Population: 3,099  
 Population density: 93 persons per sq. mile
- Average Per Capita Expenditures, 2000-2004 (2004 dollars)
 

Total:	\$2,118
School:	\$1,545
Municipal:	\$575
- Raymond is one of two study towns that has its own school district. Expenditure of state school subsidy dollars is therefore reflected in expenditures.
- In the early 1970s, local school expenses represented 55% of total expenditures; in the early 2000s, the average school share rose to 73%.
- The town is located on the north shore of Sebago Lake. The town has several other lakes within its borders, and is the study community with the most water frontage.

### Discussion

Raymond's expenditure profile does not conform to a U-shape – at least as viewed over the entire 35-year study period. If one excludes the period from 1970-1974, when expenditures were on the low side, the curve does have a clear downslope, trough, and upslope. Examined over the entire period, the pattern more closely resembles a series of steps (mostly upwards) and plateaus, creating several high and low points throughout the study period. Per capita expenditures started the period at just over \$1,500, reached an early peak of almost \$2,400 in 1976, before falling to a low point of about \$1,400 in 1984. Since that time, the trend has generally been upward, with an extended plateau/slight decline in the 1990s prior to an upswing in 2000. Total expenditures now exceed 1970 levels in real dollars, but not the expenditure peak that occurred in 1976.



School expenditures have generally followed this same pattern, although they have risen in a more consistent fashion since the mid 1980s. Municipal expenses have fluctuated considerably, with numerous peaks and valleys, and have yet to exceed 1970 levels in real dollars.

After falling to their low point in 1984, per capita expenditures turned upward, although 1988 seems to represent a more profound upswing point than 1986. Since hitting the low point, total expenditures have risen by almost \$800. Most of this increase is the result of rising school expenditures.

The upswing point for school spending also occurs in the 1986-1988 time frame. On the municipal side, a clear upswing point cannot be discerned. A very significant spike occurred in the early 1990s, but that was followed by a period of declining expenditures and only modest increases.

Of the four non-SAD towns, Raymond now spends less per capita on education than Hermon, but more than China and Durham (2000-2004 average). Although its municipal costs per capita are considerably lower now than at various points throughout the 35-year period, they still rank third among the study communities.

Raymond's total expenditures patterns have been driven largely by educational costs, although high municipal spending in the mid-1970s and early 1990s have contributed to the overall pattern. The town's somewhat unique profile for municipal spending seems to indicate the occurrence of several periods in which the town was able to realize economies of scale in its delivery of municipal services.

One factor that may have a bearing on Raymond's somewhat unique expenditure curve is the amount waterfront property in the town. In general such high valuation towns spend more per capita than other towns, and availability of revenue in a given year may make these towns less likely to defer spending decisions. As more of the tax burden is "shared" with seasonal residents, some of these spending increases may pass muster without major political opposition. Raymond's higher spending levels earlier in the study period and at other times may have had the effect not only of creating periodic spikes in the spending curve, but replicating the cycle of downslope/trough and upslope, as the town realized economies of scale for a period after a particular investment was made.

## SOUTH BERWICK

County: York

Population

1970: 3,488

2000: 6,671

Growth: 91%

Land Area: 32.2 square miles

Population Density

1970: 108 persons per sq. mile

2000: 207 persons per sq. mile

School District: SAD 35 (with Eliot)

Nearby Service Centers

Portsmouth, Rochester, Dover, NH

Biddeford/Saco

Form of Government

Town Manager & 5 Selectmen

Police Chief/Dept? Yes

Town Planner? Yes

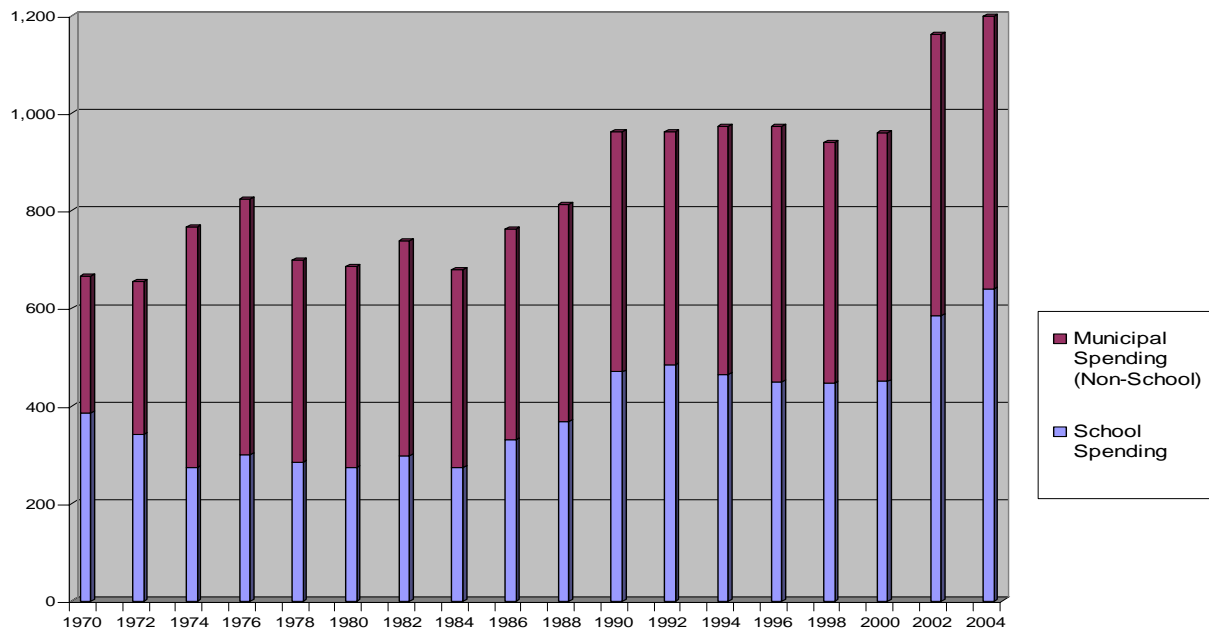
Public Sewer: No

Public Water: Yes

### Expenditure Summary (in 2004 dollars)

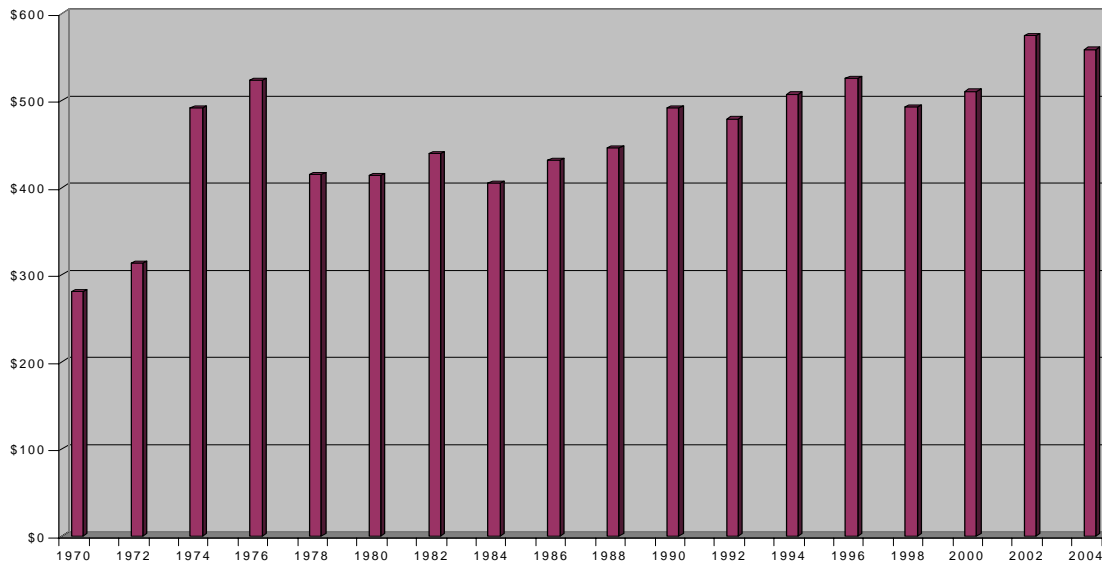
	Total Expenditures	Percentage increase since 1970	Population	Total Expenditures Per Capita	School Expenditures Per Capita	Municipal Expenditures Per Capita
1970	\$2,365,578		3,488	\$666	\$385	\$281
1980	\$2,785,359	18%	4,046	\$686	\$273	\$414
1990	\$5,494,717	132%	5,877	\$961	\$470	\$491
2000	\$6,264,966	165%	6,671	\$960	\$450	\$510
2004	\$10,115,798	254%	6,989	\$1,198	\$640	\$558

### Total Expenditures Per Capita in 2004 dollars<sup>4</sup>



<sup>4</sup> School spending amounts for 1987 and 1988 based on SAD budget report, not municipal audit.

## Municipal Expenditures Per Capita (Non-School) in 2004 Dollars



### Relevant Findings

- U-Shaped Expenditure Curve? No, unless early 1970s are excluded.
- Upswing Point for Total Expenditures? Yes
  - Year: 1986
  - Population: 5,134
  - Pop. density: 159 persons per sq. mile
- Average Per Capita Expenditures, 2000-2004 (2004 dollars)
  - Total: \$1,088
  - School: \$542
  - Municipal: \$546
- School expenses represent local contribution to SAD 35, and do not include expenditure of state subsidy dollars.
- In the early 1970s, the split between school and municipal spending was 50:50. In the early 2000s, that split has remained the same.
- South Berwick is one of the larger study communities in terms of population.

### Discussion

South Berwick's per capita expenditure profile is not U-shaped – it more closely resembles a series of plateaus and steps, somewhat similar to Raymond. The town began the study period with total per capita expenditures of \$660 and these relatively low levels were maintained for several years until spiking to over \$800 in 1976. Thereafter, expenditures dropped to an extended plateau (with a low point of 670 in 1984) followed by a series of upward steps and plateaus, leading up to the current peak of nearly \$1,200.

Educational expenses follow more of a U-shape, and exhibit a fairly steady upward trend since bottoming out – although the upslope is interrupted by an extending plateau in the 1990s. Other than the early peak in the mid-1970s, municipal expenses generally step steadily upward.

For overall expenditures, as well for the education and municipal components, a fairly clear upswing point can be discerned in 1986 after a period of fairly flat spending levels. The spending plateau that occurs in the later 1990s, does not seem to indicate a reversal of this upward trend. Since the low point in 1984, total expenditures have risen roughly \$500, with 70% of this increase due to increased educational spending.

South Berwick is the only study community to have maintained in its proportion of school versus municipal expenditures throughout the study period. It is also the only study community with an even 50:50 split in its school versus municipal funding levels.

The town's recent per capita expenditures – an average of \$1,066 in the 2000-2004 period – place it among the higher spending study towns that contribute to an SAD. Its municipal expenditures (an average of \$576 for the early 2000s) place it in the middle of the study towns, but near the top of the SAD towns.

In general, South Berwick's expenditure profile more closely follows Raymond than Sidney or Standish, and suggests that there might be a second "model" for the viewing the capita expenditures trends of suburbanizing communities. Rather than showing a steady decline, bottoming out and upswing in values in the early stages of suburbanization, these communities may exhibit a general upward trend abbreviated by periodic spikes (and dips).

In South Berwick's case, it appears that some of the investments it made in the early 1970s may have allowed the town to enjoy an extended plateau in per capita expenditures during the 1980s, before it had to increase its levels of service in the 1990s. These increased pc spending levels proved adequate for another decade until upward adjustment was needed in 2002.

The municipal expenditure trends indicate that the town has been quite responsive in adjusting its levels of service to a growing population. Unlike some of the lower-spending study towns, the community has a town manager, other full-time staff, including a local police department. Although these positions and services are evident in other study communities with larger populations, Berwick's municipal expenditure profile indicates that fairly regular adjustments were made throughout the study period, as opposed to deferring them to far into the future. As a fairly high valuation town, availability of revenue, as in the case of Raymond, may be a factor in a more proactive approach to spending. In some communities there may either be an established tradition of support for spending to fund operating and capital investments, or a trend toward increased political support for such spending as community demographics change.

