

**Sagamore Rotary
Bourne, MA**

**Social and Economic Effects of the
Refined Preferred Alternative
Compared to No-build**

Prepared for

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EXECUTIVE SUMMARY

Approach to the Analysis

FXM Associates has assessed the potential social and economic effects associated with construction and operation of the Refined Preferred Alternative, compared to No-build, using information from a variety of sources: engineering design and traffic data; interviews with directly and indirectly affected businesses and property owners; secondary source data compiled from the U.S. Census and other reports; records of the Town of Bourne; information and opinions of local property owners and business establishments; discussions with area real estate brokers, town officials, and local planning and development professionals; business surveys from prior work of the consultant; and published research in the literature on the effects of similar transportation projects. While all sources used by FXM are deemed to be reliable, no single source of information was relied upon to form the independent analyses and findings presented in the report.

Summary Findings

Effects on the regional economy: The Refined Preferred Alternative will reduce travel times within the Town of Bourne and surrounding communities, as well as to and from Cape Cod, by an estimated 1.75 million vehicle hours per year compared to No-build. Savings in trucking/distribution costs as a consequence of reduced travel times are conservatively estimated at \$6.8 million per year. Savings in shipping costs enable businesses to lower product and service costs to consumers and other businesses, and may enable them to effectively compete in a broader geographic area than before the accessibility improvements brought on by the transportation project. Annual travel time savings overall attributable to the project have been estimated, for both commercial and personal users, at \$23.3 million. When compared to the estimated \$2.6 million per year in debt amortization and maintenance costs for a \$30 million project, the annual economic benefit/cost ratio for all users is over 8/1.

Effects on the local area economy: Within approximately two minutes' drive time of the rotary are 208 businesses employing more than 1,800 people and generating over \$200 million annually in sales. Within a five-minute (uncongested) drive time of the rotary, there are 379 businesses, with over 3,200 employees and \$350 million in annual sales. The vast majority of these are small businesses engaged in wholesale/retail trade and services, serving the local and regional market.

Except for the five businesses located within the immediate rotary area, few of the businesses within two- and five-minute drive times derive any benefit from passersby traffic at the Sagamore Rotary. Analysis of traffic data and travel time estimates indicates that these businesses, and the employees who work there, will realize substantial travel time benefits during morning and evening commuting periods for most of the year. These savings will lower costs of receiving and distributing goods and will increase the effective labor market area from which employees may be drawn. Retailers, who now lose local sales during peak summer and most weekend periods due to congestion on all roadways connecting to the rotary, are likely to increase their penetration of the local resident market. Wholesalers will improve their competitive market position due to time and cost savings compared to the No-build condition, and shoppers within this resident market will be able to reach local retailers more reliably and safely throughout the year.

Effects on businesses in the immediate vicinity of the roadway: The five businesses in this immediate area now account for about 8% of the employees and sales of all businesses (16% of retailers only) within a 2-minute (uncongested) drive of the Rotary, and 4% of the employees and sales of all businesses (12% of retailers only) within a 5-minute (uncongested) drive of the Rotary. As a group, they

report that they derive roughly half of their annual sales from the passersby market and half from the resident market. FXM examined changes in key variables of access, accessibility (travel times), and visibility associated with the Refined Preferred Alternative compared to No-build:

- Within the *resident market*, the analysis suggests that, for the five Rotary area businesses overall, their current share of 8% of resident market sales potential could increase to 10-11% of resident market spending. Improved accessibility (see page 14 table for travel time comparisons) will enable them to capture additional purchases now made by local area residents outside the area (leakage).
- For the *passersby market*, accessibility gains coupled with improved safety and visibility (from proposed signage) are also likely to yield sales gains for each of the establishments. However, because some business owners strongly believe that the changes in access will adversely affect them, the overall evaluation factors in a loss of passersby market sales to certain businesses during the peak summer season. Even this limiting assumption does not change the finding that substantial sales gains are likely to be realized for businesses in the rotary area as a consequence of the Refined Preferred Alternative.
- The results of the analysis of *resident plus passersby* markets indicate that the five businesses within the immediate vicinity of the Rotary will, as a group, be likely to realize annual sales increases of at least 19-22% overall. All of the businesses are likely to realize a net gain in annual sales.
- Analysis of the overall retail spending done by households living within 5-minutes of the rotary, and sales of all retailers within the same area, indicates a substantial leakage of retail sales potential that could be captured by existing or new businesses. With improved and reliable accessibility to this underserved local market, prospects for development of a supermarket, or specialty retailing outlet, on the 10-acres of vacant, commercially zoned land within the immediate vicinity of the rotary are favorable.

