ROUTE 6A JURISDICTION EVALUATION

Prepared For

Cape Cod Commission

Prepared in cooperation with the Massachusetts Highway Department and the U.S. Department of Transportation - Federal Highway Administration

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August, 1995

1.0 INTRODUCTION

Route 6A between Bourne and Orleans on Cape Cod is a state highway under the jurisdiction of the Massachusetts Highway Department (MHD). It carries traffic volumes ranging from 8,000 to 24,000 vehicles on a summer day through a historic district whose ambiance is an important resource valued by residents and visitors alike. This dual function often creates conflicts between the state highway officials responsible for the safety, efficiency, and convenience of travel, and local residents and business people who seek both to preserve and enhance the ambiance and roadside environment, and to maintain the prosperity of abutting businesses.

From time to time these conflicts result in the suggestion that Route 6A be turned back to the host communities, who could then decide locally what treatment should be given to Route 6A. Most recently and significantly, consideration of such a reversion was suggested in the report prepared for the Cape Cod Commission entitled Old King's Highway/Route 6A Corridor Management Plan. The report noted that there were pros and cons to such a change in jurisdiction that should be evaluated. This present study was commissioned by the Commission utilizing Scenic Byways Program funding in response to that recommendation.

1.1 Purpose

The purpose of this present study and report is to identify and evaluate in appropriate detail the advantages and disadvantages of state versus local jurisdiction of Route 6A, given its unique status as both an important artery for travel purposes and its value as a historic and aesthetic resource. Among the elements to be analyzed are: relative cost factors, including both reconstruction and maintenance; resource protection; coordination; liability; and impacts on the road function.

1.2 Scope

1.2.1 Geographic Scope

The geographic scope of the jurisdiction evaluation is the entire length of Massachusetts state Route 6A between the village of Sagamore in the Town of Bourne, and the junction with Route 6 at the rotary in the Town of Orleans. This scope includes all of the sections of Route 6A lying in the Towns of Sandwich, Barnstable, Dennis, Yarmouth, and Brewster, and excludes portions of highway designated as Route 6A north of the Orleans rotary. The section of Route 6A in the Town of Barnstable which is currently under local jurisdiction, between Old Jail Lane and Hyannis Road, is also excluded.

1.2.2 Functional Scope

As established at the meeting on June 28, the scope of this evaluation is restricted to functions which would under current regulations devolve from the Commonwealth of Massachusetts to individual towns should the jurisdiction be transferred. Functions which are already under local jurisdiction are excluded, except to the extent possible economies or diseconomies of scale may be identified as an advantage or disadvantage. Table 1 shows a structured listing of highway-related functions, and identifies those which would devolve, and are therefore included in this evaluation.

1.2.3 Level of Analysis

Costs of highway construction, operation, and maintenance are treated in a quantitative fashion in this analysis. Data have been assembled from individual towns, but because of differing accounting and reporting practices, and the time constraints of this study, the cost results are handled on a generic basis based on average or typical values from the seven towns in the corridor.

Considerations other than cost, including traffic considerations, are treated in a descriptive or qualitative fashion.

1.3 Methodology

In planning and carrying out this study, a number of sources were used for data and information that would be relevant to the evaluation of jurisdiction. An initial meeting was held at the Cape Cod Commission offices and attended by the Commission's Transportation Program Manager and Traffic Engineer as well as members of the DeLeuw, Cather project team. A number of documents were discussed and made available to the project team, including the Old King's Highway/Route 6A Corridor Management Plan, various statutes and regulations pertaining to planning, design and operations along the highway, and the annual reports of towns which Route 6A traverses.

Subsequently, a number of state and local officials were interviewed to assist the project team in identifying and understanding the issues germaine to the study, as well as obtain data necessary to carry out the study. Town officials contacted included a town administrator and town planner as well as public works officials. Local representatives of the Old King's Highway Regional Historic Committee (herein, OKHC) were interviewed to better understand some of the non-transportation issues involved, and officials of the Massachusetts Highway Department (MHD) were sought out to develop an understanding of Route 6A issues from the present owning and operating viewpoint. MHD officials were also most helpful in supplying detailed information relative to Route 6A maintenance, providing information relative to the various state-aid programs and formulas, and discussing policy issues, notably the Department's policy on using alternative designs on scenic highways.

Table 1. Route 6A Highway Functions and Responsible Jurisdictions

FUNCTION	ACTIVITY	BASIS	STATE	TOWN	OTHER
Appearance	mow grass*	Annual	X		
Appearance	pick up litter*	Annual	X		
Clearance	animal control*	Annual	X		
Clearance	tree/brush work (line of sight)*	Annual	X		
Clearance	tree/brush work (utility-related)	Annual			X
Clearance	resolve encroachments*	Annual	X		
Clearance	sweep road surface*	Annual	X		
Control	maintain pavement markings*	Annual	X		
Control	maintain signs*	Annual	X		
Control	maintain traffic signals*	Annual	X		
Control	operate traffic signals*	Annual	X		
Control	maintain curbs and berms*	Annual	X		
Drainage	install catch basins*	Annual	X		
Drainage	clean catch basins*	Annual	X		
Drainage	clean drainage pipes*	Annual	X		
Guardrails	inspect guardrails*	Annual	X		
Guardrails	repair guardrails*	Periodic	X		
Improvements	install signs*	Periodic	X		
Improvements	install traffic signals*	Periodic	X		
Improvements	install pavement markings*	Periodic	X		
Improvements	install sidewalks*	Periodic	X		
Improvements	install curbs and berms*	Periodic	X		
Improvements	install street lights	Periodic		X	
Lighting	repair street lights	Annual		X	
Lighting	operate street lights	Annual		X	
Planning	permit curb cuts*	Annual	X		
Planning	permit street scape changes	Annual		X	
Planning	permit improvements*	Annual	X		
Sidewalks	repair sidewalks	Periodic		X	
Snow & Ice	plowing*	Annual	X		
Snow & Ice	salting/sanding*	Annual	X		
Snow & Ice	plowing sidewalks	Annual		X	
Structures	inspect structures*	Periodic	X		
Structures	paint structures*	Periodic	X		
Structures	repair structures*	Periodic	X		
Surface	crack filling*	Annual	X		
Surface	spot patching (potholes)*	Annual	X		
Surface	chip (stone) sealing*	Annual	X		
Surface	asphalt resurfacing*	Periodic	X		

* Functions with an asterisk would revert to the town if jurisdiction were transferred.