## BUXTON

County: York

Population

1970: 3,135

2000: 7,452

Growth: 138%

Land Area: 40.5 square miles

Population Density

1970: 77 persons per sq. mile

2000: 184 persons per sq. mile

School District: SAD 6 (with Standish, Hollis, Limington and Frye Island)

Nearby Service Centers

Portland

Biddeford/Saco

Form of Government

5 Selectmen

Police Dept? Yes

Town Planner? No

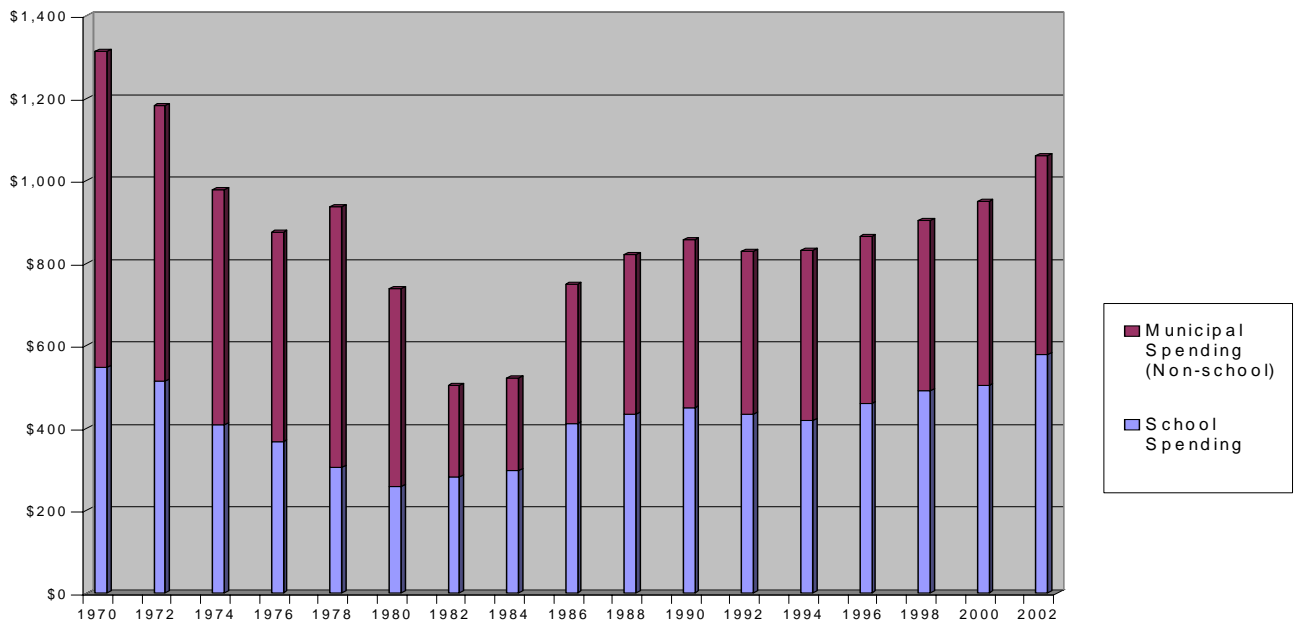
Public Sewer: No

Public Water: Yes

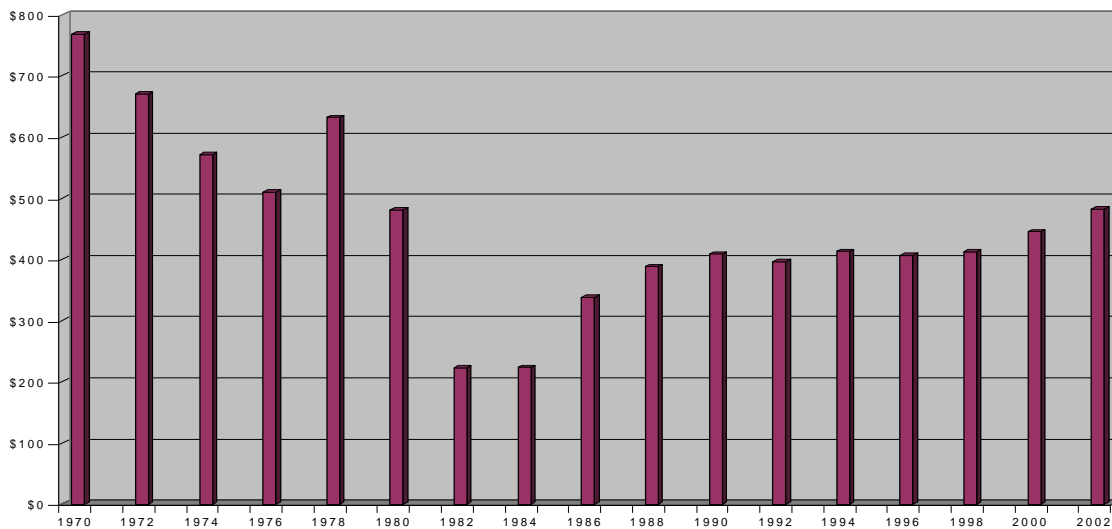
### Expenditure Summary

	Total Expenditures	Percentage increase since 1970	Population	Total Expenditures Per Capita	School Expenditures Per Capita	Municipal Expenditures Per Capita
1970	\$3,668,200		3,135	\$1,316	\$548	\$768
1980	\$4,332,706	18%	5,775	\$739	\$258	\$481
1990	\$5,522,950	51%	6,494	\$858	\$449	\$409
2000	\$6,990,258	91%	7,452	\$950	\$505	\$445
2004	\$8,323,098	127%	7,835	\$1,062	\$578	\$484

### Total Expenditures Per Capita in 2004 dollars



## Municipal Expenditures Per Capita (Non-School) in 2004 Dollars



### Relevant Findings

- U-Shaped Expenditure Curve? Yes
- Upswing Point for Total Expenditures? Yes  
 Year: 1986:  
 Population: 6,206  
 Population density: 153 persons per sq. mile
- Average Per Capita Expenditures, 2000-2004 (2004 dollars)
 

Total:	\$1,020
School:	\$551
Municipal:	\$469
- School spending represents local contribution to SAD 6, and does not include expenditure of state subsidy dollars.
- In the early 1970s, local school expenses represented 42% of total expenditures; in the early 2000s, the average school share increased to 54%.
- 2004 total per capita expenditures have not exceeded 1970 levels.
- The town's upswing point occurs at the highest population level of the study communities.
- Buxton has the largest population (2000 Census) of the study towns.

### Discussion

Buxton exhibits a clear U-shape profile, particularly for its overall and school spending expenditures. The curve is not as symmetrical as Sidney's, and its upslope includes an extended plateau during the 1990s. The overall pattern, however, unmistakably conforms to the pattern exhibited by Sidney and Standish. At the start of the study period, per capita expenditure peaked at just over \$1,300, falling rapidly thereafter to low point of about \$500 in 1982. Expenses remained around this level for several years before making a significant jump, which has been followed by more modest increases interspersed with fairly flat spending. Per capita spending levels in 2004 have yet to surpass 1970 levels in real dollars.

A very clear upswing point occurs in 1986 for total expenditures as well as school and municipal spending, although it was followed by a fairly flat expenditure profile in the 1990s. Since the low point in 1982, per capita expenditures have risen \$550 in real dollars. This increase was fairly evenly split between school and municipal costs.

School expenses are now higher relative to municipal costs than they were at the beginning of the study period: in the early 1970s, they represented 42% of total spending as opposed to 54% in the early 2000s. This is somewhat attributable to relatively high municipal spending levels pc in the 1970s, rather than a surge of educational spending since that time.

Buxton's recent spending levels place it the middle of the towns with SADs. While its spending on municipal services has been on the increase since the 1980s, it still ranks among the lower spenders in this regard.

Overall, Buxton seems to exhibit expenditure trends consistent with the hypothesis posed in the "Creeping Cost of Sprawl" article: that per capita costs may initially decline as towns try to hold the line on spending as populations increase, but that at some point, investments in services and facilities are needed and per capita costs turn upward. In Buxton's case, the primary driver for declining per capita costs in the 1970-85 period seems to be school costs. Since that time, rising municipal expenditures have been a strong factor the upswing of per capita expenditures.

Despite increases in municipal spending, these levels are still quite low, especially compared with communities of the same size. Buxton seems to exemplify a town that has worked very hard at keeping its costs down. It is certainly one of Maine's larger towns that administer town affairs with five Selectmen and no town manager or administrator. Just as some towns seem to exhibit a history of supporting new or expanded town services, other towns may have a well-established tradition of resisting such changes. A strong "tradition of frugality" may play a role in deferring major spending increases, and moderating upswings. In Buxton, per capita expenditures increases are occurring in spite of relatively barebones approach – at least regarding some services or staffing. Other costs relating to necessities such as solid waste disposal and road improvements may be driving up expenditures in spite efforts to resist the growth of government. It will be interesting to view Buxton's expenditure levels during the 2005-2010 period to see if a more dramatic upswing in municipal costs occurs.

# CHINA

County: Kennebec

Population

1970: 1,850

2000: 4,106

Growth: 122%

Land Area: 49.8 square miles

Population Density

1970: 37 persons per sq. mile

2000: 82 persons per sq. mile

School District: Member of School Union 52 with Winslow and Vassalboro.

Nearby Service Centers

Augusta

Waterville

Form of Government

Town Manager & 5 Selectmen

Police Chief/Dept? Yes

Town Planner? No

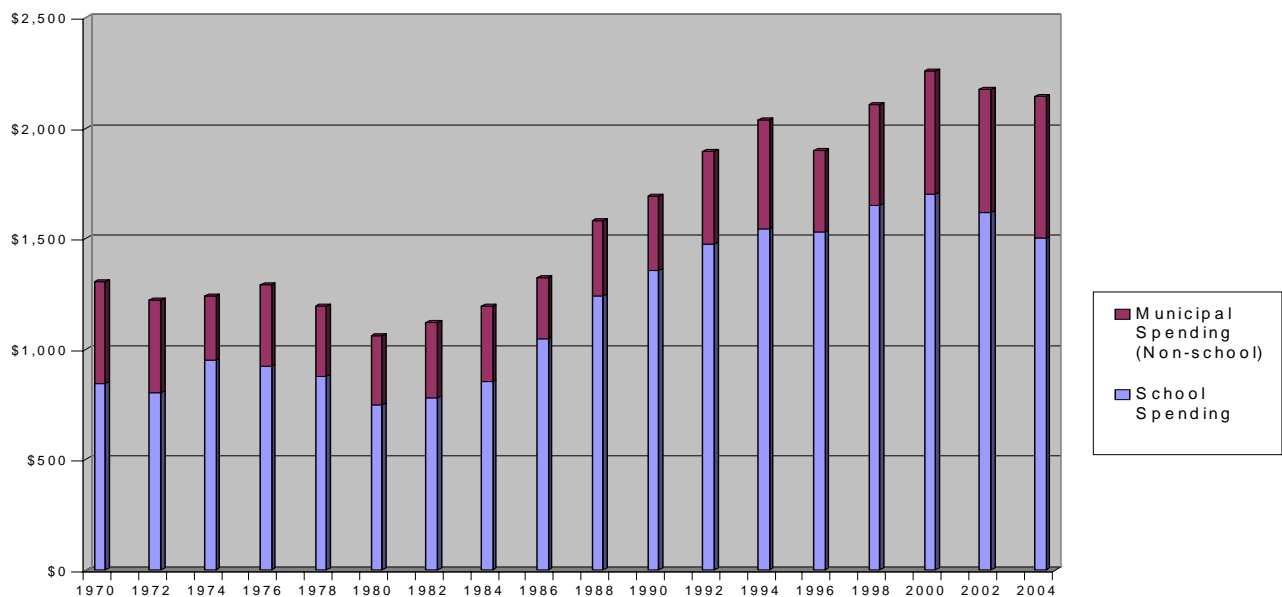
Public Sewer: No

Public Water: No

## Expenditure Summary (in 2004 dollars)

	Total Expenditures	Percentage increase since 1970	Population	Total Expenditures Per Capita	School Expenditures Per Capita	Municipal Expenditures Per Capita
1970	\$2,430,328		1,850	\$1,305	\$842	\$463
1980	\$3,100,170	28%	2,918	\$1,061	\$746	\$314
1990	\$6,106,658	151%	3,713	\$1,692	\$1,354	\$338
2000	\$9,053,186	273%	4,106	\$2,258	\$1,703	\$555
2004	\$9,137,283	276%	4,263	\$2,143	\$1,505	\$638

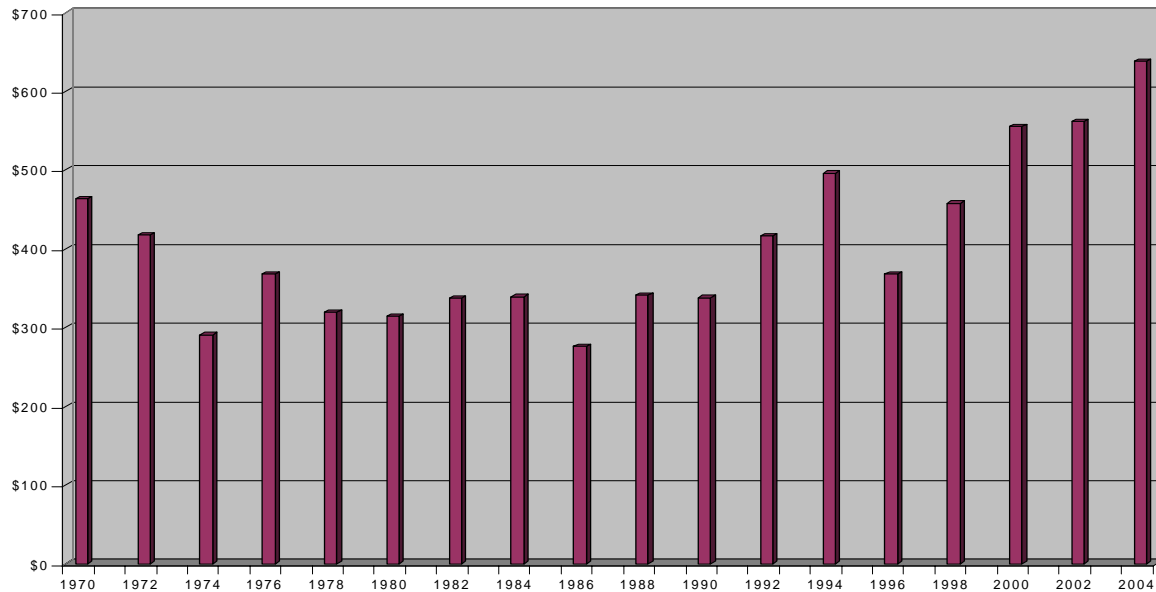
## Total Expenditures Per Capita in 2004 Dollars<sup>5</sup>



<sup>5</sup> 1987-1990 and 1992-1993 municipal audits lack total school expenditures, and educational spending for these years is estimated using school budget reports.