Effects on residents: Several residential neighborhoods will be affected by the proposed project. The majority of these households own and occupy single-family units and depend on their automobiles for transportation to work. Median household incomes fall into the \$60-65,000 range. The households within a two-minute drive time generate about \$47 million per year in retail sales (all locations); within a five-minute drive time, their spending potential is about \$146 million annually.

There are 3,000 persons living in 1,100 households within a 2-minute drive time of the Rotary. For these residents, accessibility to destinations within and outside the project area will improve substantially. The improved mobility will, over time, raise the value of their property. There are approximately 9,500 persons living in 3,600 households within a 5-minute drive of the rotary. The mobility of these residents will improve in similar ways to that expected for closer-in residents, and their accessibility to many destinations within and outside the project area will improve substantially.

The proposed reconstruction would displace four households. Tenants occupy three of the houses; one is owner occupied. A search of real estate ads and interviews with local real estate brokers reveals that it will be difficult to find comparable housing that meets the likely needs of relocated households, particularly the renters. In the event that the maximum regular relocation payments payable under the terms of the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended, are insufficient to compensate for the differences in rents and acquisition prices, last resort replacement housing may need to be considered.

SOCIAL AND ECONOMIC ENVIRONMENT

Social and Economic Overview

The population of the Town of Bourne was 18,721 persons in 2000, according to the U.S. Census Bureau, up from 16,064 in 1990. This average annual growth rate of about 1.7% is about seven times larger than the average annual growth rate for the State of Massachusetts. The Bourne planning department expects population growth to continue at a similar rate for the next decade, while state growth is expected to remain at about 0.25% annually. Twenty-two per cent of Bourne residents are under 18, and 18% are over 65. There are 7,439 households, 72% occupying units they own and 28% renting. Twenty-three per cent of the total housing units in the town are vacant, but of the total, 19.3% are seasonal. The vacancy rate for owner-occupied units is 1.2% and for rental units, 3.9%

There are no identified social groups in the project area. 2000 Census data for the town show that the population is 95% white. No specific information on the race or ethnicity of the residents potentially displaced or otherwise affected has as yet been collected but neither is there any information to suggest that the affected residents are atypical of the town as a whole.

There are three residential neighborhoods in the immediate area of the proposed project. Two are now physically separated by Route 3 and the rotary. The third is an established neighborhood of modest single-family homes located northeast of the rotary. Also in the area are a park and ride lot and a commuter bus terminal. In addition, the Sagamore fire station and the Cape Cod Canal Region Chamber of Commerce visitor center are located on the rotary. Pedestrians from the neighborhoods now cross Route 3 through holes in the fences to reach the bus terminal. Bicyclists from points west of Route 3 must negotiate the rotary in order to reach the commercial area, State Park and canal trails

According to the Mass. Division of Employment and Training, in 2001 Bourne had 7,134 people employed in 654 business establishments, broken down as follows: 34% are in the trades, 21% in government, 21% in service industries, and the balance in construction, manufacturing, transportation/communication, and finance. Overall, the town has a diverse economic base, with no employment category dominating all others. In 2001, the unemployment rate was 3.2%.

Approximately 46% of the Town of Bourne's revenue is derived from property taxes, 87.8% of which are from residential property, 11.2% from commercial property, and another 1% from open or industrial land.

The Board of Appeals recently approved a 121-lot subdivision in Bournedale. The only commercial property available for development in the immediate area of the rotary is a ten acre parcel behind the Texaco Station. Members of the Sorrenti family own this parcel, as well as the two gas stations and other commercial properties at or near the rotary. Large parcels along the east end of the Scenic Highway, zoned for residential, were recently proposed for subdivision into 100 to 200 house lots. Town officials believed that the cost to the town of servicing this housing

would have exceeded the tax revenue generated from them. To preclude this development the town purchased the property for open space through its recently formed Land Bank Committee.

Businesses within the Project Area

In order to develop a more complete picture of the businesses likely to be affected by the proposed rotary reconstruction and of how they compare to the local economy, census data for all the businesses within two-, and five-minute (uncongested) drive times of the rotary were analyzed. The two-minute drive time defines an area from the rotary east on Meetinghouse Lane to Scusset Beach Road, a little less than a mile north on Rte 3, west on Rte 6 about half a mile, and south on Rte 6 to approximately Woodland Road. The five-minute drive time would extend out Meetinghouse Lane all the way to the ocean, north on Rte 3 and State Road about 3.5 miles, west on Rte 6 about 2.5 miles, and south on Rte 6 to near Discovery Hill Road. It is important to note that the definitions of these areas are very approximate and are intended simply to indicate the likely areas from which local customers of affected businesses are or could be drawn, as well as businesses for which the Sagamore Rotary is a principal means of access to the regional roadway system.