2.0 THE COST OF OWNING AND OPERATING ROUTE 6A

An important issue to be addressed in considering a possible turn back of Route 6A to municipal jurisdiction is the net financial impact: what would be the change in income (in the form of state aid for highways) relative to the increased cost of design, construction and maintenance that would be incurred by the towns?

The total cost of a highway section includes both annual maintenance expenses and periodic reconstruction or rehabilitation. The division into annual and periodic by function is shown in Table 1.

There are a number of factors which complicate the effort to identify the total capital costs (reconstruction and rehabilitation) connected with ownership of Route 6A. A detailed analysis of the present facility's condition and its future repair and rehabilitation needs is beyond the scope of this study. In all probability, MHD would undertake and fund an extensive improvement as part of an agreement with the towns to assume jurisdiction and responsibility for Route 6A. However, the nature and extent of any such plan would have to be agreed upon by each municipality and MHD. It is not possible at this juncture to predict what the plan might look like, and therefore what the experience in the first ten or so years after reversion would look like. However, in the longer term, the approximate amount of repair and rehabilitation costs can be estimated.

As far as roadway construction for future improvements, the highway would presumably still be eligible for funding under the federal Surface Transportation Program (STP). Thus, an indeterminate amount of funding from state and federal sources would be available for future improvements to Route 6A in the event the towns assumed jurisdiction.

At the outset of this study, the "life cycle cost" analysis approach was suggested as a desirable method of evaluating the costs associated with owning and operating Route 6A. However, the use of life cycle costs relative to transportation infrastructure is technically problematic. One difficulty lies in determining the true value of the total investment, since right-of-way value generally appreciates while other elements are depreciating. Life cycle costs are also very dependent on the discount rate used in the analysis, and there is no consensus as to what rate should be used at this time. Finally, the existing roadway condition varies along the 32-plus miles of Route 6A through seven towns, making such a rigorous analysis impractical. Consequently, a life cycle analysis can obscure the relevant elements of comparison. Therefore, the conventional or complete life cycle approach was not employed for this study; estimated annual costs have been used instead.

2.1 Annual Maintenance Cost

The annual recurring costs of roadway maintenance would be transferred to the towns from the MHD if Route 6A reverted to local jurisdiction. To offset this, certain state aid to the towns would increase. The net financial effect on the towns can be estimated as the difference between these amounts based on historic experience.

2.1.1 Typical Municipal Experience

The level of data available in town reports permits the development of separate cost estimating formulas for both *general maintenance* and *ice and snow removal*. General maintenance includes all annual activities denoted in Table 1 except the planning function and snow and ice removal. For a typical town in the corridor, general maintenance costs can be estimated in 1995 dollars as:

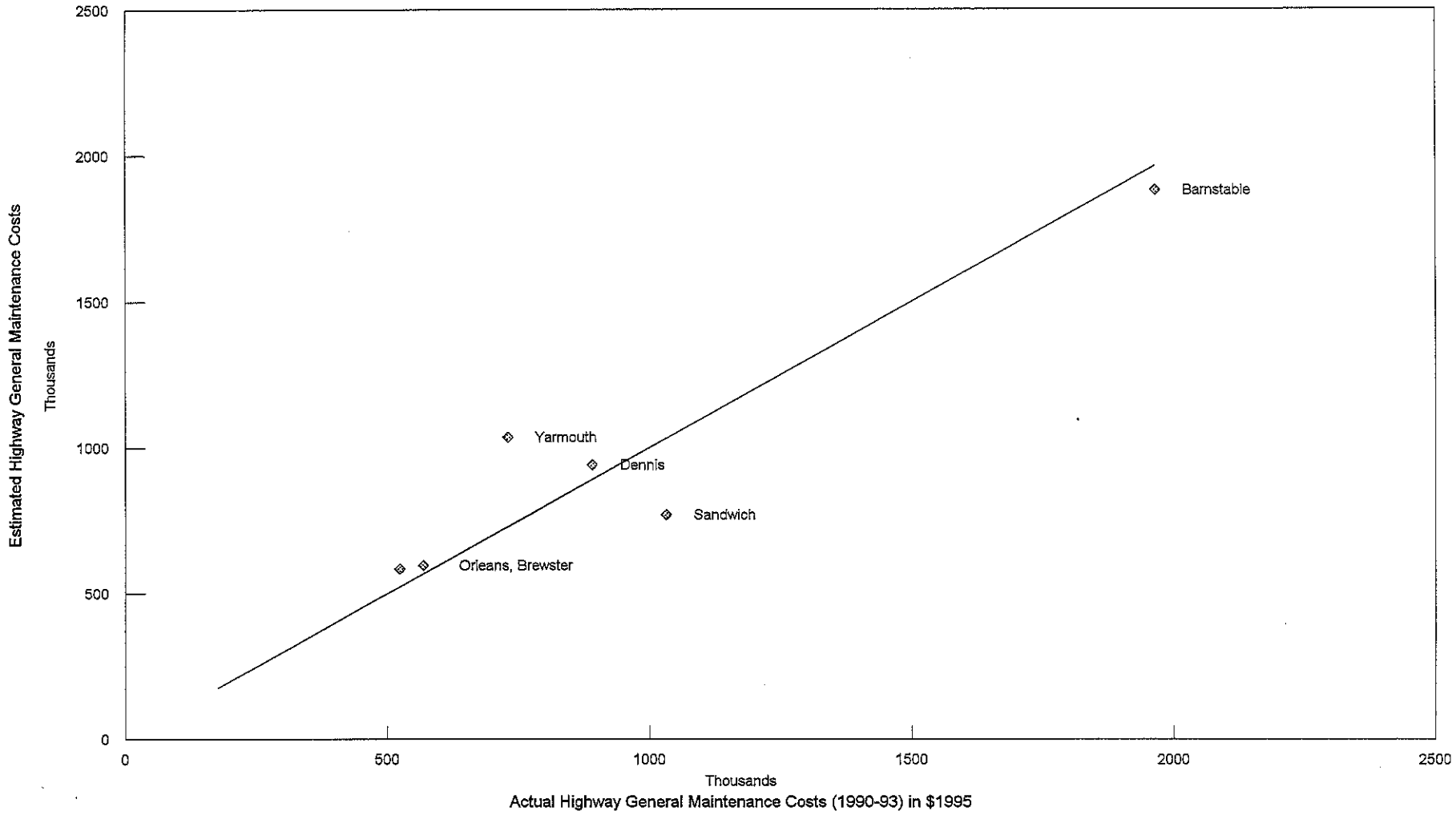
$$C_{gm} = \$379{,}993 + \$4{,}303\ LM$$

where LM is the number of miles of local (accepted) roadway in the town. Figure 1 shows how this estimating equation compares to the actual average 1995 dollar costs for the towns along the corridor for the years 1990-93. Table 2 shows the total and per-mile values for each town; Bourne was excluded because reliable data could not be easily extracted directly from the Town's annual reports. For the total six-town group, the average general maintenance cost in 1995 dollars per highway mile was $6,899.