## Municipal Expenditures Per Capita (Non-school) in 2004 Dollars



### Relevant Findings

- U-Shaped Expenditure Curve? Yes
- Upswing Point for Total Expenditures? Yes  
 Year: 1986:  
 Population: 3,395  
 Population density: 68
- Average Per Capita Expenditures, 2000-2004 (2004 dollars)
 

Total:	\$2,203
School:	\$1,629
Municipal:	\$574
- Member of school union, but state educational subsidy goes directly to town and reflected in school expenditures.
- In early the 1970s, local schools expenses represented 67% of total expenditures; in early 2000s, the school share rose to 74%.

### Discussion

China has an asymmetrical U-shaped expenditure curve, with a relatively short downslope and shallow trough, followed by fairly steep and steady upslope. In the early 2000s, there has been a leveling off of spending, driven by school cost reductions, but municipal costs continue to rise. At the start of the study period, expenditures were at \$1,300, falling to a low point of \$1,000 in 1980. Per capita spending thereafter increased rapidly, reaching a peak of \$1,700 in 2000.

School expenditures basically mimic the profile exhibited by overall expenditures, although there has been a pronounced downturn in the early 2000s. Municipal expenditures have experienced more fluctuation with several lesser peaks and valley during the study period.

Even though expenditures rose in 1982 from their low point two years prior, 1986 seems to be a clear upswing point for total expenditures and for school spending. Municipal spending has turned upward several times during the study period, most recently in 1998. Since the low point in 1980, total per capita

expenditures have risen \$670 in real dollars, with this increase equally attributable to rising school and municipal costs.

At least in the period from 1970 to 2000, school expenses have risen faster than municipal costs. In the early 1970s, the average school share was 67%; in the 2000s, the average has been 73%. Overall, the town's per capita costs have risen significantly since 1970 in real dollars.

Compared to other non-SAD communities, China's recent per capita spending level of \$2,012 places it below than Gray and Hermon, but above Durham. Its municipal spending level of \$574 is the forth highest among the study communities.

China's overall expenditure profile is somewhat different from several other towns that exhibit more symmetrical U-shaped patterns. Its expenses in 1970 were quite low compared to these communities, resulting in a less significant drop as economies of scale were realized. While school costs have been the primary driver of the town's expenditure profile, municipal expenditures have played a role in keeping the pattern moving upward (or not decreasing significantly) in the 2000s.

China has somewhat high municipal costs pc for a small community. Its average municipal spending levels in the early 2000s place it in the company of Raymond and Hermon as study towns with populations near 4,000 with relatively high levels of service for their residents. Unlike some of the lower-spending towns, China has a town manager and police chief. The presence of significant amount of tax revenue form waterfront property (China Lake) may be factor in allowing the town to afford this level of staffing.

# WATERBORO

County: York

Population

1970: 1,208

2000: 6,214

Growth: 414%

Land Area: 55.5 square miles

Population Density

1970: 22 persons per sq. mile

2000: 112 persons per sq. mile

School District: SAD 57 (with Alfred, Limerick, Lyman, Newfield and Shapleigh)

Nearby Service Centers

Sanford

Biddeford/Saco

Form of Government

Town Administrator & 5 Selectmen

Police Dept? Yes

Town Planner? On & off during study period

Public Sewer: No

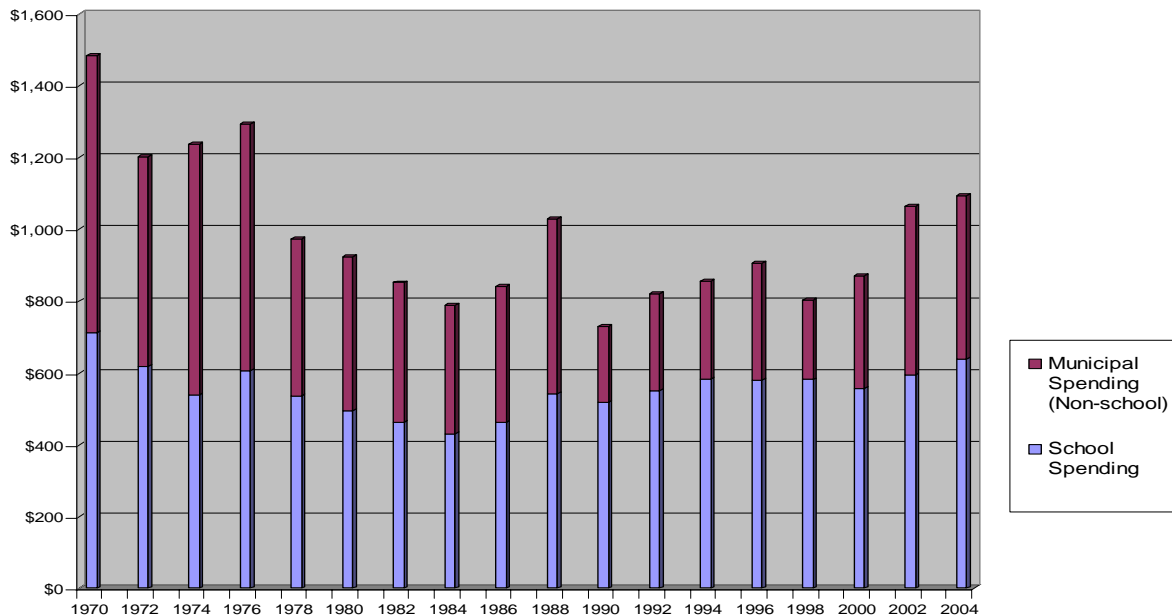
Public Water: Yes

## Expenditure Summary (in 2004 dollars)

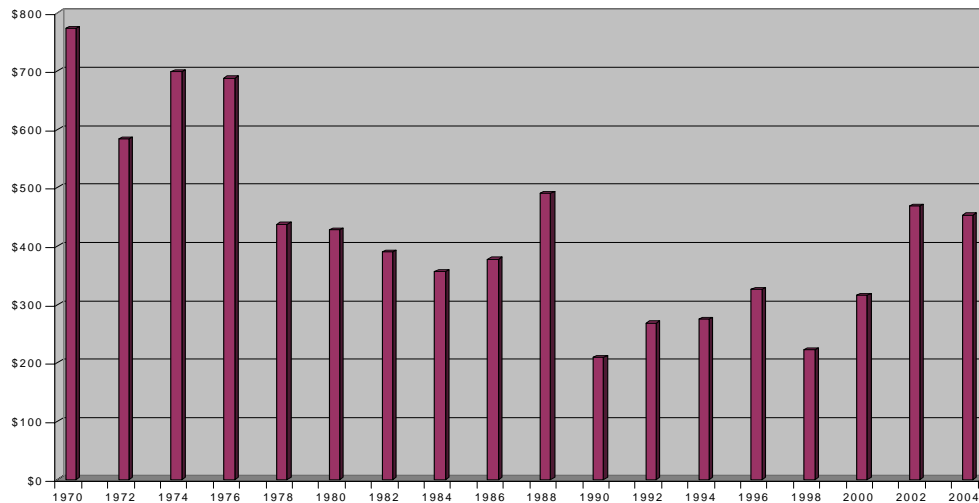
	Total Expenditures	Percentage increase since 1970	Population	Total Expenditures Per Capita	School Expenditures Per Capita	Municipal Expenditures Per Capita
1970	\$1,796,575		1,208	\$1,484	\$711	\$773
1980	\$2,857,811	59%	2,943	\$923	\$495	\$428
1990	\$3,408,709	90%	4,510	\$728	\$519	\$209
2000	\$4,921,627	174%	6,214	\$871	\$556	\$316
2004	\$7,536,305	319%	6,896	\$1,093	\$640	\$453

\* 1991 figures (1990 unavailable)

## Total Expenditures Per Capita in 2004 dollars



## Municipal Expenditures Per Capita (Non-school) in 2004 Dollars



### Relevant Findings

- U-Shaped Expenditure Curve? Yes
- Upswing Point for Total Expenditures? Yes  
 Year: 1992:  
 Population: 4,851  
 Population density: 87
- Average Per Capita Expenditures, 2000-2004 (2004 dollars)
 

Total:	\$992
School:	\$575
Municipal:	\$404
- School spending represents local contribution to SAD 57 and does not include expenditure of state subsidy dollars.
- In the early 1970s, local school expenses represented 50% of total expenditures; in the early 2000s, the average school share rose to 60%.
- Recent per capita levels have yet to exceed early 1970 levels.
- The town has significant amount of waterfront property, including development on Lake Arrowhead with its private association that somewhat functions as a “community within a community.”

### Discussion

Waterboro exhibits a broad U-shaped curve, although its pattern is somewhat the reverse of China’s, with a high per capita spending levels at the onset, a fairly deep trough, and more modest upslope. At the start of the study period, expenditures pc were \$1,480, dropping to a low point of \$730 in 1990, prior to a fairly steady climb to the current level, which, at \$1,100 is still well below the 1970 level.

The curve for education spending, while also U-shaped, is shallower, with a flatter profile over the past few decades. The municipal pattern exhibits more pronounced high and low points, and several spikes and dips, but a U-shaped profile can still be discerned. Spending levels in the early 2000s are still well below their levels in 1970.

The upswing point exhibited by Waterboro seems to occur later than for most of the other study communities. Although an initial spending spike occurs in 1988, it is followed by a low point in 1990 before expenses swing upward again in 1992. While there is a modest regression of values in late 1990s, the general trend since the low point has been upward, with per capita expense now \$440 higher than that

time. School expenditures have similar upswing points (although increases have been very modest). Although municipal expenditures also turned upward at that same time, they experienced another decline in the late 1990s – a clearer upswing point is the year 2000.

Municipal spending has been rising since 1992, but the percentage of education costs relative to total spending increased during the study period – from 50% to 57%. Unlike Sidney, Waterboro is a member of an SAD that consider the population of its member towns in determining the local contributions, although no analysis was conducted to see how these affects Waterboro's school spending trends.

Waterboro recent per capita expenditure levels are low compared to other SAD towns. Since the early 1990s, increases in overall expenditures have been moderated by the town's relatively low per capita municipal spending levels. Although municipal spending turned upward in 2002, Waterboro's average municipal spending the early 2000's has been \$404 per capita, placing it just above Sidney.

The town's overall expenditure profile is dominated by the relatively high per capita expenses that started the study period. Whereas the town was one the highest per capita spenders among the group, it now ranks among the lowest, particularly for municipal costs. Clearly, the town, as it has grown, has been able to realize considerable economies of scale in providing municipal services. With the upswing of municipal costs in 2000, however, it may be that the trend will be more consistently upward.

The presence of Lake Arrowhead Estates, a lakeside community is likely to have a bearing on Waterboro's expenditure trends. With its own manager, services and facilities, the development may help the town save money on municipal services – at least relative to other towns with waterfront development.

## DURHAM

County: Androscoggin

Population

1970: 1,264

2000: 3,381

Growth: 167%

Land Area: 38.1 square miles

Population Density

1970: 33 persons per sq. mile

2000: 89 persons per sq. mile

School District: Member of School Union 30  
with Lisbon

Nearby Service Centers

Lewiston/Auburn

Brunswick/Topsham

Portland SMSA

Form of Government:

Administrative Assistant &  
5 Selectmen

Police Dept? No

Town Planner? No

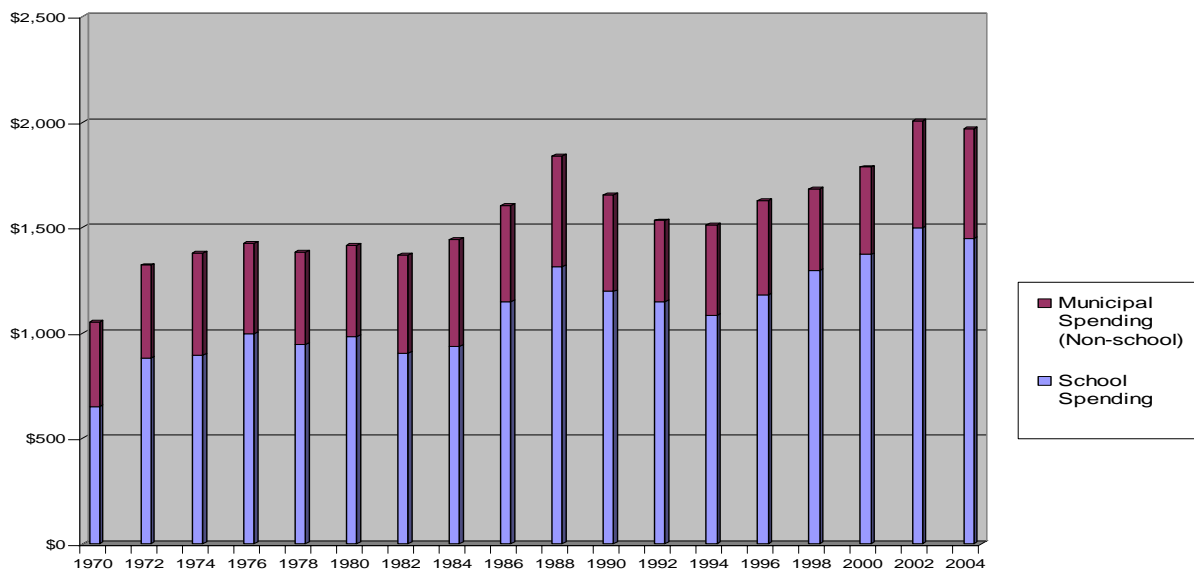
Public Sewer: No

Public Water: No

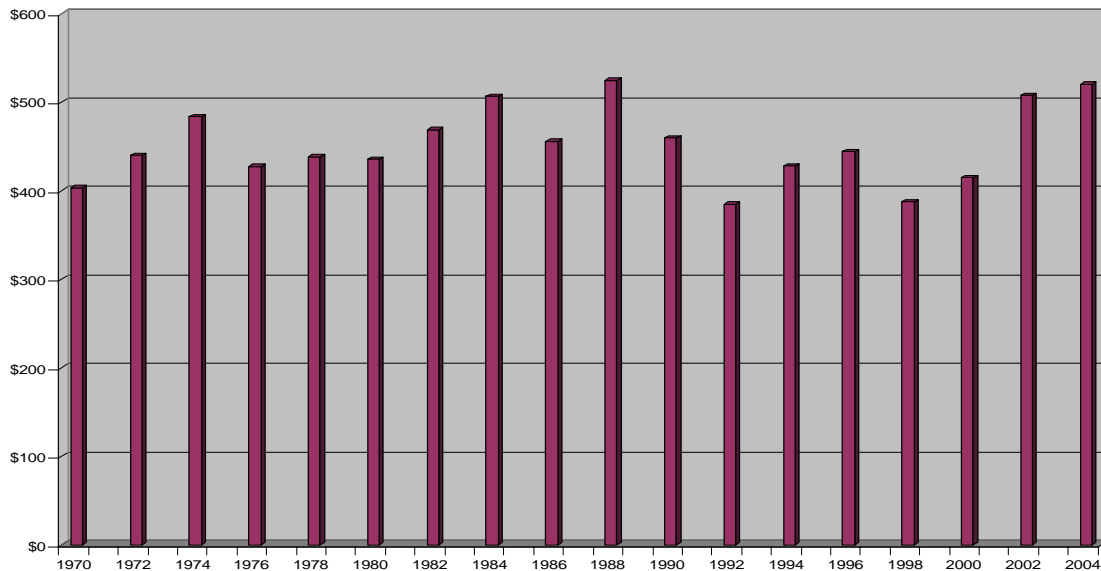
### Expenditure Summary (in 2004 dollars)

	Total Expenditures	Percentage increase since 1970	Population	Total Expenditures Per Capita	School Expenditures Per Capita	Municipal Expenditures Per Capita
1970	\$1,269,353		1,264	\$1,053	\$650	\$403
1980	\$3,024,364	138%	2,074	\$1,418	\$982	\$436
1990	\$4,732,948	273%	2,842	\$1,657	\$1,197	\$460
2000	\$5,838,675	360%	3,381	\$1,787	\$1,372	\$415
2004	\$7,075,942	457%	3,597	\$1,967	\$1,447	\$520

### Total Expenditures Per Capita in 2004 Dollars



## Municipal Expenditures Per Capita (Non-school) in 2004 Dollars



### Relevant Findings

- U-Shaped Expenditure Curve? No
- Upswing Point for Total Expenditures? Somewhat  
Year: 1996:  
Population: 3,165  
Population density: 83
- Average Per Capita Expenditures, 2000-2004 (2004 dollars)  
Total: \$1,911  
School: \$1,438  
Municipal: \$473
- Member of school union, but state educational subsidy goes directly to town and is reflected in school expenditures.
- In the early 1970s, local school expenses represented 64% of total expenditures; in the early 2000s, the average school share rose to 75%.

### Discussion

Durham's expenditure curve is not U-shaped – it more closely resembles the stepped pattern exhibited by Raymond and South Berwick. Per capita expenditures started the study period at about \$1,000 and after an upturn, plateau and another upturn, reached an early peak of \$1,840 in 1988. Thereafter there was a decline followed by an upswing which brought pc expenditure levels up to \$2,000 in 2002.

Per capita education expenses have mirrored this pattern of periodic upswings, and these expenses are now more than double of what they were in 1970. Municipal expenses, on the other hand, have conformed to no clear pattern other than numerous peaks and valleys. Current municipal expenditures are a bit higher than 1970 levels, but similar levels have been reached at least three times during the study period.

Discerning a clear upswing point for Durham is difficult, as expenditures have been slowly on the rise throughout the study period. The last low point for overall and school expenditures pc was probably 1994, and expenses have risen fairly steadily since then, rising roughly \$500. On the municipal side, expenses pc have been on the upswing since 2000, but it is difficult to know whether this trend will continue.

During the study period school costs have risen faster than municipal expenditures. In the early 1970s, they averaged 64% of total expenditures; in the early 2000s, they averaged 75%. This higher range is consistent with other non-SAD study towns.

Although overall per capita expenditures have been on the rise in Durham, they are the lowest of any non-SAD town. This is mainly by virtue of its education costs being lower than other towns with own school districts or school unions. The town's municipal expenditures are relatively low as well – putting into the company of Buxton, New Gloucester, Waterboro and Sidney.

Overall, Durham's expenditure profile has been driven largely by school spending, even though this spending is at somewhat lower levels than other non-SAD schools. The town's per capita expenditures have shown significant increase since 1970, but this is somewhat a result of the town's very low spending level at that time. Durham, like Sidney, may be early enough in its suburbanization process that a clear upswing on municipal costs is in the future, and the town's expenditures per capita bear watching over the next five years.



# GRAY

County: Cumberland

Population

1970: 2,939

2000: 6,820

Growth: 132%

Land Area: 43.3 square miles

Population Density

1970: 68 persons per sq. mile

2000: 158 persons per sq. mile

School District: SAD 15 (with New Gloucester)

Nearby Service Centers

Portland

Lewiston/Auburn

Form of Government

Town Manager & 5 Council Members

Police Dept? Yes

Town Planner? Yes

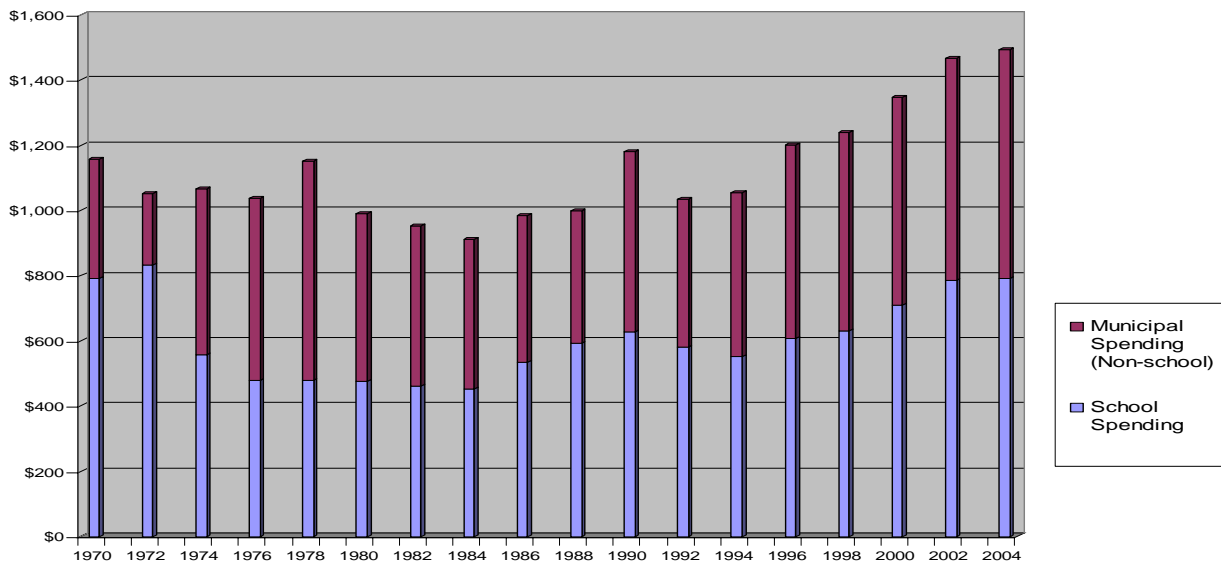
Public Sewer: No

Public Water: Yes

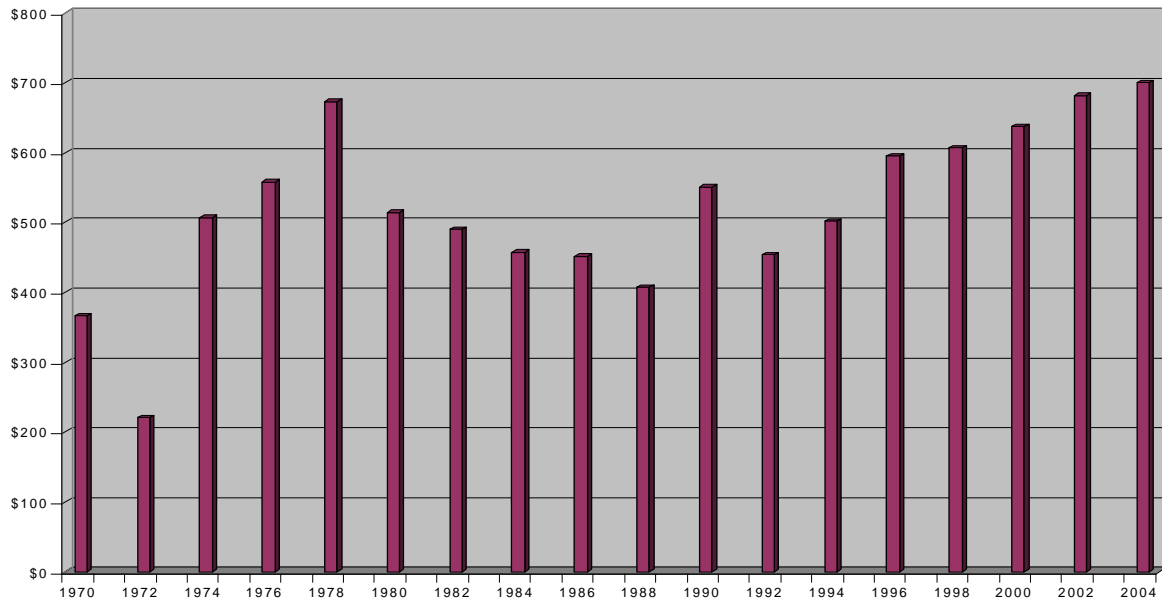
## Expenditure Summary (in 2004 dollars)

	Total Expenditures	Percentage increase since 1970	Population	Total Expenditures Per Capita	School Expenditures Per Capita	Municipal Expenditures Per Capita
1970	\$3,490,402		2,939	\$1,158	\$791	\$367
1980	\$4,377,105	25%	4,344	\$990	\$476	\$514
1990	\$6,965,964	100%	5,904	\$1,180	\$629	\$551
2000	\$8,891,198	155%	6,820	\$1,347	\$710	\$638
2004	\$10,718,784	207%	7,186	\$1,492	\$791	\$700

## Total Expenditures Per Capita in 2004 Dollars



## Municipal Expenditures Per Capita (Non-school) in 2004 Dollars



### Relevant Findings

- U-Shaped Expenditure Curve? Yes
- Upswing Point for Total Expenditures? Yes  
 Year: 1986:  
 Population: 5,280  
 Population density: 122
- Average Per Capita Expenditures, 2000-2004 (2004 dollars)  
 Total: \$1,424  
 School: \$756  
 Municipal: \$668
- School spending represents local contribution to SAD 15, and does not include expenditure of state subsidy dollars.
- In the early 1970s, local school expenses represented 68% of total expenditures; in the early 2000s, the average school share decreased to 53%.
- Gray has the second highest population (2000 Census) of the study towns.

### Discussion

Gray's per capita expenditure curve is a shallow U-shape, with a fairly gentle downslope and a more pronounced upslope. At the start of the study period expenditures pc were \$1,160, dropping to a low point of \$910 in 1984. Other than a spike in expenditure that occurs in 1990 and subsequent dip, the trend since that low point has been steadily upward, with per capita expenditure levels reaching \$1,490 in 2004.

Per capita school spending has generally conformed to this pattern, although 2004 values have yet to exceed the 1970 level. The pattern for municipal expenditures pc has been less predictable. Starting at low levels in 1970 those values climbed quickly before declining again in the early 1980s. The pattern since does show a pronounced U-shaped pattern, albeit with several spikes. Current municipal per capita spending levels are much higher than in 1970, but just surpassing a peak experienced in 1978.

For overall expenditures pc, the upswing point probably occurred in 1986. Because of a spike and dip after this time, a case can be made that the upswing point occurs somewhat later – around 1998. But the

upswing in 1986, while not abrupt, seems to signify a shift from the previous downward pattern to a generally upward trend. Since the identified low point in 1984, expenditures pc have risen \$580 to their current 2004 levels.

The upswing for educational expenses also seems to occur in 1986, with a \$339 increase in expenditures pc since the low point was reached. For municipal expenses, it is difficult to ignore 1990 as the logical upswing point, even though expenses declined briefly in subsequent years before rising again. Since the low point in 1984, municipal expenses pc have increased by \$293.

Over the course of the study period, municipal spending has been rising faster than school costs, and municipal costs now comprise 47% of total expenditures compared with 32% in 1970. Gray is a member of an SAD that apportions local contribution based on state valuation, although the town's share of enrollment relative to New Gloucester's has been on the decline.