Within approximately two minutes of the rotary area are 208 businesses employing over 1,800 people and generating over \$200 million annually in sales. The vast majority of these are small (under 20 employees) businesses serving the local market. Most employees are in wholesale/retail trades, services, and construction sectors.¹ The following table summarizes the information for the major industry sectors within a two-minute drive time of the rotary.

| Within a 2 minute drive time of the rotary: | | | |
|--|---------------------------------|----------------------------|--------------------------------|
| Major Industry Sector | Number of Establishments | Number of Employees | Business Sales (\$ mil) |
| Construction | 18 | 266 | \$ 48 |
| Manufacturing | 12 | 62 | \$ 6 |
| Transport./communic./util. | 8 | 85 | \$ 10 |
| Wholesale/retail trade | 79 | 819 | \$ 93 |
| Finance/insur./real est. | 15 | 45 | \$ 8 |
| Services | 66 | 507 | \$ 45 |
| TOTAL | 198 | 1784 | \$210 mil |

Source: 2003 Claritas Site Reports and FXM Associates

The picture is similar for the larger area within a five-minute drive of the rotary: sales volumes and employment are largest for wholesale/retail trade, services and construction.

¹ 2003 Claritas Inc., Site Reports

| Within a 5-minute drive time of the rotary: | | | |
|--|---------------------------------|----------------------------|--------------------------------|
| Major Industry Sector | Number of Establishments | Number of Employees | Business Sales (\$ mil) |
| Construction | 42 | 382 | \$ 73 |
| Manufacturing | 20 | 227 | \$ 17 |
| Transport./communic./util. | 15 | 140 | \$ 15 |
| Wholesale/retail trade | 125 | 1134 | \$ 129 |
| Finance/insur./real est. | 43 | 247 | \$ 29 |
| Services | 134 | 1106 | \$ 89 |
| TOTAL | 379 | 3236 | \$ 352 mil |

Source: 2003 Claritas Site Reports and FXM Associates

Survey of Selected Businesses

As part of its economic assessment of the proposed changes to the Sagamore Bridge approach, FXM Associates interviewed 24 local businesses in four categories: businesses in the southeast quadrant of the immediate project area (four of five businesses were interviewed); businesses located less than one-quarter mile beyond the immediate project area but affected by rotary traffic (11 interviewed); businesses at the Bourne rotary (six); and selected businesses in a nearby community comparable to the affected businesses in the overall project area (3). FXM Associates contacted all businesses in the first group because these businesses would be most directly affected by changes in physical access. A sample of businesses in the other three categories was interviewed in order to get a more complete understanding of how current traffic patterns affect the existing business environment. This information provides a baseline against which to estimate potential impacts of the proposed improvement.

The total assessed value of the Bourne businesses surveyed is approximately \$15 to \$20 million, or 10% to 15% of the town’s commercial tax base. This represents 1% to 2% of the total tax base, including residential. Total assessed value of the business property located in the southeast quadrant of the immediate project area is approximately \$4.4 million. This quadrant also encompasses 20.8 acres of privately-owned vacant land.

In total, more than 400 (full-time equivalent) employees are employed in the 15 affected businesses surveyed within the immediate project area (less than one quarter mile from the rotary) or approximately 6% of Bourne’s 2001 employment base. Estimated gross sales of these establishments total approximately \$35 million. The survey results represent about a third of all businesses within one-quarter mile of the rotary.

Of the project area businesses surveyed, four are restaurants, two are gas stations, five are engaged in selling retail goods, one is a professional service firm, one is a bus company, and one a bottling plant/distributor. Information obtained from individual businesses is confidential and is

used to aid the assessment of potential economic effects discussed in the social and economic consequences section.

Residences within the Project Area

Because the proposed reconstruction will also affect the accessibility of several residential neighborhoods within the project area, Census data (updated to 2002 estimates) were examined to determine relevant household characteristics.

Within the two-minute (uncongested) drive time, there are almost 3,000 residents who live in an estimated 1,113 households. Seventy-two per cent of households occupy a home they own; 28% are renters. The median value of owner-occupied units is estimated at \$246,629 (2002), and 64% of those are single unit detached dwellings. Based on these figures, the estimated total value of all residential units within a two-minute drive time (uncongested) from the rotary would be \$245 million. The estimated average household income for all residents is about \$60,000; the median is slightly higher at \$61,000. In this area less than two minutes from the rotary, residents spend about \$47 million per year at retail establishments (all locations, within and outside the project area).