Table 2. General Highway Maintenance Costs (1990-93 Average in 1995 Dollars)

TOWN	MILES	COST	COST PER MILE
Barnstable	349	$1,964,026	$5,635
Bourne	97	N/A	N/A
Brewster	52	$523,000	$10,058
Dennis	130	$890,741	$6,831
Orleans	51	$568,428	$11,229
Sandwich	91	$1,031,279	$11,400
Yarmouth	153	$728,271	$4,782
TOTAL (excluding Bourne)	827	$5,853,668	$6,899

Figure 1. Estimated Vs. Actual Municipal Highway General Maintenance Expenditures



Y = $379,993 + $4,303 * (local roadway miles)
reliable data for Bourne not available

The corresponding estimating equation for ice and snow removal is:

$$C_{i\&s} = \$17{,}458 + \$624\ (LM + UM)$$

where LM are the local miles, and UM are unaccepted miles of road in the town (for which the town does provide snow removal). Figure 2 shows how this equation compares to actual experience, and Table 3 shows the actual and per-mile costs For the seven-town group, the average cost per mile for ice and snow removal in 1995 dollars was $716.

Table 3. Ice and Snow Removal Costs
(1990-93 Averages in 1995 Dollars)

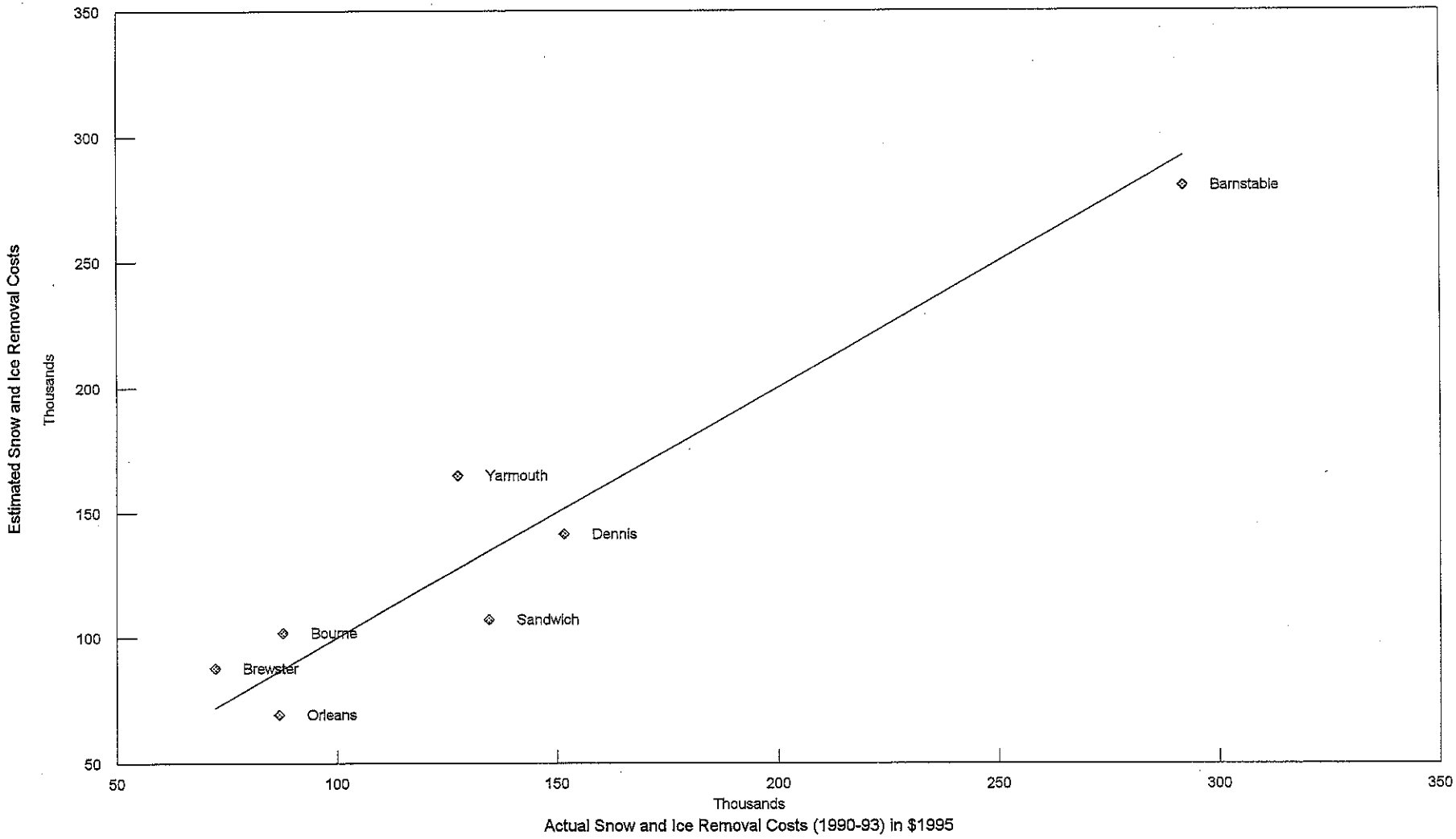
TOWN	MILES OF ROAD	COST	COST PER MILE
Barnstable	431	$291,949	$694
Bourne	136	$ 87,709	$649
Brewster	117	$ 72,246	$640
Dennis	198	$151,542	$764
Orleans	84	$ 86,705	$1,041
Sandwich	145	$134,507	$936
Yarmouth	236	$127,507	$540
TOTAL	1,337	$952,165	$716

2.1.2 MHD District 5 Experience

Table 4 shows the estimated 1995 general maintenance expenditures by MHD's District 5 for Route 6A in six of the seven towns. The data for Bourne could not be broken out from data for Route 6, so are listed as not available (N/A). These costs average $5,739 per highway mile, somewhat lower than the average municipal expense in Table 2, but higher than the $4,303-per-mile slope of the estimating equation. Possible reasons for differences in one direction or the other include:

- differences in traffic signal density; many town roads are less densely signaled than Route 6A (and the costs of electricity is not insignificant);
- Route 6A costs do not include sidewalk maintenance; most town costs do;
- The MHD costs do not include fully allocated costs of District 5 or statewide management, whereas town budgets usually include the management of the Department of Public Works.