Of the study towns, Gray now has the highest per capita municipal costs – an average of \$668 in the 2000-2004 period. The town began the period with one of the lowest per capita spending levels for municipal services.

While decreasing per capita school expenditures largely drove the early downslope of Gray's expenditure profile, municipal expenses have contributed significantly to the general upswing that has occurred since the mid-1980s. The town began the study period with some of the lower per capita expenses for municipal services, but these expenses are now the highest. This is reflective of the town's significant staffing levels and its relative sophisticated governmental structure. It has a town manager, police force and a town planner. It is one of two study towns with a council form of government.

## NEW GLOUCESTER

County: Cumberland

Population

1970: 2,811

2000: 4,803

Growth: 71%

Land Area: 47.1 square miles

Population Density

1970: 60 persons per sq. mile

2000: 102 persons per sq. mile

School District: SAD 15 (with Gray)

Nearby Service Centers

Portland

Lewiston/Auburn

Form of Government

Town Manager & 5 Selectmen

Police Dept? No

Town Planner? Yes

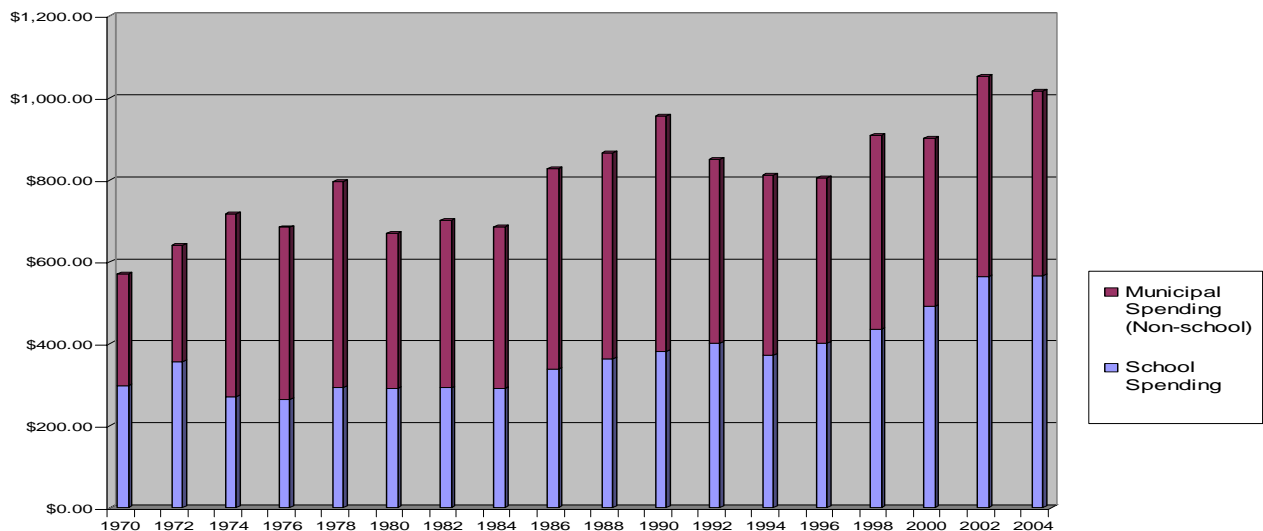
Public Sewer: No

Public Water: No

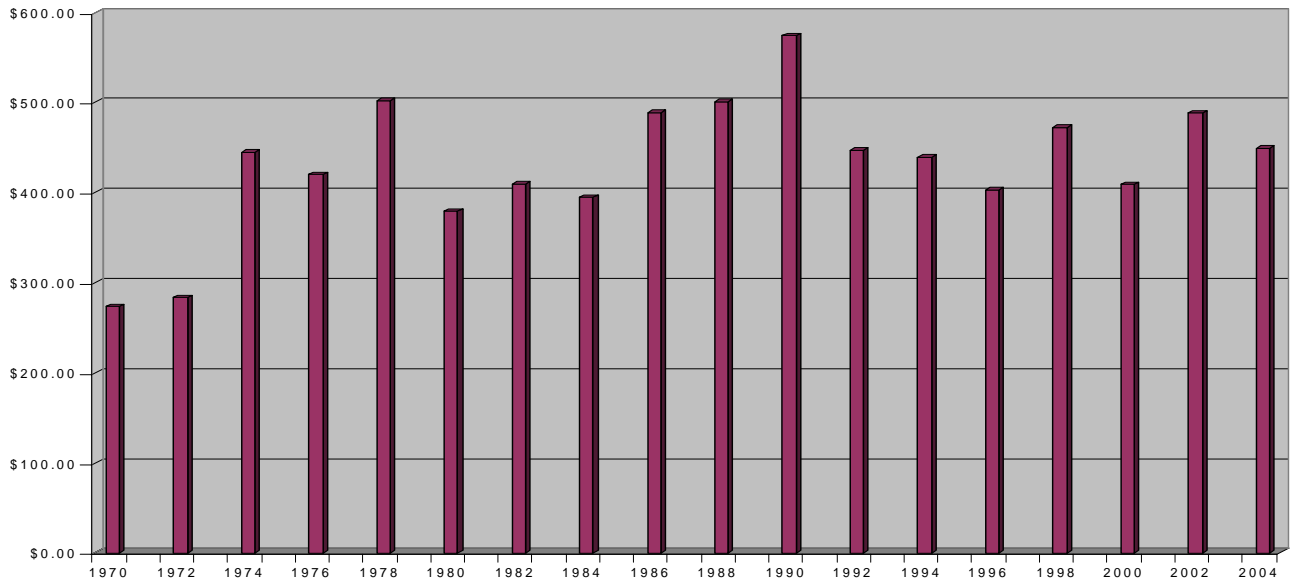
### Expenditure Summary (in 2004 dollars)

	Total Expenditures	Percentage increase since 1970	Population	Total Expenditures Per Capita	School Expenditures Per Capita	Municipal Expenditures Per Capita
1970	\$1,520,639		2,811	\$572	\$298	\$274
1980	\$2,186,040	44%	3,180	\$670	\$290	\$379
1990	\$3,746,303	146%	3,916	\$957	\$574	\$574
2000	\$4,160,698	174%	4,803	\$901	\$474	\$409
2004	\$5,241,759	245%	5,158	\$1,016	\$567	\$449

### Total Expenditures Per Capita in 2004 Dollars



## Municipal Expenditures Per Capita (Non-school) in 2004 Dollars



### Relevant Findings

- U-Shaped Expenditure Curve? No
- Upswing Point for Total Expenditures? Somewhat  
Year: 1986 (or possibly 1998)  
Population: 3,622  
Population density: 77
- Average Per Capita Expenditures, 2000-2004 (2004 dollars)
 

Total:	\$985
School:	\$536
Municipal:	\$449
- School spending represents local contribution to SAD 15, and does not include expenditure of state subsidy dollars.
- In the early 1970s, local school expenses represented 51% of total expenditures; in the early 2000s, the average school share rose to 54%

### Discussion

New Gloucester's expenditure curve is not U-shaped, and resembles more the profiles exhibited by Raymond, South Berwick, and perhaps, most closely, Durham. The town began the study period with very low per capita expenditures of \$570, which rose quickly to an early peak of nearly \$800 in 1978. Expenditures then fell to a low point of \$670 in 1980. Since that time the trend has generally been upwards, alternating between upward steps and plateaus (with one noticeable downstep). Spending levels in 2004 were just over \$1,000 per capita.

School spending patterns have been a bit more U-shaped, albeit with a very shallow trough and an upslope higher and longer than its downslope. In 2004, school expenditure levels per capita were nearly double those of 1970. Municipal spending, on the other hand, shows an undulating pattern of peaks and valleys, with no clear trends. Although 2004 levels are significantly higher than 1970 levels, the trend since the middle 1970 has been relatively flat.

An upswing point can be discerned in 1986 after the low point that occurs during 1980-84. Although this point is not as clear as for some of the other communities, it does seem to mark a shift toward higher per

capita expenditures. Since the preceding low point, values have increased by almost \$350, most of it as a result of educational spending.

The upswing point for educational spending occurs at roughly the same time. For municipal expenditures, it is difficult to discern a clear upswing point. These expenditures, while experiencing multiple peaks and valleys, have remained, on the whole, flat.

Spending levels in 1970 and 2004 show a fairly even split between school and municipal expenditures, with some increase in the proportion of the school share at the end of the study period. The proportion of municipal spending actually increases quite significantly during the intermediate years of the study period.

Among SAD towns, New Gloucester current spending levels remain relatively low – under \$1,000 per capita. Its per capita municipal spending is particular low, just above that of Sidney and Waterboro.

New Gloucester's per capita expenditure profile is strongly influenced by its fluctuating municipal spending patterns. While school spending exhibits somewhat steady trends, the rising and falling share of municipal values results in a more erratic profile.

The town's spending on municipal services remains low compared with the other study towns, although not as low as Sidney and Durham. Unlike those towns, New Gloucester has had a full-time town manager through much of the planning period, and in the early 2000s hired a town planner. Although the town may fit the profile of a community that is generally accepting of increase staffing and selective investment, it may also be that the town is still somewhat behind the curve as far as a true upswing point for municipal expenses. In light of shifting community dynamics resulting from the redevelopment of Pineland Center, and discussion of easements on large tracts of now undeveloped lands, the next five years may prove eventful ones regarding expenditure trends.

# HERMON

County: Penobscot

Nearby Service Centers  
Bangor/Brewer

Population

1970: 2,376

2000: 4,437

Growth: 87%

Form of Government

Town Manager & 7 Council Members

Police Dept? Yes

Land Area: 35.9 square miles

Town Planner? Economic Development Director

Population Density

1970: 66 persons per sq. mile

2000: 124 persons per sq. mile

Public Sewer: No

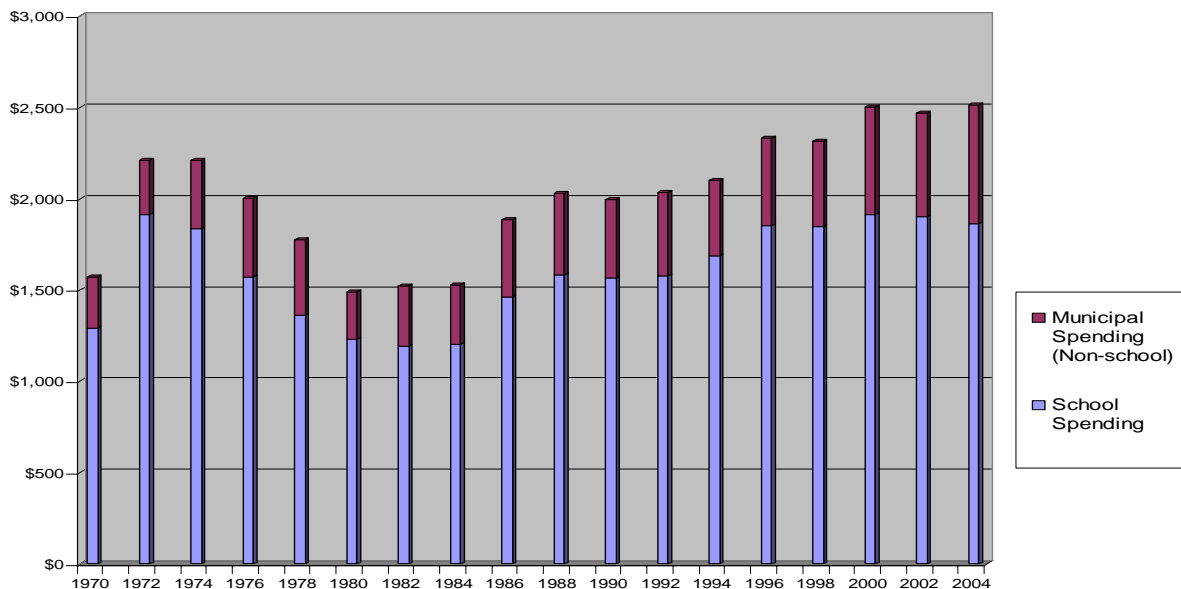
Public Water: Yes

School District: Own

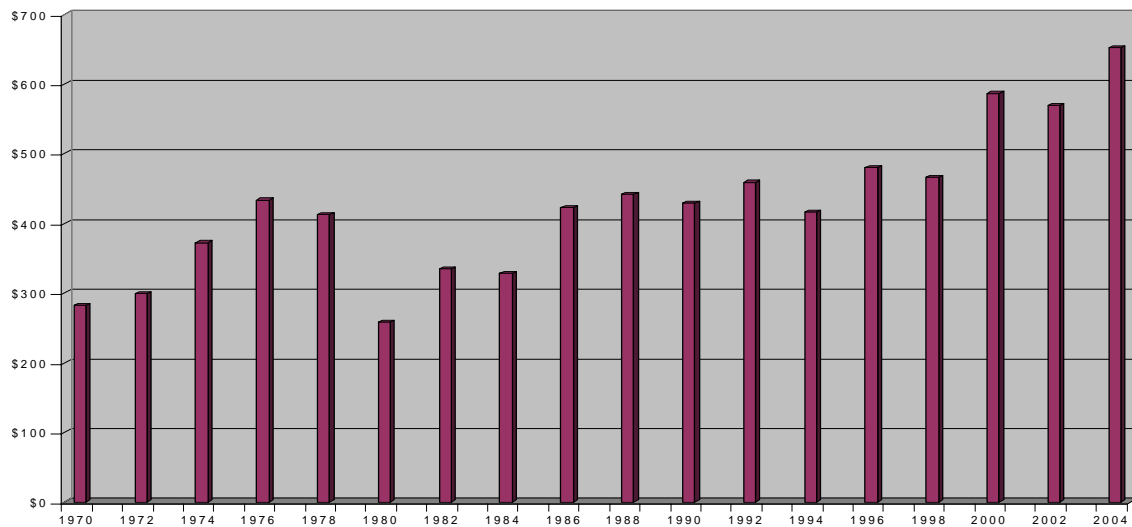
## Expenditure Summary (in 2004 dollars)

	Total Expenditures	Percentage increase since 1970	Population	Total Expenditures Per Capita	School Expenditures Per Capita	Municipal Expenditures Per Capita
1970	\$3,489,646		2,376	\$1,574	\$1,291	\$283
1980	\$4,557,702	31%	3,170	\$1,489	\$1,230	\$258
1990	\$7,603,335	118%	3,755	\$1,993	\$1,564	\$429
2000	\$11,138,604	219%	4,437	\$2,501	\$1,914	\$586
2004	\$11,847,693	240%	4,710	\$2,516	\$1,863	\$652

## Total Expenditures Per Capita in 2004 dollars



## Municipal Expenditures Per Capita in 2004 dollars



### Relevant Findings

- U-Shaped Expenditure Curve? Yes
- Upswing Point for Total Expenditures? Yes  
 Year: 1986:  
 Population: 3,521  
 Population density: 98
- Average Per Capita Expenditures, 2000-2004 (2004 dollars)
 

Total:	\$2,491
School:	\$1,899
Municipal:	\$593
- Has own school district – state educational subsidy is reflected in expenditures.
- In the early 1970s, local school expenses represented 84% of total expenditures; in the early 2000s, the average school share decreased to 76%.