The majority of those employed work in managerial/professional, technical/sales/administrative support, and service jobs, mainly in the private sector. Ninety-five per cent of households have at least one vehicle. The overwhelming majority, 88%, depend on the automobile for transportation to work, with most of those driving alone. Approximately 42% live within 15 minutes of their places of employment. Just over 30% travel 30 minutes or more to work.

In the area that is a five-minute drive time (uncongested) from the rotary, there are approximately 9,500 residents in 3,573 households. Eighty per cent own their homes; 20% rent. The estimated median value of owner-occupied units is slightly lower in the overall five-minute drive time area than in the two-minute area: \$237,489, yielding a total estimated property value of these properties of about \$680 million and a total residential property value estimated at \$786 million. The estimated average household income, however, is higher: \$70,874; the median is \$64,278. These households annually generate about \$146 million in retail sales (all locations).

Occupations of residents who live in the larger five-minute drive time area cluster in the same three categories as those in the two-minute area. Almost 97% of households own at least one vehicle, and 93% either drive alone to work or carpool. About 28% live within 15 minutes of their jobs; an additional 29% travel between 15 and 29 minutes to work. Forty-three percent travel 30 minutes or more to work.

Retail sales potential for the area defined by 10 minutes' drive time was also examined, since interviews with certain businesses indicated that they drew customers from this area as well. Within that area are an estimated 12,437 households whose average income is estimated at \$70,453. Their estimated median income is \$61,721. These households spend an estimated \$506 million annually at retail establishments (all locations).

The table below summarizes selected characteristics of project area households and housing.

| Characteristics of Project Area Residents Within Drive Times of Rotary (uncongested) | | |
|---|------------------|------------------|
| | 2-minutes | 5-minutes |
| Population | 2,915 | 9,543 |
| Households | | |
| 2002 | 1,113 | 3,573 |
| Projected 2007 | 1,230 | 3,913 |
| Average household income (est.) | \$59,888 | \$70,874 |
| Annual retail spending potential | \$47 million | \$146 million |
| Dwelling units | 1,207 | 4,279 |
| Owner-occupied units | | |
| Number | 803 | 2,858 |
| Percent | 72% | 80% |
| Renter-occupied units | | |
| Number | 310 | 714 |
| Percent | 28% | 20% |
| Median owner-occupied home value | \$246,629 | \$237,489 |
| Estimated total residential property value | \$245 million | \$786 million |

Source: 2003 Claritas, Inc. and FXM Associates

SOCIAL AND ECONOMIC CONSEQUENCES

Approach and Methodology

The assessment of potential social and economic effects associated with construction and operation of the Refined Preferred Alternative, compared to No-build, is based on the following sources of information:

- Engineering design and traffic data, including travel time estimates, supplied by other project team members;
- Interviews with businesses and property owners in the immediate vicinity of the Sagamore Rotary, plus others in the immediate vicinity of the Bourne Bridge;
- Secondary source data compiled from U.S. Census and other reports on population, household income and spending, dwelling units and home values; and number and type of current businesses, employment, and business sales;
- Records of the Town of Bourne Assessor's Office;
- Information and opinions provided in project team meetings by local property owners and business establishments;
- Discussions with area real estate brokers, town officials, and local planning and economic development professionals; and
- Review of proprietary data and business surveys from prior work of the consultant, as well as published research, case studies, and guidelines in the literature on economic effects of transportation projects.

In the analysis of economic effects attributable to proposed transportation changes, the terms access, accessibility, visibility, resident and passerby markets are used to mean the following:

Access refers to the physical connection of active land uses and vacant land to the local and regional roadway system. In the proposed project, the elimination of the rotary itself, construction of new ramping, and changes to Church Lane, Meetinghouse Lane, and State Road will physically alter current access to residences and businesses within the immediate area of the existing rotary. Changes in access attributable to the Refined Preferred Alternative can affect the actual and perceived convenience and safety of travel to and from residences and businesses within the immediate vicinity of the existing rotary.

Accessibility refers to the time it takes for autos and trucks to travel between locations to and from the immediate project area and locations outside the immediate project area. The Refined Preferred Alternative will result in changes in travel times, compared to No-build, from areas north, south, east, and west of the existing rotary to residences and businesses throughout the project area. Changes in accessibility will affect the attractiveness of existing land uses and vacant land to residential and commercial markets, influencing sales potential for businesses and property values for residences as well as businesses.

Visibility, in the specific context of this project, refers to the ability of passersby to see purchasing or other opportunities in time to safely exit the primary roadway.

Resident Market refers to persons living within a certain distance or travel time of an existing or proposed commercial business or business area. Resident markets are typically defined, in large part, by the amount of time it takes to travel from a residence to a business or business area. Convenience stores, fast food restaurants, and some gas stations typically define their primary market area as residents within a five-minute drive or less. Supermarket-type food stores and sit-down restaurants may extend their primary resident market area to persons within a 10-minute drive or longer, while regional shopping centers and large destination retailers would capture purchases from residents within a 15-minute drive time or longer.