Figure 2. Estimated Vs. Actual Municipal Snow and Ice Removal Expenditures



Y = $17,458 + $624 * (local + unaccepted roadway miles)

Table 4. Massachusetts Highway Department Estimate of Route 6A Cost Per Town - 1995

Cost Category	Orleans	Brewster	Dennis	Yarmouth	Barnstable	Sandwich	Totals
Tree trimming	$330	$1,540	$880	$770	$1,540	$1,540	$6,600
Tree removal	$150	$600	$450	$450	$600	$600	$2,850
Sweeping	$400	$1,200	$700	$700	$1,200	$1,200	$5,400
Grass mowing	$2,500	$9,000	$5,000	$5,000	$9,000	$9,000	$39,500
Drainage structure rebuilt	$1,400	$1,400	$1,400	$2,100	$2,100	$2,100	$10,500
Cleaning drainage pipes	$300	$780	$600	$1,560	$600	$600	$4,440
Cleaning drainage pipes	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$6,000
Dense graded crushed stone	$1,200	$4,000	$2,400	$2,400	$4,000	$4,000	$18,000
Bit. Conc. Mix - Patching	$1,500	$3,600	$2,100	$2,100	$6,000	$6,000	$21,300
Signs	$1,000	$5,000	$3,000	$2,500	$4,000	$4,000	$19,500
Reflectorized lines	$1,500	$6,500	$3,800	$3,400	$5,000	$5,000	$25,200
Traffic signals (electricity)	$9,000	$1,000	$3,000	$2,000	$2,000	$3,000	$20,000
Traffic signals (maintenance)	$1,311	$413	$413	$826	$826	$413	$4,202
Miscellaneous	$409	$967	$257	$194	$134	$547	$2,508
Total $	$22,000	$37,000	$25,000	$25,000	$38,000	$39,000	$186,000
Route 6A Miles	1.62	7.79	4.26	3.72	7.54	7.48	32.41
Total $ / Mile 1995	$13,580	$4,750	$5,869	$6,720	$5,040	$5,214	$5,739

Without additional research beyond the scope of this study, it is not possible to fully account for the differences between MHD and town per mile costs for general maintenance activities. Nevertheless, it is possible to conclude that the additional general maintenance cost which would be incurred by the towns to maintain the sections of Route 6A should not be strikingly different from the values in Table 4. An increase of $645 per mile to the MHD costs is suggested to account for additional town management oversight to replace MHD management; this is based on 15 percent of the estimated marginal cost of general maintenance to a town (i.e., $4,303 per mile, the slope of the estimating equation, which represents the cost of one additional, or marginal, mile assuming a maintenance department already exists).

The MHD was not able to supply a breakout of snow and ice removal costs for Route 6A. These activities are handled out of three maintenance depots and current records and controls do not permit such a breakout. Because MHD, like the towns, relies heavily on private contractors for snow removal, and because the range in cost experience among the towns is relatively small, it can be assumed that the differential between the town's costs for snow and ice removal, and those of MHD, is small. Therefore, the average cost data developed for town snow and ice removal operations was used to develop the total cost of state operations.

2.2 Reconstruction and Rehabilitation Cost

Table 5 shows the statewide ratios of capital outlay to annual maintenance expenditures for recent years and classifications of roadway. Based on these figures, approximate estimates of long-term average capital outlay were made for each town based on the mileage of Route 6A transferred, and the average per-mile cost for maintenance ($5,739, from Table 4). For all towns except Orleans, an average ratio of 1.25 times annual maintenance was used, i.e. $7,174 per mile per year. For Orleans, where much of the mileage is urbanized, a ratio of 1.75 was used, yielding $10,043 per mile per year.

Table 5. Highway Capital Outlay to Maintenance Ratios - Massachusetts

Rural Principal Arterials					
Year	Capital Outlay (Thousands)[1]	Maintenance (Thousands)[1]	Capital to Maintenance Ratio	Adjustment Factor[2]	Adjusted Ratio
1989	$1,822	$5,633	.323	.600	.194
1990	$9,172	$5,943	1.543	.575	.887
1991	$25,006	$5,523	4.528	.600	2.718
1992	$20,382	$47,277	.431	.611	.264
				Average	1.016
Rural Minor Arterials					
Year	Capital Outlay (Thousands)[1]	Maintenance (Thousands)[1]	Capital to Maintenance Ratio	Adjustment Factor[2]	Adjusted Ratio
1989	$16,231	$7,802	2.080	.600	1.248
1990	$6,850	$8,232	.832	.575	.479
1991	$13,175	$7,649	1.722	.600	1.034
1992	$24,778	$5,519	4.490	.611	2.745
				Average	1.376
Small Urban Principal Arterials					
Year	Capital Outlay (Thousands)[1]	Maintenance (Thousands)[1]	Capital to Maintenance Ratio	Adjustment Factor[2]	Adjusted Ratio
1989	$2,356	$1,795	1.313	.500	.656
1990	$1,769	$1,893	.934	.541	.505
1991	$12,336	$1,760	7.009	.468	3.284
1992	$9,957	$1,758	5.664	.595	3.367
				Average	1.875

[1] current dollars

[2] Adjustment to include only 3R, bridge work, and 50% of safety and other work

2.3 State Aid For Highways

The Commonwealth of Massachusetts provides financial aid to municipalities for local highways in a variety of forms. However, there are two elements of particular relevance to this study, because they are based in part on the amount of local road mileage which would increase if Route 6A were to be turned back to the host towns. Thus, state aid for highways would increase; the question is, how would that increase compare with the added costs associated with owning and operating Route 6A?

The first source of state aid is Chapter 81 funding for local highway maintenance, which was established in 1980 and directs that 15 percent of the state's gas tax revenue be given to municipalities for highway use; half of these monies are distributed under Chapter 81, Section 31. The amount of funds sent to each community under Chapter 81 is based on an equalizing formula of local road miles, the number of car registrations, and equalizing valuation (of real property) figures.

Projects eligible for funding under Section 31 of Chapter 81 including constructing, maintaining and policing public ways with limitations spelled out by state regulation. In general, these monies can be used for most direct highway maintenance and construction purposes, and serve to partially offset costs incurred in operating and maintaining town roads.