### Discussion

Hermon exhibits a U-shape curve if one discounts 1970-71 when spending was low. After an expenditure level of just over \$1,500 pc in 1970, spending rose quickly to over \$2,200 in 1972. Thereafter, spending dropped to a low plateau in the early 1980s, reaching a low value of just under \$1,500 pc prior to a jumping upward and continuing in a generally upward trend until the current time, when expenditures have surpassed \$2,500.

School spending generally mimics this pattern, although the expenditures have yet to exceed some of the levels reached in the early 1970s. Municipal expenditures show no clear pattern, although after considerable fluctuation, a mini-U-shaped pattern is exhibited from the mid-1980s onward.

A fairly clear upswing point for total expenditure can be discerned in 1986. Thereafter, the trend is generally upward with periodic flat periods that continue to the current time. From the low point in 1984, expenditures have increased over \$1,000. The upswing for school expenditures also occurs at this time, and since the low point in 1984, these expenses have increased almost \$700. Municipal expenditures exhibit several spikes, but the upswing in 1996 may signal a shift toward more steady increases, as opposed to up and down fluctuations. From the low point that occurred earlier in the study period, municipal



expenditure have risen by almost \$400. From the secondary trough that occurs prior to 1996, these expenses have risen by about \$250.

Although education spending comprises the bulk of Hermon's expenditures, municipal spending has been rising more quickly during the study period. In the early 1970, municipal spending only averaged 16% of total spending; in the early 2000s, it averaged 24%.

Of all the non-SAD towns, Hermon has experienced the largest increase in per capita expenditures during the study period, and has the highest expenses pc as of 2004. Its current pc municipal spending levels are exceeded only by Gray.

Hermon expenditure profile is largely driven by its educational spending, although since 2000, its rising municipal expenses has contributed to the continuing upward trend of expenditures. For a relatively small community in terms of population, its municipal spending levels are high, and are indicative of a fairly high level of staffing and town services. The town has a town manager, town council, police department, and an economic development director. Again, the factor of how the town has evolved, both demographically and politically, may play a role in its expenditure trends. Although Hermon has a significantly smaller population and lower population than Gray, it may share many characteristics regarding its development as a suburban community.

## COMPARATIVE ANALYSIS (in 2004 dollars)

### Upswing Point Comparisons

Town	Year	Pop.	Pop. Density	Increase since low point
Sidney	1988	2,485	59	\$460
Raymond	1988	3,099	93	\$800
Durham	1996	3,165	83	\$500
China	1986	3,395	68	\$1,200
Hermon	1986	3,521	98	1,000
New Gloucester	1986	3,622	77	\$350
Waterboro	1992	4,851	87	\$440
South Berwick	1986	5,134	159	\$500
Gray	1986	5,280	122	\$580
Buxton	1986	6,206	153	\$550
Average	1988	4,061	100	Avg. SAD: \$875
Median	1987	3,521	87	Avg. Non SAD: \$480

### SAD Towns: Recent Per Capita Spending (2000-2004 Average)

Town	Total	Municipal	School
Gray	\$1,424	\$668	\$756
South Berwick	\$1,088	\$546	\$542
Buxton	\$1,020	\$469	\$551
Waterboro	\$992	\$404	\$575
New Gloucester	\$985	\$449	\$536
Sidney	\$932	\$355	\$578
Average	\$1,074	\$482	\$590

### Non-SAD Towns: Recent Per Capita Spending (2000-2004 Average)

Town	Total	Municipal	School
Hermon	\$2,491	\$593	\$1,899
China	\$2,203	\$574	\$1,629
Raymond	\$2,118	\$574	\$1,545
Durham	\$1,911	\$473	\$1,438
Average	2,181	\$554	\$1,628

**Average Per Capita Expenditures**  
(Sorted by highest current municipal expenditures)

Town	Total			Municipal		
	Study Period	1970-1974	2000-2004	Study Period	1970-1974	2000-2004
Gray	\$1,158	\$1,114	\$1,424	\$544	\$353	\$668
Hermon	\$2,544	\$2,012	\$2,491	\$527	\$318	\$593
Raymond	\$2,042	\$1,614	\$2,118	\$725	\$735	\$574
China	\$1,688	\$1,237	\$2,203	\$428	\$410	\$574
South Berwick	\$970	\$681	\$1,088	\$521	\$336	\$546
Durham	\$1,548	\$1,197	\$1,911	\$448	\$432	\$473
Buxton	\$1,157	\$1,209	\$1,020	\$601	\$698	\$469
New Gloucester	\$842	\$637	\$985	\$454	\$315	\$449
Waterboro	\$1,022	\$1,295	\$992	\$450	\$653	\$404
Sidney	\$952	\$1,008	\$932	\$465	\$573	\$355

**Proportion of School/Municipal Spending to Total Expenditures PC**

Town	1970-1974 Average		2000-2004 Average	
	School	Municipal	School	Municipal
Sidney	43%	57%	62%	38%
Raymond	55%	45%	73%	27%
South Berwick	51%	49%	50%	50%
Buxton	42%	58%	54%	46%
China	67%	33%	74%	26%
Waterboro	50%	50%	60%	40%
Durham	65%	35%	75%	25%
Gray	68%	32%	53%	47%
New Gloucester	50%	50%	54%	46%
Hermon	84%	16%	76%	24%

## **V. CONCLUSIONS**

### **Overall Findings**

#### **Shape of Expenditure Curve**

1. A U-shaped per capita expenditure curve is exhibited by some, but not all, of the study communities. Six of the 10 communities show a clear U-shape curve. Two more exhibit a U-shaped pattern, but not for the entire study period.
2. The expenditure profile for several communities more closely resembles a stepped pattern – a series of “stairs” (mostly up, some down) and plateaus, with a generally upward trend.
3. For communities exhibiting U-profiles, the actual shape varies considerably from town to town in terms of the depth of the “troughs,” and the height and steepness of up and down slopes. Several profiles have intermediate spikes.
4. At least six communities (if not seven) have U-shaped school spending curves for the study period. For several towns, the U-shape is actually more pronounced for this spending component than for overall expenditures.
5. Municipal (non-school) expenditures generally follow a more erratic pattern than school-related expenditures, with considerable year-to-year fluctuations, and multiple peaks and valleys during the planning period. While the municipal spending profiles of a few towns conform to a rough U-shape, most follow an up-and-down stepped pattern.
6. For a number of communities, educational spending patterns strongly affect the shape of the overall expenditure profile during the first half of the study period, but municipal expenditures begin exert more influence during the second half.
7. For most communities, the expenditure profiles whether U-shaped or stepped, show that 2004 expenditures pc have exceeded 1970 levels in real dollars, with their upslopes rising well above the values evident at the start of the study period.. The upslopes of three communities, however, have yet to exceed 1970 levels.

#### **Upswing Point**

1. Most of the study communities show a point in their curves when expenditures shift to a more consistently upward trend that continues to the present time (2004). For some communities, this upswing point is pronounced and is followed by steadily rising values. For other communities, the upswing point represents a more subtle shift from generally flat or descending values to an upward trend.
2. The upswing point for per capita educational expenditures tends to occur during the same time frame and population range as overall spending. In most instances, however, the upswing point is less pronounced than for overall spending.
3. Discerning a clear upswing point for municipal expenses is less clear for a number of study communities. In some cases, the upswing appears to be later than for school and overall expenditures. In other cases, there is no clear upswing trend.
4. There is a strong correlation between when this upswing occurs and the population (and population densities) of these communities at that time. For population, the range is 2,485-6,206, with a median value of 3,521. For population density, the range is 55-159 per mile, with a median value of 85.

5. Independent of population characteristics, a strong correlation exists between upswing points and the year in which it occurs. Upswing points clearly occurred for five communities in 1986 and for two in 1988 (with one community showing a less clear 1986 upswing);
6. For non-SAD communities (except for Durham, which has a late upswing point) the extent of the increase in total per capita expenditures since the upswing point is in the \$1,000 range. For SAD towns, it is in the \$500 range (measured from the low point just before the upswing point).

## **Other Findings**

1. For eight of the study communities, the relative proportion of school to municipal costs shifted toward a greater proportion of school spending over the study period. For one community, the municipal share increased relative to school spending. For the remaining town, the municipal-school spending share stayed about the same.
2. For non-SAD schools, the share of educational expense in the early 2000s is consistently in the mid-70% range. For SAD towns, there is a greater range, with a low of 50% and a high of 62%.
3. The per capita expenditures of seven communities showed an increase between 1970 and the early 2000s in real dollars, although three of these towns exhibited temporary peaks during the study period that exceeded 2004 levels.
4. Among non-SAD towns, Hermon has the highest average per capita spending in 2000-2004 period, and Durham has the lowest. These two towns also have the highest and lowest values for per capita school and municipal spending. Raymond and China share very similar values for school, municipal and total per capita expenditures.
5. Among SAD towns, Gray has the highest average per capita spending in 2000-2004 period, and Sidney has the lowest. These two towns also have the highest and lowest values for per capita school and municipal spending, except that New Gloucester has the lowest school expenditure values. The total per capita spending levels for South Berwick, Buxton, Waterboro and New Gloucester are within \$100 of each other.
6. In the early 2000s (2000-2004 average), the range in expenditures among the study communities with their own school districts or school unions is \$1,911 to \$2,491 per capita. The range for those with SADs is \$932 to \$1,424 per capita. The range for municipal expenditures is \$355 to \$668. These ranges are generally less than the ranges found in 1970.

## Overall Analysis/Observations

### Expenditure Curve

1. Suburbanizing towns may exhibit different expenditures curves; some U-shaped, some not. The U-shaped pattern seems to be prevalent among suburbanizing towns, but it may occur among communities as well. For example, preliminary analysis indicates that Presque Isle, a service center, has a U-shaped per capita expenditure pattern over this same time period (see Appendix C). It is important, however, to view these expenditure patterns in the context of their overall growth patterns. Gray, for instance shows a broad U-shaped pattern and an increase in per capita expenditures despite more than a two-fold increase in population to share in rising real dollar costs during the 1970-2004 period. Presque Isle shows a similar curve, but with a population and a reduction in real dollar expenditures during this period.
2. The stepped expenditure pattern exhibited by several towns may represent a second “model” for the per capita growth of expenditures in suburbanizing towns. With fairly bare bones budgets at the study period, these towns may have less of an opportunity to realize significant economies of scale as populations began to rise – and therefore exhibit a delayed or no downslope in per capita expenditures. Instead, their curves may show a series of fairly gradual series of steps and plateaus as these governments make fairly regular adjustments to respond to their growing populations. At some point, however, these towns find that more major adjustments are needed and a more significant and sustained upswing occurs.
3. School spending, whether it is contributions to SADs or funding of individual districts or school unions, seems to exert a stabilizing affect on overall expenditures during the study period. Whereas municipal expenditures tend to fluctuate considerably from year to year, school spending tends to show more gradual increases and decreases. For the towns that show U-shaped per capita expenditure curves, most do so largely because of the impact of their school spending patterns, although municipal spending has been a factor in sustaining upslopes.