Passersby Market refers to tourist and other travelers now passing through the rotary area on their way to destinations outside the local area. This is often referred to as the “impulse” market, but the term “impulse” is somewhat misleading since the passersby market includes travelers and potential customers who are familiar with the local businesses from having stopped there in the past.

The sections which follow summarize the analyses and findings of work accomplished to assess Effects on the Regional Economy; Effects on the Local Area Economy; Effects on Businesses within the Immediate Vicinity of the Rotary; and Effects on Local Area Residents.

Effects on the Regional Economy

Compared to No-build, the Refined Preferred Alternative will influence regional economic performance by reducing travel times to and from Cape Cod and within the Town of Bourne and surrounding communities. Users of Route 3, Route 6, and other roadways connecting to or near the Sagamore Rotary will benefit from reduced travel times, whether passing through the local project area or destined to residences or businesses within the local area. Auto travelers include commuters, shoppers, vacationers, businesspersons, and others engaged in personal leisure and other trips. Trucks carrying goods and packages to and from destinations within the region are the other primary user group.

The value of time to various users of the roadway system has been studied from many perspectives. For goods movement, the average value per hour cost incurred by commercial carriers is the typical measure of economic effects. This hourly rate is multiplied by the total hours of time savings to commercial vehicles calculated for the proposed action. The result is an estimate of distribution cost savings within the regional economy. Savings in shipping costs enable businesses to lower product and service costs to consumers and other businesses, and may enable them to effectively compete in a broader geographic area than before the accessibility improvement brought on by the transportation project. The value of time to personal and other auto users is typically estimated as the average wage rate paid to all labor in the region, reduced by some factor to account for the fact that most people do not value their leisure time as highly as

they do their work time. This approach is standard practice in transportation planning for estimating roadway user benefits.

Annual travel time savings attributable to the Refined Preferred Alternative have been estimated by stepping down from the time savings measured through the Rotary area during peak periods (see Traffic Section) to all other times of the year, based upon measured daily traffic volumes compared to peak period volumes. The results of this analysis are summarized below:

| | |
|--|-----------------------|
| Estimated Annual Total Vehicle Hours Saved (VHS) | 1,750,000 hours |
| VHS Autos @ 94% Total Vehicles | 1,645,000 hours |
| Auto User Benefits @ \$10/hour | \$16.5 million |
| VHS Trucks @ 6% Total Vehicles | 105,000 hours |
| Distribution Cost Savings @ \$65/hour | <u>\$ 6.8 million</u> |
| Annual User Benefits | \$23.3 million |

If compared to annual debt amortization and maintenance costs for a \$30 million capital cost project (estimated at \$2.6 million per year over 20 years), the annual economic benefit to cost ratio of this project would thus be approximately 9/1. It should be noted that these estimated vehicle hours and cost savings apply only to vehicles physically passing through the rotary area, and do not include travel time savings that may be realized elsewhere on the roadway system. The numbers shown above are thus a conservative measure of the roadway user benefits that would annually accrue as a consequence of the Refined Preferred Alternative.

Effects on the Local Area Economy

As shown by data in the Social and Economic Environment section, there are approximately 200 businesses within a 2-minute (uncongested) drive time of the Sagamore Rotary. These business establishments employ an estimated 1,800 workers and generate approximately \$210 million in sales annually. Within a 5-minute (uncongested) drive time of the Rotary, there are an estimated 380 businesses, with over 3,200 employees and \$352 million in annual sales. Within the 2-minute driving area there are 80 establishments engaged in wholesale/retail trade, employing over 800 persons and generating over \$90 million in sales annually. Within the 5-minute drive time, the number of establishments in wholesale/retail trade grows to 125, employing over 1,100 persons and generating approximately \$129 million in sales annually.

With the exception of the five businesses within the immediate Rotary area -- which represent approximately 8% of the employees and business sales within the 2-minute drive area, and 4% of employees and sales within the larger 5-minute drive area -- few, if any, of the businesses within this local area economy derive any benefit from traffic at the Sagamore Rotary. They have no visibility from the Rotary, and according to those interviewed, derive few sales from the passersby market. Analysis of traffic data and travel time estimates indicates that these businesses, and the employees who work there, will realize substantial travel time benefits during morning and evening commuting periods for most of the year, even as they may not suffer greatly during the off-business hours peak weekend periods. For almost six months of the year, shippers of goods to and from this local area economy who use Routes 3 or 6, as well as commuting

workers, will save over 10 minutes of travel time during four-to-six hours around the peak daily periods of the week. These travel time savings will lower business costs of receiving and distributing goods, and increase the effective labor market area from which their employees may be drawn.