Table 6 shows the current (1995) "cherry sheet" (Chapter 81) disbursements to the towns, and DeLeuw, Cather's estimate of how this amount would change if the designated State mileage for Route 6A in each town were transferred.

Table 6. Estimated Changes in Chapter 81 Payments to Towns on Transfer of Route 6A

TOWN	Local Mileage 1994	Local Mileage 1994 (if 6A added)	Actual Chapter 81 Apportionment 1994	Estimated Chapter 81 Apportionment 1994 (including 6A)	Increase Due to 6A Transfer 1994
Barnstable	348.56	356.10	$290,107	$296,751	$6,644
Bourne	96.68	97.31	$125,136	$125,691	$555
Brewster	47.58	55.37	$34,777	$41,641	$6,864
Dennis	130.40	134.66	$49,563	$53,317	$3,754
Sandwich	53.21	60.69	$72,494	$79,085	$6,591
Orleans	50.62	52.24	$9,134	$10,561	$1,427
Yarmouth	152.28	156.00	$141,057	$144,335	$3,278

The second source of state aid is the so-called Chapter 90 Program, authorized under Chapter 90 of the General Laws of the Commonwealth. Section 34 authorizes the Commonwealth to allocate funds to municipalities through the annual state budget as well as periodic transportation bond issues. The purpose of this program is to assist municipalities in the construction, reconstruction and improvement of roads under local jurisdiction. Eligible work includes preliminary engineering, right-of-way acquisition, landscaping, traffic control devices, reconstruction; resurfacing is eligible if the roadway project is at least 500 feet long, and the re-surfacing is at least 3/4 inch thick. Projects must be approved by the MHD before expenditures are made.

Chapter 90 monies are disbursed to municipalities under two different distribution formulas, both of which have local (i.e., non-state highway) road mileage as a factor. Two-thirds of the money is disbursed under a formula based 50 percent on road mileage, 25 percent on population, and 25 percent on number of persons employed in the town; the remaining one-third is based 75 percent on road mileage, 12.5 percent on population, and 12.5 percent on number of persons employed.

It is worth noting that MHD standards must be adhered to on Chapter 90 projects unless an exception is approved by MHD.

Table 7 shows the current Chapter 90 disbursements to the towns, and an estimate of the changes resulting from a transfer of Route 6A. The amounts are very similar to the expected costs, which is consistent with a program intended to substantially underwrite such costs.

Table 7. Estimated Changes in Chapter 90 Payments to Towns on Transfer of Route 6A

TOWN	Local Mileage 1994	Local Mileage 1994 (including 6A)	Actual Chapter 90 Apportioned Amount 1994-95*	Estimated Chapter 90 Amount 1994-95* (including 6A)	Net Increase Due to 6A Transfer 1994**
Barnstable	348.56	356.10	$3,182,457	$3,258,427	$37,985
Bourne	96.68	97.31	$919,729	$925,427	$2,849
Brewster	47.58	55.37	$435,909	$506,452	$35,272
Dennis	130.40	134.66	$1,074,155	$1,113,044	$19,445
Sandwich	53.21	60.69	$831,477	$899,308	$33,915
Orleans	50.62	52.24	$471,457	$490,449	$9,496
Yarmouth	152.28	156.00	$1,374,155	$1,407,618	$16,731

* Values are for two years

** 50% of two year net increase

2.4 Net Financial Impact of Transfer of Jurisdiction

Table 8 shows the estimated net financial effect to the towns of the transfer of Route 6A. The "cherry sheet" increase is estimated to cover only a sixth of the annual generalized maintenance cost of the transferred mileage, while Chapter 90 will return about two-thirds of what would be spent on reconstruction, rehabilitation, and related periodic expenses in the long term.

Table 8. Estimated Net Financial Impact of Transfer of Route 6A

TOWN	Increased General Maintenance Cost (with snow & ice)	Chapter 81 Increase in funding	Long-Term "4R" Annualized Cost	Chapter 90 Increase in funding	Net Annual Impact ($1995)
Barnstable	$48,058	$6,644	$54,092	$37,985	($57,521)
Bourne	$4,809	$555	$4,520	$2,849	($5,925)
Brewster	$47,011	$6,864	$56,029	$35,272	($60,904)
Dennis	$31,003	$3,754	$30,561	$19,445	($38,365)
Sandwich	$51,612	$6,591	$53,662	$33,915	($64,768)
Orleans	$24,561	$1,427	$16,270	$9,496	($29,908)
Yarmouth	$29,408	$3,278	$26,887	$16,731	($36,286)
TOTAL	$234,923	$29,113	$242,021	$155,693	($292,138)

3.0 RESOURCE AND FUNCTION PROTECTION

3.1 Transportation Function Protection

For state highway officials charged with maintaining a modern highway facility, Route 6A presents a continuing challenge. Its winding alignment, narrow pavement, lack of shoulders, drainage deficiencies, blind intersections and lack of buffer between the roadway and roadside obstacles seem to cry out for roadway and roadside reconstruction to bring the facility up to current state highway design standards. Yet the institutional obstacles to such reconstruction are great; the scenic highway status of Route 6A means that approval is required from an outside agency for many measures for which the MHD generally has full discretionary authority. This agency is the Old King's Highway Regional Historic District Commission (OKHC herein). There is concern within MHD that the Department has responsibility for, and possibly in the eyes of a court, concomitant liability for roadway deficiencies in design (such as substandard curves and restricted sight distances) without a corresponding real ability to correct those deficiencies. There is a sense on MHD's part that many residents and local government agencies seem to

prefer retention of scenic features and other values to reconstruction or improvements that would make the roadway easier, more convenient, and probably safer to drive.

Beyond the need to accommodate motor vehicle travel, there is increasing demand for bicycle travel along Route 6A. However, given the generally narrow pavement and lack of shoulders, the highway is not a satisfactory conduit for the mixed accommodation of motor vehicles and bicycles. Therefore, there are growing pressures for additional pavement -- either a widened roadway or an adjacent bicycle path -- to provide for safer, more comfortable, bicycle travel. This constitutes a further challenge for state highway officials because every recent proposal to add pavement along Route 6A has been opposed by parties concerned with preserving the corridor's scenic appearance.

The protection of the transportation function includes both the maintenance of safety, and the provision of adequate capacity (i.e., efficiency). The safety and efficiency of a roadway depends in part on the standards to which it is designed and maintained, while the capacity depends largely on its physical configuration.