### Upswing Point

1. Ultimately, the particular shape of a town’s expenditure curve may be a less significant indicator of suburbanizing communities than the presence of a clear upswing point that signals steadily rising per capita costs even as populations continue to increase. Almost all of the study communities exhibited such an upswing point following a period of spending downswings, plateaus or modest growth.
2. The strong correlation between these upswing points and the population/density ranges of these towns when this point occurs is consistent with the hypothesis of a balance point being reached as described in the in article on the *Creeping Costs of Sprawl*, referenced in the Introduction. While this point may not always follow a bottoming out of expenditures, it does seem to mark a change in the prevailing trend, whether it is U-shaped or some other pattern.
3. On the other hand, the ranges found in study would suggest that among suburbanizing communities, there is not a predictable “formula” for predicting when per capita municipal costs will swing upward. In some towns it may occur in the 2,500-3000 range, in some not until the town approaches 6,000.
4. Town-by-town differences, both in expenditure profiles and the timing of upswing points relative to their population growth, may be attributable to multiple factors, some having to do with each community’s unique characteristics. One strong influence may be the historically rooted but evolving attitude of residents toward local spending increases. Some communities may have an established tradition of resisting new staffing or capital improvements – resulting in a deference of

some of these costs for as long as possible. Other towns may have a history of supporting expanded services and facilities;

5. The strong correlation among these upswing points and their occurrence within the same time frame, may point to other factors involved in these trends. Four possible time-specific factors may warrant additional consideration:
  - New State requirements enacted during this period that may have imposed significant costs on municipalities. Interestingly, the amendment to the State Constitution that essentially prohibited “unfunded government mandates” was passed in 1988;
  - Increased service demands from the front-end of the baby boom generation which began settling in rural communities in the early 1980s;
  - The significant changes in accounting practices that were applied to most communities in the 1980s may contribute to some expenditure increases by capturing some expenditures that previously were not fully accounted for; and
  - The relationship of municipal expenditures during these years to the Consumer Price Index could also contribute to the upswings. In general, the period of per capita expenditure decline or plateau coincided with a rapidly rising CPI for the Northeast. The period of steady increase since that time has coincided with a more modest increases in the CPI. This may indicate either a lag time between CSI and Maine- related expenditures, or perhaps that the CSI is not as reflective of some of the expenditures that Maine governments incurred during the 1986-2004 period.

### **Other Analysis/Observations**

1. At least at early stages of suburbanization, there is not necessarily a shift toward more municipal spending relative to education spending. This did clearly occur in one community that happens to be quite advanced in its suburbanizing process (Gray), but the proportion of school spending rose significantly in most of the other study towns.
2. The relatively narrow ranges between per capita spending in the early 2000s among the study communities suggests that despite significant local variations, many of the costs involved with local government are similar from town to town. While some of these costs may be growth-related, they may be less affected by location-specific factors and other local differences.
3. Although not a focus on the study, the findings provide some perspective on local government spending, at least viewed within the lens of per capita costs. For some of the study towns, increases in expenditures pc have been modest compared to 1970 levels, although the recent trend has a clearly upward one. To gain insight, it may ultimately prove helpful to compare municipal expenses on a per capita or household basis to other costs, such as housing, transportation and food during the same study period.
4. Examining these per capita trends may provide some indication of the comparative efficiency of the study towns in providing services to their citizen. It does not, however, answer the question of whether municipal government as a whole is efficient. To help answer that question, one would need to compare these per capita patterns with those that would likely occur under different governmental structures (e.g. multi-town or regional).
5. While this study has focused on the per capita spending profiles exhibited by suburbanizing communities, the information collected for this study provides a firm foundation for additional study and analysis that should further understanding of municipal costs and their relationship to growth. The generation of baseline data may prove to be one of the study’s most valuable components.

## **Recommendations for Future Study**

1. Continue to track expenditures for these study towns in the 2005-2010 period in order to view and analyze trends. In particular, determine if the upswings identified in this study sustain themselves as populations continue to increase.
2. Conduct a more in-depth analysis of two study towns: one an SAD town, and the other community with either its own district or a member of a school union. This more in-depth study might involve looking more closely at what investments in services and facilities accounted for increasing per capita expenditures.
3. Consider collecting and analyzing data for additional suburbanizing towns (see Appendix A). To reduce the amount of data collection time, expenditures might be collected at 5-year increments (e.g. 1970, '75, '80 etc).
4. For SAD study towns, consider whether conducting additional data collection and analysis is worthwhile in trying to better capture the full cost public education, factoring in state subsidy dollars and federal grants (see Appendix B).
5. Investigate the feasibility of factoring in other local costs that are not typically accounted for in the local budget process. A particularly significant cost may be what the Maine Department of Transportation spends on local road improvements above and beyond what is reflected in town's budget under state road aid. While it may be difficult to pinpoint precise numbers for this and other considerations, development of rough estimates may help provide a fuller picture of some of the growth-related investments that are occurring in these communities.
6. Conduct additional analyses as to why expenditures per capita seem to increase for many communities during the second half of the 1980s, particularly the years 1986 and 1988. This analysis should include study of the factors listed above (under Overall Analysis/Observations pertaining to Upswing Points, #4) as well as any other plausible hypotheses.
7. Develop a hypothetical multi-community service area model, projecting per capita costs assuming shared services and facilities, and comparing those costs with the actual per capita expenditures of the individual communities that comprise the service area. As three of the study towns – Raymond, Gray, and New Gloucester – are adjacent to one another, it may possible to create a service area of these three towns, using the combined expenditure data from these three towns as a basis of comparison.



## VI. APPENDICES

### APPENDIX A: OTHER SUBURBANIZING TOWNS

Community	Nearby Service Centers	County	Population		Growth Rate 1970-2000	Land Area (sq. miles)	2000 Pop. Density (persons per sq. mile)
			1970	2000			
Lyman	Biddeford Saco, Sanford	York	864	3,795	339%	44	86
Glenburn	Bangor/Brewer	Penobscot	1,196	3,962	231%	31	128
Arundel	Biddeford/Saco, Sanford	York	1,322	3,571	170%	30	119
Sabattus	Lewiston/Auburn	Androscoggin	1,681	4,486	167%	27	166
Hollis	Portland, Sanford, Biddeford/Saco	York	1,560	4,114	164%	33	126
Lebanon	Sanford Rochester, NH	York	1,983	5,083	156%	57	89
Poland	Lewiston/Auburn	Androscoggin	2,015	4,866	141%	50	98
Greene	Lewiston/Auburn	Androscoggin	1,772	4,076	130%	36	113
Oxford	Norway/Paris	Oxford	1,892	3,960	109%	39	102
Harpwell	Brunswick	Cumberland	2,552	5,239	105%	22	239
Turner	Lewiston/Auburn	Androscoggin	2,426	4,972	105%	62	80
Warren	Rockland, Augusta	Knox	1,864	3,794	104%	46	82
North Berwick	Sanford, Portsmouth, NH	York	2,224	4,293	93%	36	119
Monmouth	Augusta	Kennebec	2,062	3,785	84%	38	99
Winterport	Bangor/Brewer	Waldo	1,963	3,602	83%	36	101
Kennebunkport	Biddeford/Saco, Portsmouth	York	2,160	3,720	72%	21	181
Wiscasset	Bath/Brunswick	Lincoln	2,244	3,603	61%	28	130
Vassalboro	Waterville, Augusta	Kennebec	2,618	4,047	55%	23	176

## APPENDIX B: ESTIMATING SCHOOL SPENDING IN SAD TOWNS

The audited financial reports of towns that are members of School Administrative Districts (SADs) do not give a full picture of the “true” cost of public education. That is because state subsidy dollars and other state and federal grant monies generally go directly to the district offices, and are not accounted for in municipal budgets. Educational expenditures in the town’s audited financial report reflect only the local contribution to the district, not what it actually costs to educate the community’s school-aged population.

For this study, consideration was given toward determining this cost for study towns that were SAD members. The primary challenge involved with this task is apportioning funds that historically have been granted to the districts without an accounting of what share of those funds “belongs” to which towns in the district. Interestingly, recent changes in the approach to school funding actually do allow for such a breakdown. This was not the case, however, for most of the 35-year time frame for this study.

Despite this challenge, a tentative methodology for apportioning state subsidy dollars was developed, after discussions with staff at the Maine Department of Education and the finance directors of several SADs. It included the following components:

1. Collecting historical data from District offices documenting their total expenditures for each year from 1970-2004;
2. Collecting data from the Maine Department of Education documenting the relative student enrollments of the study towns, as well as other communities within their SADs, for the 1970-2004 period; and
3. Collecting data from Maine Revenue Services documenting state valuations of the study towns, as well as other towns within their SADs for the 1970-2004 period.

Although until recently there has been no accounting of what portion of the state subsidy belongs to individual towns within the SAD, there are long-standing formulas for how districts apportion local contributions to the districts. Most districts use state valuation as the sole criterion. Thus, a community whose valuation represents 60% of the total valuation of all the towns within the SAD pays 60% of the local share.

Use of this approach is based mostly on the concept of “ability to pay” rather than on trying to determine what the district might be spending to educate the students of a particular town. In an effort to better factor in the latter consideration, some districts have adopted a formula in which the relative student enrollments of the member towns are also examined. A typical arrangement is a 50:50 method in which a town’s relative percentage of both total valuation and school enrollment is averaged to determine the local share. Thus a town that has 60% of the state valuation, but only 40% of the enrollment of District’s member towns, pays a 50% share.

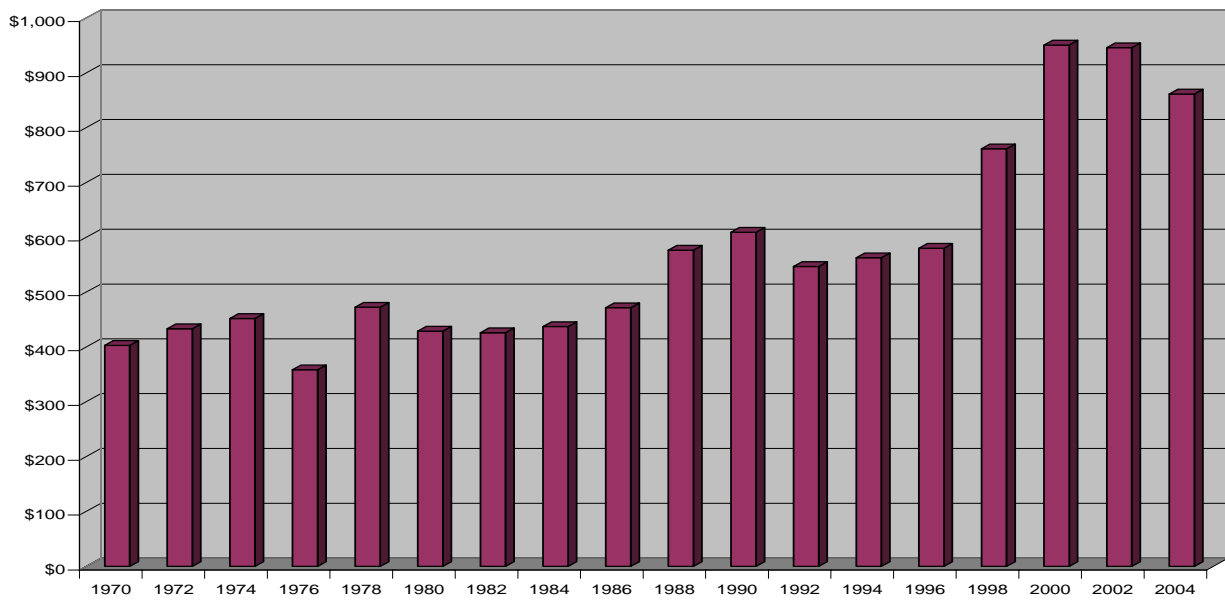
After conferring with the individuals described above, it was determined that a valid approach to apportioning state subsidy dollars would be to use an approach similar to how districts apportion local costs. It was also determined that the approach that factors in both valuation and populations, while not used by the majority of communities, might provide a “fairer” breakdown as it takes into account how a town’s growing student enrollment may affect overall costs.

As a test of the methodology, detailed information was collected for one SAD study town: South Berwick. The following table and chart summarizes the results.