Retailers within the two-minute (uncongested) drive time of the Rotary are likely to increase their penetration of sales potential within the resident market, while wholesalers will improve their competitive market position by being able to receive and send goods in less time (less cost) than under the No-build condition (an estimated 80 establishments are engaged in wholesale/retail trade within the 2-minute drive area, with 820 employees and \$93 million in sales). Shoppers within this resident market will be able to reach the local retail establishments in less time and with more reliable and safe trips. These retailers now have little or no ability to capture resident market sales during peak summer and weekend periods, where travel times from north, east, west, and south of the local area are severely constrained by the current mix of local and through travelers at the Rotary. Market potential and related issues are further discussed in the subsequent section on Effects on Businesses within the Immediate Vicinity of the Rotary.

Effects on Businesses within the Immediate Vicinity of the Rotary

The five businesses within the immediate vicinity of the Rotary, one of which is physically located on the Rotary, now account for an estimated 16% of the employees and sales of all retailers within a 2-minute (uncongested) drive of the Rotary, and 12% of the employees and sales of all retailers within a 5-minute (uncongested) drive of the Rotary. While individual establishments differ in their reported shares of sales to local residents and passersby, as a group they reportedly derive roughly half of their annual sales from the passersby market, and half from the resident market. They are more dependent on the passersby market than other area retailers, including those interviewed in the vicinity of the Bourne Bridge (see Social and Economic Environment section). The businesses within the immediate vicinity of the Sagamore Rotary now include two gas stations with convenience retail, two fast-food restaurants, and a sit-down family restaurant.

To assess possible effects on these businesses as a consequence of the Refined Preferred Alternative, it is first necessary to consider how the proposed action may change the key transportation variables of access, accessibility, and visibility (see Approach and Methodology, this section), based on the conceptual design and traffic information reported in other sections of this document. An understanding of these physical changes is then used to predict effects on resident and passersby markets, based on information supplied by the Sagamore Rotary businesses, objective data on current market characteristics, and the experiences of other businesses (such as those interviewed in the immediate vicinity of the Bourne Bridge, where the flyover there diverted substantial through traffic from the old rotary). The following briefly summarizes an analytical economic perspective of the proposed transportation changes, and forms the assumptions used for predicting changes in business sales and development potential within the immediate vicinity of the existing rotary:

- *Access.* The Refined Preferred Alternative design will negligibly alter the physical distance now required to be driven to three of the five Rotary area businesses from all directions. It will require some additional distance to be driven from the business area to Route 6 south of the rotary, but the physical distances to exit in other directions are roughly comparable to those under No-build. Slightly longer physical distances will be required to reach the Texaco station, located on the Rotary itself, from north, south, and west of the Rotary, and to and from the Friendly's restaurant for Route 6 south of the Rotary. The owner of the Texaco station regards this change in physical access as problematic, while representatives of Friendly's regard the physical access change as a substantial improvement compared to the driveway off the Rotary that is now their only physical access. The relocation of the Canal Region Chamber of Commerce Visitor Center and the commuter parking lot, to the newly configured business area, will provide Chamber visitors and commuters walking access to the businesses that does not now exist.
- *Accessibility.* Based upon travel time estimates for all directions to and from the business area (see Traffic section), all businesses will enjoy substantially improved accessibility (at least 5 minute travel time savings) to resident and passersby markets for four to six hours each day for six months of the year. For fewer hours each day all businesses will enjoy improved accessibility for most days throughout the year. Even during peak periods, it will be possible to enter the business area safely from all directions, and to exit in all directions with minimal travel delay compared to current conditions. Even with the slightly longer physical access to two businesses, discussed above, travel times to and from the business area improve under the Refined Preferred Alternative for all businesses compared to No-build.

An important reduction in travel times to the business area will occur during the Friday evening and mid-day Saturday summer peak periods, for traffic coming from Route 3 north of the Rotary. Under present conditions, the ability of Cape Cod-bound travelers to safely enter and exit the business area is extremely problematic, and according to traffic analyses, requires the average traveler about 27 minutes to enter the business area (from 1.5 miles north of the rotary) and exit back on Route 6 (to 1.5 miles south of the rotary). Not surprisingly, the businesses surveyed report few sales during the Friday evening peak period compared to Sunday evening. Under the Refined Preferred Alternative, this same trip will require only 8 minutes, a saving of 19 minutes to the average Friday evening traveler in peak summer months, and can be safely negotiated by exiting and entering dedicated ramps from the main highway. Travel time savings for Friday evening Cape-bound travelers coming from west on Route 6 are less (7 minutes), as the current 30 minute trip into and out of the business area is only reduced to 23 minutes from that direction.