3.1.1 Design Standards

Highway design standards affect safety, and as such cannot be divorced from their possible impact on the legal liability of the highway owner and operator. However, there are instances where a design standard can be modified to provide a more pleasing, or less intrusive, appearance.

Highway guard rail is one area for which local representatives have suggested a modified standard, one that would be more in keeping with the rustic nature of the local environment. In the past, MHD officials did not approve guard rail that differed from the Department's normal design standard. However, within the past few years, the Federal Highway Administration has adopted design alternatives that may be approved within scenic areas.

Discussions with MHD officials indicate that the Department will, on a case by case basis, approve such different standards for roadside appurtenances where there is an acceptable design and the application is appropriate. As pointed out in the Corridor Management Plan, other states, including neighboring Rhode Island and Connecticut, have adopted regulations for such standards for designated scenic roads. Given the extent of such mileage in Massachusetts, it is likely that Massachusetts will follow suit at some point. Such statewide standards would ultimately reduce some of the conflicts which have occurred, should the highway remain under state jurisdiction.

The matter of liability in the event of an accident causing serious injury or death is an important issue that must be considered by the individual towns in deciding whether or not it would be beneficial to assume responsibility for Route 6A. The principle of sovereign immunity has been substantially weakened or eliminated by courts; therefore, municipalities in Massachusetts and

elsewhere are no longer exempt from legal action an aggrieved party might take following an accident in which design, construction or maintenance defects are judged to be a factor.

An exhaustive treatment of this complex legal issue is well beyond the scope of this present study. Nevertheless, some basic information would be helpful to the official charged with weighing the advantages and disadvantages of a possible change in jurisdiction for Route 6A.

In general, a highway agency is protected from legal action in the event of damages arising from an act that is discretionary or judgmental in nature. However, the definition of what activities or omissions fall into this category is as yet incomplete. For example, while a Minnesota court has held that a city's decision not to upgrade a traffic control device was discretionary and hence, protected from liability, a New York court held that the discretionary exemption does not apply to a situation where it can be shown that decision-making was grounded on inadequate study or lacked a reasonable basis.

In what may be a particularly germane area of decision-making for this present report, courts have rendered differing opinions in instances where sub-standard or non-existent guard rail was at issue. A Florida court held that the decision as to whether a guard rail should be installed on an existing road was a "classic example of the type of planning level policy decisions which remain in the protected sphere of sovereign immunity". However, a New York appeals court held that highways must be periodically reviewed to determine if they are safe in actual operation, and if not, the responsible agency has a duty to take corrective action.

In Massachusetts, the so-called "pot-hole law" limits liability of cities and towns as well as the state to $5,000 in cases involving roadway defects. However, each session of the General Court considers legislation to increase or eliminate this restriction, so the exposure of a highway-owning agency in such instances could well increase in the future.

It is evident that at least some level of liability would follow the roadway's transfer to the towns, with the likelihood of increase exposure to financial losses from claims awarded by the courts.

3.1.2 Physical Configuration

Old King's Highway is a two-lane highway which operates at or over capacity at many locations during the summer months, particularly on weekends. Much of the congestion is related to turning movements, especially into and out of both major traffic generators and numerous roadside businesses. The major physical improvements typically advanced for a rural arterial, widening and/or reconstruction of significant portions of the route, do not conform to Corridor-wide recommendations made by the Corridor Management Plan, which include: speed limit reduction, access management, turn restrictions, encouragement of alternative modes of transportation, and improvements to highways other than Route 6A. Because the average trip length is relatively short compared to the length of the corridor, and because the Mid-Cape Highway (Route 6) effectively serves longer-distance traffic, proposals for improvement are

appropriate at a more site- or Town-specific level, and tend to relate to access management rather than through capacity or speed improvements.

The Management Plan envisions the transfer of jurisdiction to the towns as a vehicle for advancing "access management policies that are consistent with the character and needs of each town and all of Route 6A". In practice, this amounts to investing the towns with the powers to:

- reduce speed limits - MHD approval would still be required for this action after transfer to the towns;
- establish direction of travel (i.e., introduce one-way restrictions) - MHD approval for some changes (i.e., adjacent to town lines) would still be required after transfer;
- permit or prohibit on-street parking - the degree of towns control would assume upon transfer; however it would become necessary to enact regulations on a default "parking permitted" basis, rather than permit parking on the default "no parking" basis of state highways.
- permit, construct, and mark turning lanes - the towns would acquire this power on transfer;
- prohibit turning movements at intersections - the towns would acquire this power on transfer;
- permit curb cuts - the towns would acquire this power on transfer;
- where necessary, close existing access points - the towns would acquire this power on transfer.

Brewster's Route 6A Corridor Overlay Protection District may be regarded as a precursor to such powers; according to the Management Plan, it "requires developers to share driveways and parking areas where feasible, find ways to reduce traffic in and out of business, [and] place parking and loading areas to the rear of buildings". These powers are very limited compared to those that would devolve upon transfer. Brewster has also made an attempt to pursue the authority to grant curb cut permits from the state legislature, but has been unsuccessful; this suggests that it is unlikely that other towns would be successful in this endeavor.

3.2 Natural and Historic Resource Protection

Protection for the natural and historic resources in and along the Route 6A corridor is currently provided by a number of state, local and regional agencies which exercise varying degrees of permitting authority under several statutes and local by-laws.

Following is a description of some of the most important regulations which help preserve the natural and historic environment along Route 6A at present:

Environmental Regulations:

- Wetlands Protection Act (Chapter 131, Section 40): Regulates work within a coastal or inland wetlands resource area, and any work within a 100 foot buffer zone that is likely to affect a wetland. Administered by each town's conservation commission through a permit process which entails a public hearing.

- Massachusetts Endangered Species Act (Chapter 131A): Protects areas that have been designated by the state as being significant habitat areas for endangered and threatened species.

- Local Wetlands By-Laws: All seven towns involved in this study have individual wetlands by-laws. In Barnstable and Brewster, wetlands by-laws also provide protection of historical and archeological resources.

Historic Controls:

- Old Kings Highway Regional Historic District Regulations: Local OKHC reviews threats to historic structures along Route 6A in all towns except Bourne. In addition a certificate of appropriateness or exemption is needed for construction of signs, walls, fences, decks and stone walls.

- National and State Register of Historic Places: Listing provides a certain amount of protection for nearby listed properties when federally- and state-funded projects are proposed.