**South Berwick: Estimated Share of State/Federal Education Funds in 2004 Dollars<sup>6</sup>**

Year	Total SAD Expenditures	Total SAD Expenditure minus local share (from South Berwick and Eliot)	Estimated South Berwick Share of State/Federal Funds	Estimate of State/Federal Share PC	2-Year Average
1970					\$403
1971	\$6,387,493	\$3,124,081	\$1,428,528	\$403	
1972					\$433
1973	\$6,346,814	\$3,436,138	\$1,584,377	\$433	
1974					\$452
1975	\$6,327,490	\$3,816,020	\$1,702,922	\$452	
1976	\$6,788,283	\$3,869,744	\$911,461	\$238	\$359
1977	\$7,114,006	\$4,282,847	\$1,858,078	\$479	
1978					\$473
1979	\$7,425,715	\$4,665,455	\$1,886,655	\$473	
1980	\$7,050,182	\$4,257,078	\$1,726,224	\$427	\$429
1981	\$7,203,042	\$4,399,311	\$1,825,957	\$432	
1982	\$7,564,465	\$4,353,836	\$1,799,837	\$408	\$426
1983	\$8,148,006	\$4,875,965	\$2,037,114	\$444	
1984	\$8,267,542	\$4,829,759	\$2,026,029	\$425	\$437
1985	\$8,636,617	\$5,267,840	\$2,226,855	\$450	
1986	\$9,430,274	\$5,827,743	\$2,551,071	\$497	\$472
1987	\$10,444,598	\$5,383,823	\$2,376,208	\$447	
1988	\$11,409,271	\$6,503,957	\$2,937,862	\$534	\$577
1989	\$12,540,517	\$7,558,615	\$3,520,127	\$619	
1990					\$609
1991	\$13,990,014	\$7,596,123	\$3,630,001	\$609	
1992	\$13,691,140	\$7,256,566	\$3,476,114	\$576	\$547
1993	\$13,310,059	\$6,709,323	\$3,169,307	\$518	
1994	\$13,685,993	\$7,126,153	\$3,462,182	\$559	\$563
1995	\$14,016,264	\$7,275,443	\$3,558,433	\$567	
1996	\$14,012,130	\$6,682,609	\$3,304,509	\$520	\$580
1997	\$14,816,048	\$8,295,375	\$4,118,216	\$640	
1998	\$15,246,418	\$8,771,685	\$4,319,452	\$663	\$762
1999	\$18,149,835	\$11,475,741	\$5,671,304	\$860	
2000	\$18,726,056	\$11,903,388	\$5,895,019	\$884	\$951
2001	\$20,729,892	\$13,700,595	\$6,871,340	\$1,018	
2002	\$21,815,081	\$12,707,196	\$6,444,673	\$944	\$946
2003	\$22,248,583	\$12,576,809	\$6,554,440	\$949	
2004	\$21,831,000	\$11,845,481	\$6,021,132	\$862	\$862

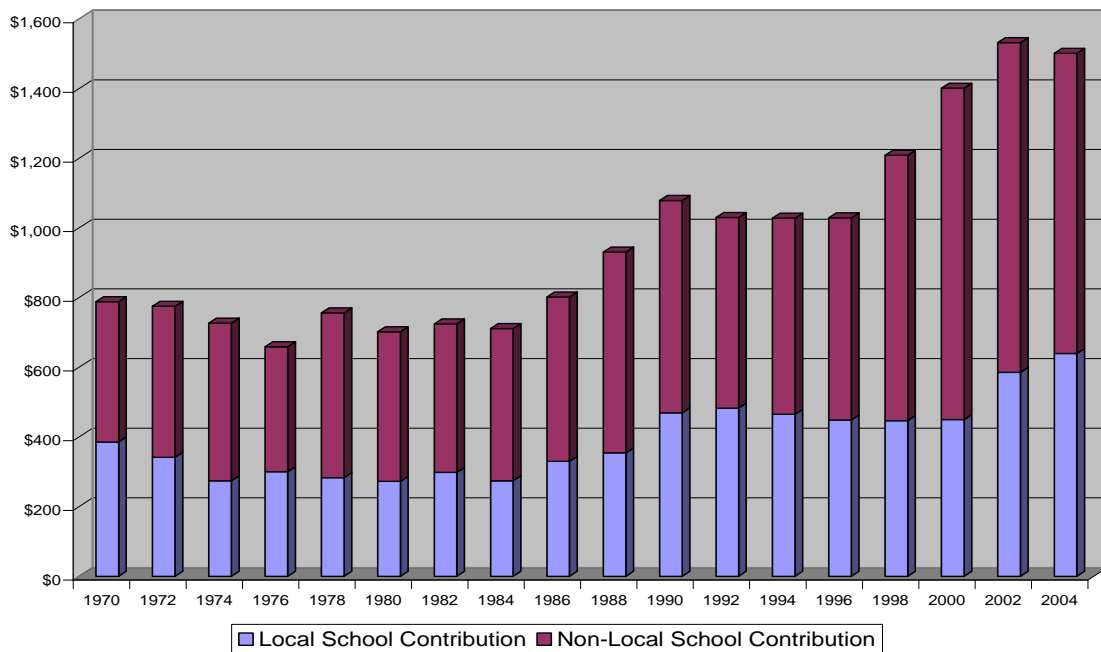
<sup>6</sup> Data unavailable or incomplete for blank years



South Berwick's estimated share of non-local school dollars somewhat follows the stepped pattern that is evident for town's local contribution, although the trend up to 1986 is more flat. A pronounced upswing in state/federal funds occurs in the late 1990s/early 2000s, but, since hitting a peak in 2001, the trend has been downward.

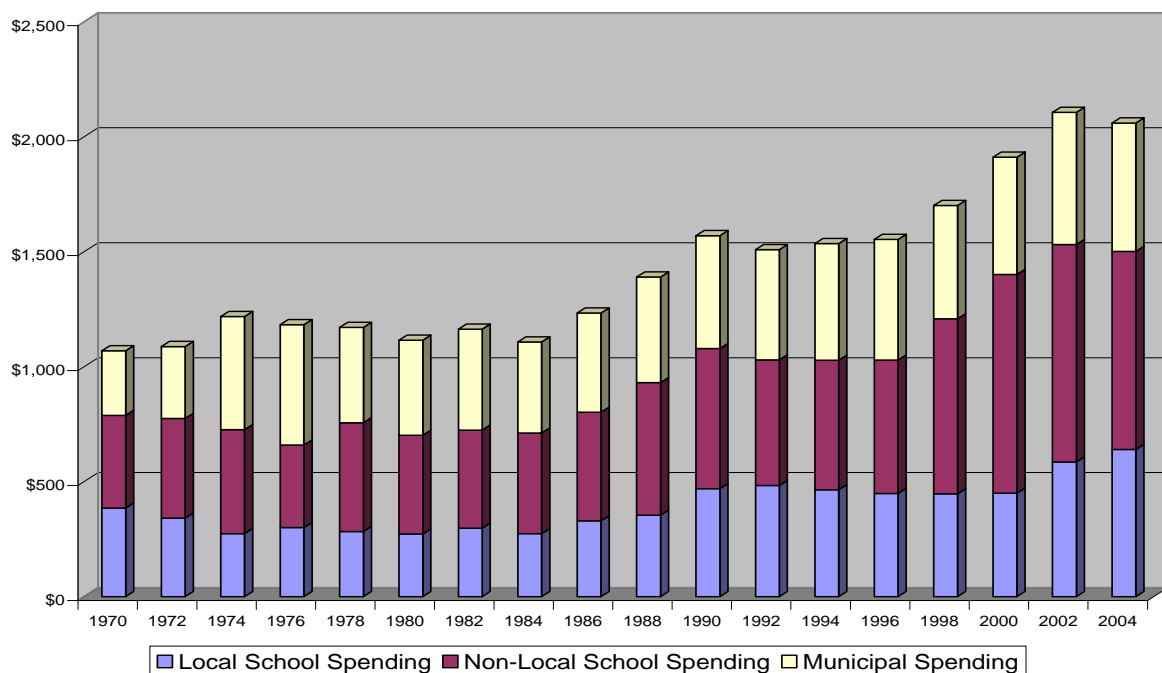
Combining South Berwick's local education contribution and the estimated state/local share yields the following totals for the 1980-2000 period, using 2-year averages.

	Local Share/PC	Estimated State/Federal Share/PC	Estimated Total School Spending/PC
1970	\$385	\$403	\$788
1972	\$342	\$433	\$775
1974	\$274	\$452	\$726
1976	\$300	\$359	\$659
1978	\$283	\$473	\$756
1980	\$273	\$429	\$702
1982	\$298	\$426	\$724
1984	\$274	\$437	\$711
1986	\$330	\$472	\$802
1988	\$354	\$577	\$931
1990	\$470	\$609	\$1,079
1992	\$483	\$547	\$1,030
1994	\$465	\$563	\$1,028
1996	\$449	\$580	\$1,029
1998	\$447	\$762	\$1,209
2000	\$450	\$951	\$1,401
2002	\$586	\$946	\$1,532
2004	\$640	\$862	\$1,501



These per capita school funding levels are generally in line with the total educational expenditures of the non-SAD study towns. South Berwick's average funding in both the early 1970s and early 2000s are quite similar to Durham's and Raymond, although their spending trends between these years vary considerably.

While the profiles for South Berwick local and non-local school funding per capita are similar, the more pronounced stepped pattern of the former results in a an overall pattern that conforms more to this model. These differences are not enough to change the pattern of total expenditures, if municipal expenditures numbers are factored in, as seen in the following graph:



The addition of estimated non-local educational spending does have the effect of moderating the effect of fluctuations in municipal spending, helping to accentuate a plateau in the first half of the study period. This addition, however, does not significantly alter the overall trend. The total expenditure curve continues in a similar stepped pattern, and the upswing point remains at 1986.

Securing the necessary information to conduct this type of analysis and assuring its accuracy is relatively time-intensive. Before the methodology is pursued for other study towns, more consideration may need to be paid to the best way of accessing this data in timely manner, and, ultimately, whether the yielded information and analysis is valuable enough to warrant this effort. Retrieving the older information for South Berwick required significant assistance from district staff. A second SAD office visited had considerably less complete expenditure records. While some of this information might also be accessed by examining audited financial reports available at the State Archives, the researcher found this to be an extremely slow process. Gathering information and performing analysis at 5-year increments may be a more realistic approach. Analysis of trends at that level of analysis may be adequate to determine whether factoring in state and federal funding has a marked effect on the shape of a community's total per capita expenditure profile or the timing of its upswing point.

## APPENDIX C: PRELIMINARY EXPENDITURE DATA FOR PRESQUE ISLE

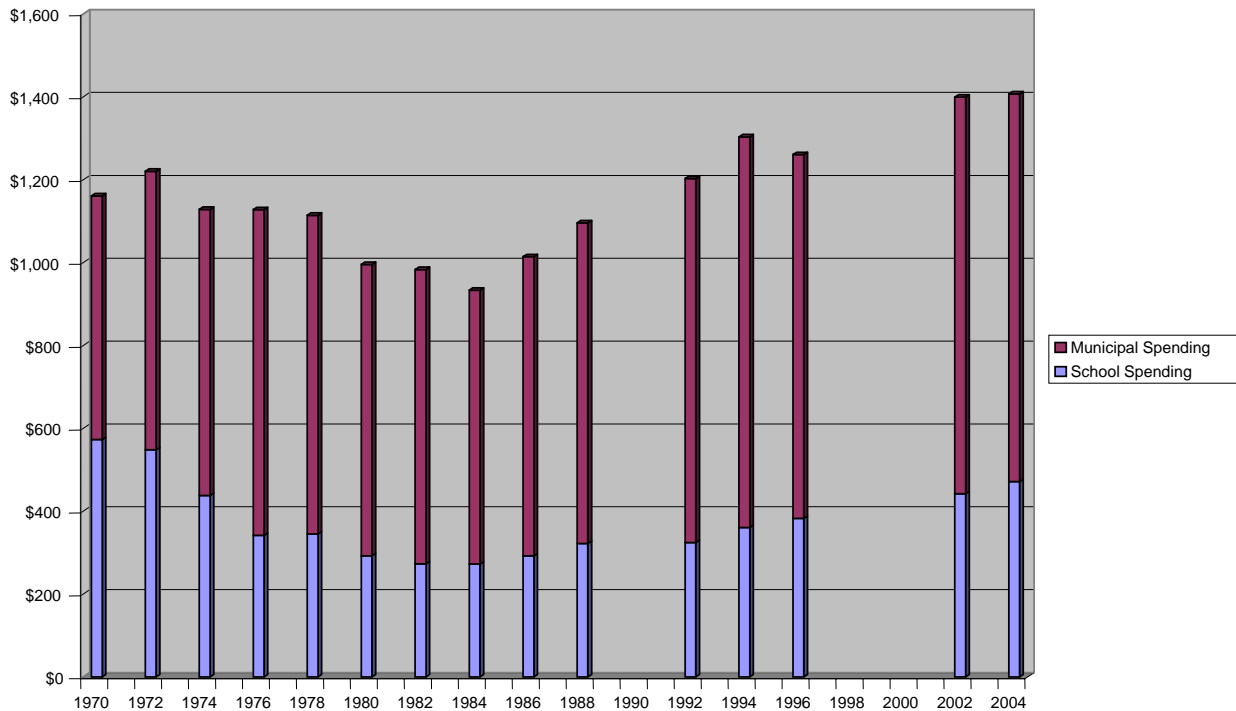
Preliminary data collection and analysis were conducted for the city of Presque Isle to provide perspective on how trends for a service center with a declining population might compare with those of suburbanizing communities.

While gaps exist for some of the study years, the information is complete enough to indicate that the per capita expenditure curve for the city is generally U-shaped. At the beginning of the study per capita expenditure levels were just under \$1,200 at the start of the study period, falling to a low point of about \$950 in 1984, prior to an upswing that has continued to the present time.

### Expenditure Summary (in 2004 dollars)

	Total Expenditures	Percentage increase since 1972	Estimated Population	Total Expenditures Per Capita	School Expenditures Per Capita	Municipal Expenditures Per Capita
1972	\$13,436,748		11,396	\$1,294	\$564	\$672
1982	\$11,411,030	-15%	11,048	\$961	\$277	\$711
1992	\$12,462,824	-7%	10,342	\$1,227	\$331	\$878
2002	\$13,017,660	-3%	9,303	\$1,399	\$442	\$957

### Total Expenditures Per Capita in 2004 dollars



What is most significant about these findings is that the U-shaped pattern occurs for of a city with a declining population and declining expenditures in real dollars. Although actual expenditures have risen slightly since 1984, the dominant factor in the rise of per capita spending since that time has been a declining population. This underscores the plight of many service center communities which find themselves having to maintain current service levels and infrastructure, even as their populations stagnate or decline. While a community's per capita expenditure profile may be revealing, it is important to view it in the context of its overall changes in actual expenditures and population. Whereas an upswing in per capita spending for a growing suburbanizing community may indicate that the capacity of existing infrastructure and services have been exceeded, upturns in expenditures pc for service center communities may indicate underutilized capacity in the face of declining or stagnant growth.