During the mid-day Saturday peak period, which includes shoppers moving in all directions as well as through travelers, travel time savings into and out of the business area are substantial from all directions. These are shown in the text table below, comparing current conditions to those under the Refined Preferred Alternative for

travelers entering and exiting the business area from varied directions (from north, south, east, or west of the rotary; to north, south, east, or west of the rotary):

| | <u>Existing</u> | <u>Build</u> | <u>Savings</u> |
|---|-----------------|--------------|----------------|
| From Route 3 North to Route 6 South | 27.1min | 6.3min | 20.8min |
| From Route 6 West to Route 6 South | 24.1min | 5.9min | 18.2min |
| From Route 6 South to Route 3 North | 23.7min | 5.2min | 18.5min |
| From Route 6 South to Route 6 West | 23.5min | 5.0min | 18.5min |
| From Route 6 West to Route 6 West | 22.7min | 3.9min | 18.8min |
| From State Rd. North to State Rd. North | 39.3min | 5.9min | 33.4min |
| From Mtng Ln, East to Mtng Ln. East | 26.0min | 4.5min | 21.5min |

Travel time savings will also be realized on Sunday evenings, as trips into and out of the business area from Route 6 south (2 miles) of the rotary to Route 3 north (1.5 miles) and Route 6 west (1 mile) will drop from a peak period average of 26 minutes to 6 minutes under the Refined Preferred Alternative, a saving of 20 minutes for the average customer of rotary area businesses.

- *Visibility.* Under the Refined Preferred Alternative, the ability of passersby to see businesses within the newly configured business area will be substantially improved for travelers coming from the south across the Sagamore Bridge. The trees that now block views from and immediately after the bridge are to be removed for an exit ramp directly into the business area, permitting views to the businesses there. More importantly, the design concept calls for signage intended to enable travelers southbound on Route 3, eastbound on Route 6, and northbound on Route 6 to see the name of each of the five businesses in time to exit safely into the business area from these major roadways.

For the *passersby market*, the Refined Preferred Alternative, based upon the design and transportation variables discussed above, creates, in effect, a full service highway rest area with direct access, visibility, and dramatically improved accessibility from three primary roadway directions. There are no comparable opportunities for travelers elsewhere on Route 3 north to Boston, nor along Route 6 on Cape Cod as far as Orleans. Exit 6 to Route 132 in Barnstable is similar, but lacks the dedicated access to a business area and requires an unsignalized left turn across Route 132 traffic for eastbound travelers who would want to exit for gas or eating opportunities (which are fewer than at the Sagamore Rotary).

Some have argued that the long delays now imposed during peak periods help businesses within the immediate vicinity of the Rotary to garner sales from the passersby market. There is nothing in the literature on transportation project economic effects, nor in the experience of the preparers of this document, nor in the numerous surveys conducted of businesses before and after intense congestion, to suggest that congestion and delays enhance business sales. Even if the businesses and conditions at the existing Sagamore Rotary were the unique exception that might probe this rule, businesses recognize that such congestion (and the special safety problems of a rotary handling heavy volumes of traffic) dampens sales potential from travelers southbound on Friday evenings or Saturday during peak periods. The sales captured relatively lucratively on Sunday evenings during peak summer season are more likely attributable to the large volume of

passersby, and less to the fact that they are delayed. The volume of passersby will remain the same and grow under the Refined Preferred Alternative, and businesses within the immediate vicinity of the Rotary will be able to capture peak period travelers from all directions. Average speeds through the Rotary area will remain modest (under 30-35mph from most directions, according to the traffic analysis) during peak periods, because of the capacity limitations of the bridge itself. These speeds are typical of a boulevard or urban arterial rather than a limited access highway.

For the *resident market*, the Refined Preferred Alternative will enable current and prospective future businesses in the immediate vicinity of the existing Rotary, as well as others further removed geographically from the immediate rotary area, to reach a resident market that is now denied them much of the year by the congestion, safety concerns, and long travel times imposed by existing traffic conditions at the Rotary. To gauge the possible impact on Rotary area businesses of improved accessibility, retail sales expenditures by households within a five minute drive of the business area were estimated and compared to the sales of existing retail businesses within the same area. The difference between sales potential and the current sales of businesses within this limited market area is called “leakage”, and is the classically accepted method used by market analysts to estimate the market opportunities for new businesses or expanded sales by existing businesses. The text table below shows current sales leakage by type of retailing within the five minute drive time (uncongested) of the Rotary business area.