- Massachusetts Scenic Road Designation: Provides protection for existing stone walls and trees through OKHC or planning board review. If, as is considered likely, Massachusetts moves in the direction of neighboring states in establishing standards for scenic highways, the degree of protection afforded by this designation could improve. It is not clear whether this scenic designation, and any protection it confers, would continue in effect after transfer of Route 6A to the towns; this determination would require a legal opinion beyond the scope of this study.

- Preservation restrictions and burial grounds: Provide protection and require permits for alterations through the Massachusetts Historical Commission.

Scenic Controls:

- Major Scenic Views: Generally afforded protection as an environmental or historical issue.

- Detailed scenic resources and tree canopy: OKHC and local planning board consent required before any repair, maintenance, reconstruction or paving of Route 6A that involves demolition of stone walls or trees. OKHC in each community must also approve alteration or removal of scenic elements such as flagpoles, hedges, gates and fences.

- Signs: Signs along Route 6A are regulated by the local OKHC as well as each town's by-laws. OKHC members assert that the Committees' authority extends to official highway guide and warning sign, but it is not clear that state highway officials concur with this interpretation. The matter has not been raised as a specific issue.

3.2.1. Issues of Local Concern

Although local control in matters involving environmental, historic and scenic issues is extensive, as the foregoing outline indicates, there are areas where local officials feel increased local authority or decision-making power would be desirable.

One such area involves new tree plantings, which some local officials feel should be given a higher priority in the competition for Route 6A funding. Typically, local public works budgets on the Cape do provide for new plantings on a regular basis along local streets and highways while that is not the norm for MHD, particularly in the present time of budget austerity.

A second area where local officials would place greater priority is that of drainage -- both maintenance and improvements. One town official expressed concern over what he described as MHD's practice of allowing highway runoff directly into marshes; he also indicated his department -- and perhaps those in other towns -- devoted more attention to the maintenance of drainage structures, etc. He felt that under town control, projects whose sole purpose is improvement of the existing drainage system would be promoted, whereas MHD projects generally address a more comprehensive list of highway and infrastructure deficiencies at one time.

Town officials report that there is some interest on the part of local residents in measures to improve the appearance of Route 6A, such as installation of brick sidewalks and burial of overhead wires, neither of which are likely to occur under state auspices. As a practical consideration, however, local officials acknowledge that local jurisdiction would not likely to result in implementation of either concept in the foreseeable future due to cost and other considerations.

There is also the matter of access for the handicapped under the Americans with Disabilities Act (ADA). Towns are generally responsible for sidewalks along state highways although MHD may construct a new sidewalk or improve an existing one. One local public works official expressed concern that the town may be required at some future date to make sidewalk improvements even though the highway is under state jurisdiction.

4.0 COORDINATION AND IMPLEMENTATION

One significant disadvantage of devolution from state jurisdiction is the potential loss of coordination among the towns, and the lack of a forum for establishing and enforcing various standards. Existing legislation enables the creation of certain instrumentalities that might perform this function, while jurisdictions outside Massachusetts present examples of others. This sections discusses the requirements, and the advantages and disadvantages of alternative forms of coordination.

4.1 Functional Coordination Requirements

The major coordination requirements among the towns upon transfer of Route 6A would be a subset of the devolved functions from Table 1. Some of these functions require coordination above and beyond that currently conducted by the OKHC and the Cape Cod Commission. These include:

1. Maintain/install pavement markings, e.g., coordinate treatments on either side of municipal boundaries.

2. Maintain/install signs, e.g., assure that signage on roadways on the outbound approaches to a town line properly reflect downstream conditions.

3. Maintain/install curbs and berms, e.g., assure that inappropriate discontinuities are not introduced at town lines.

4. Snow removal, e.g., assure that turning plow trucks at town lines do not leave major discontinuities in the width of plowed highway, or snowpiles on the traveled way.

5. Permitting of roadway improvements, which would largely consist of physical configuration changes which would become town responsibilities upon transfer: establishing direction of travel within (but not up to) town limits; on-street parking management; turn lanes; turn prohibitions; and curb cut control.

6. Planning, e.g., coordinating the overall transportation function, including continuity of functional classification, bicycle, and transit provisions.

7. Permitting streetscape changes, specifically any powers regarding sidewalks, street furniture, non-regulatory signage, and other roadway appurtenances now lying with the state that might become a local responsibility if the highway would no longer carry a scenic state highway designation.

The first four of the above requirements have at least some precedent with the local roads which cross town lines. The issues are essentially *bilateral* (i.e., between two parties), and can be viewed as extensions to the ways adjoining towns have traditionally worked with each other. They are also largely "technical", and are seldom likely to be of interest beyond the public works departments of the towns concerned. Nevertheless, because of the importance of Route 6A as a major traffic carrier, there would be a value in formalizing these understandings where a written agreement is not already in place.

The issue of permitting largely local improvements will often involve only one town, but there will be numerous requirements for bilateral coordination. To the extent that improvements in one town may relieve or create congestion in an adjoining town, these issues become overall (i.e., at least bilateral) transportation function issues.

The issue of coordinating overall transportation function extends well beyond the vicinity of town lines. Between Yarmouthport, Dennis, and Brewster, for example, Route 6A has a significant through traffic function, and significant "local" changes could have more widespread effects. On the segment through Bourne and Sandwich, summer traffic backups from the Sagamore Bridge affect both towns, and impact the traffic level of service in Barnstable; a coordinated approach to mitigating the effects of both of these situations would require *multilateral* effort.

Coordination of streetscape changes is not of necessity a multilateral requirement, but several factors point to its being appropriately handled on that basis: the fact that Route 6A is currently designated a *state* scenic road, with MHD approval required at least nominally for any streetscape changes; the existence of the OKHC; and the CCC's undertaking the present study.

4.2 Fiscal Coordination

Without explicit agreements to a different effect, the net financial impact on each town would be borne by that town. Towns such as Orleans, with a relatively high traffic signal density, for example, would incur higher costs for electricity that previously were distributed on a wider basis. Any equalization of per-mile costs among the towns would require an agreement for determination of the equalization, and an instrumentality for executing it. Given that there is little likelihood of significant economies of scale, and given the relatively small amounts of Route 6A expenditures as shown in Table 8 compared to each town's total annual highway expenditures, this is not a significant consideration for most towns, and therefore the need for such equalization does not appear great.

4.3 Instrumentalities for Coordination

Existing arrangements on Cape Cod and elsewhere present a number of models for both bilateral and multilateral coordination. These include:

1. The Cape Cod Commission (CCC), on which all the Cape's towns are represented, is the regional planning agency. The Commission's powers are derived from state legislation, and it is financed by both municipal assessments and state funding for specific projects . The CCC can designate Districts of Critical Planning Concern (DCPCs) for specific purposes, as has occurred on Martha's Vineyard. The CCC also has an established regional planning function, and has developed its own functional classification of the Cape's highway system.

2. Regional school districts (e.g., Nauset, composed of Wellfleet, Brewster, Orleans, and Eastham), which are formed under bi- or multilateral arrangements between or among towns to operate shared public schools. In some such districts in Massachusetts, true regionalization (i.e., the formation of a regional legal entity) has occurred, but the Nauset district has chosen to rely on cooperation among the constituent municipalities for operation of their middle and high schools. Expenses are shared by the four towns based on school enrollment, with the budget having to be approved by all four town Meetings.

3. The Old King's Highway Regional Historic District Commission (OKHC). This body is charged with setting general guidelines for, and coordinating the activities of, local Kings Highway (or Route 6A) Commissions in each town of a District which includes all seven towns except Bourne. It regulations provide for prior review of all new construction, alteration, or demolition of historic structures, including roadside trees, stone walls, and commercial and residential signage. Towns may exempt specific areas from these regulations, and in practice, the local committees carry out the approvals.

4. Autonomous commissions or authorities. In the Canadian province of Ontario, two parkway commissions (Thousand Islands and Niagara) have extensive jurisdiction over many miles of two-lane road, including many abutting private properties and attractions of nationwide merit.

Given the existence of multilateral coordination requirements, it is reasonable to stipulate that an appropriate coordinating instrumentality should involve at least all seven towns. Certain of the above forms exhibit features making them more or less attractive than others:

1. The CCC already exists, could treat multilateral issues which might extend beyond the seven towns, and is already active in transportation planning. A DCPC for Old King's Highway could accomplish the transportation functions in coordination with OKHC.

2. An *ad hoc* regional district could be formed to make certain classes of town action subject to wider agreement. This would leave open the possibility of unilateral withdrawal from the arrangement in the event of disagreements. True regionalization would require development of a

new organization, with appropriate enabling legislation and either levying authority or some dedicated source of funds.

3. The OKHC presently relies on town-level committees that make decisions that have relatively localized impact. There does not seem to be a strong corridor-wide focus for standards or guidelines, but this could be remedied, as recommended by the Corridor Management Plan.

4. Autonomous authorities or commissions are most successful when they have a clearly defined mission and the powers to carry it out. Imposition of the level of power and control characteristic of the Ontario commissions is not likely to be practical in a U.S. context, with both a much narrower existing right-of-way and relatively limited public ownership of abutting land.

With appropriate preparatory work, however, it is likely that a successful framework for coordination could be crafted, most likely under the auspices of existing entities. This should be done by determining the best "home" for individual functions, rather than necessarily assuming they must all be co-located. The functions requiring the most attention will be overall transportation functions coordination, including a process for bilateral issues.

5.0 CONCLUSIONS

This study has defined or quantified a number of factors which bear in a significant way upon the relative merits of the host towns assuming responsibility for Route 6A between Bourne and the junction with Route 6 in Orleans. These can be summarized as follows:

- Turnback of Route 6A from the Massachusetts Highway Department to the towns through which it traverses will result in increased annual costs to each town ranging from approximately $6,000 in Bourne to some $65,000 in Sandwich, with a total combined added cost to Cape municipalities of approximately $290,000.

- The highway function of Route 6A is not likely to suffer from a municipal assumption of Route 6A jurisdiction, because local public works officials can be expected to maintain the safety and capacity standards currently in effect. However, local officials would be likely to direct more money and effort towards addressing drainage problems of local concern.

- Scenic considerations along the Route 6A corridor would probably receive higher priority under local control. As the highway owner/proponent of improvement projects along Route 6A, local public works officials and town engineers would likely be more aggressive in promoting signing aesthetics and alternate designs for highway appurtenances such as steel-backed, wood beam guard rail.

- It is unlikely that there would be any significant changes in the protection of historic and environmental features along the Route 6A corridor in the event of turnback to local jurisdiction.

- Measures would have to be implemented to assure an adequate level of coordination if the single agency control MHD exercises over Route 6A were to be replaced with municipal control of seven municipalities. Multilateral coordination will be required for some functions.

- Town officials have mixed emotions regarding a possible takeover of Route 6A. Those with budget responsibilities are generally less than enthusiastic about such a change, because they fear that added funding would not be provided to cover the new Route 6A responsibilities. Other local officials with responsibilities in the environmental, scenic or historic arena, appear to support a municipal takeover, but do recognize that a town takeover without off-setting benefits would not be supported by the town at-large.

- It would appear that any turnback from MHD of Route 6A would require agreement by and with all seven towns. It is unlikely that such agreement would be obtained from all seven towns given the cost figures developed herein. However, the benefits to MHD of turning back Route 6A might warrant the Commonwealth's reaching a more generous financial arrangement with the host towns than present procedures provide, and could make such a turnback beneficial for all concerned agencies.

ACKNOWLEDGMENTS

De Leuw, Cather's project staff would like to acknowledge the assistance of state, county and local officials in carrying out this study, and express our appreciation for this assistance. In particular, we would like to recognize and thank the following:

Cape Cod Commission:

Robert Mumford, Transportation Program Manager
Lev Malakhoff, Traffic Engineer

Massachusetts Highway Department:

Bernard McCourt, District 5 Highway Administrator
Harold Wood, District 5 Maintenance Engineer
Eileen Thompson, Capital Expenditure and Programming Office
Mario Tocci, Highway Design Office
David Phaneuf, Highway Design Division

Local officials:

Warren Rutherford, Town Administrator, Town of Barnstable
Thomas Mullen, Director of Public Works, Town of Barnstable
Robert Burgmann, Town Engineer, Town of Barnstable
Robert Schernig, Town Planner, Town of Barnstable
Allan Tkaczyk, Superintendent of Public Works, Town of Brewster
Patrick Ellis, Director of Public Works, Town of Sandwich
Joseph Rodericks, Town Engineer, Town of Dennis
George Allaire, Director of Public Works, Town of Yarmouth
Peter Freeman, Old Kings Highway Historic District Committee, Town of Barnstable
David Moeller, Old Kings Highway Historic District Committee, Town of Yarmouth