| Business Type | Spending at All Locations by Households within 5 minutes of Rotary | Current Sales of Businesses within 5 minutes of the Rotary | Current Sales Leakage |
|----------------------------|---|---|------------------------------|
| Bldg. Mat, Garden Supp. | \$ 9,891,891 | \$ 3,200,000 | \$ 6,691,891 |
| Gen'l Merchandise | \$ 9,595,404 | \$ 5,500,000 | \$ 4,095,404 |
| Food Stores | \$ 24,728,573 | \$ 6,100,000 | \$ 18,628,573 |
| Auto Dlrs & Gas Stations | \$ 24,807,151 | \$ 6,712,500 | \$ 18,094,651 |
| Apparel & Accessory | \$ 9,270,253 | \$ 5,300,000 | \$ 3,970,253 |
| Eating & Drinking Places | \$ 17,145,131 | \$ 14,720,000 | \$ 2,425,131 |
| | | | - |
| Total of categories | \$ 95,438,403 | \$ 41,532,500 | \$ 53,905,903 |
| Other Retail | \$ 50,730,893 | \$ 30,400,000 | \$ 20,330,893 |
| Totals | \$ 146,169,296 | \$ 71,932,500 | \$ 74,236,796 |

Source: 2003 Claritas, Inc. Siteports, and FXM Associates

Note: Current Sales of Businesses within 5 minutes of the Rotary excludes estimated sales to passersby market (based on interviews) to properly represent resident market potential.

As the data indicate, there is a substantial retail sales leakage within the local market area, and therefore opportunities for existing and new businesses to capture additional retail sales by virtue of their improved accessibility to residents within this 5-minute drive time market area. Of particular note is the large dollar amount of food purchases now made outside the local area. With improved and reliable accessibility to this underserved local market, the potential for

development of a supermarket, or mixed use retailing outlet on the 10 acres of vacant, commercially zoned land in the immediate vicinity of the Rotary appears favorable.

Summary Evaluation. For the resident market, a variety of scenarios, based on prior case studies in comparable situations and the specific local context, were analyzed to estimate potentially increased sales to businesses now located within the immediate vicinity of the Rotary that may be attributable to accessibility gains as a consequence of the Refined Preferred Alternative. A spreadsheet model was developed and alternative assumptions for each of the businesses and business types individually were tested, taking into consideration current resident market share, sales leakage, current resident and passersby customer and sales mix, local competition, and other factors, including perceptions of the business owners/managers. The intent of this scenario testing was to bracket possible outcomes and to select a median, most reasonable estimate of economic effects. Because each of the businesses were assured that their employment and sales information reported in interviews would remain confidential, the detailed results of this evaluation cannot be shown. The mid-range scenario for additional resident market sales (attributable to accessibility improvements) suggests that, for the five Rotary area businesses overall, their current share of 8% of resident market potential (which now varies from 3% to 14% by business) could increase to 10-11%, based on capturing only 6% of current sales leakage within the automotive and food away from home retail categories. These are very modest assumptions for sales gains following the dramatic change in accessibility attributable to the refined Preferred Alternative.

For the passersby market, accessibility gains coupled with improved safety and visibility (largely from proposed signage) are also likely to yield sales gains for each of the establishments. However, in deference to the strong convictions of certain business owners that changes in access will adversely affect the unique locational advantage they now perceive, none of the passersby market scenarios tested included sales gains to these businesses. Instead, a 20% loss of passersby market sales during the peak summer season for selected businesses was factored into the overall evaluation. For the reasons previously discussed, the authors of this report do not agree with this assessment by certain business owners. In the overall evaluation, this limiting assumption understates the overall sales gains expected, but does not change the finding that substantial sales gains are likely to be realized for businesses in the rotary area as a consequence of the Refined Preferred Alternative.

The results of the overall analysis indicate that the five businesses within the immediate vicinity of the Rotary will, as a group, be likely to realize annual sales increases of at least 19-22%. All are likely to realize a net gain in annual sales, even assuming some loss in passersby sales (which is unlikely).

Effects on Residents

As shown by data in the Social and Economic Environment section, within a 2-minute (uncongested) drive of the Rotary, residential communities include 3,000 persons living in 1,100 households. Within the 2-minute area there are 1,200 dwelling units, 8 % of which are seasonal homes. In 2000, the median value of owner-occupied homes (72% of total dwellings) in this area

was about \$250,000. Residential property value overall is estimated at \$245 million. For these residents, especially those now dependent on egress via Church Lane, the ability to move about in substantially less time than they can under current (and projected) future traffic conditions will improve their mobility, and over time, raise the value of their property. At Church Lane, during Friday and Saturday peak periods they will be able to enter Route 6 and proceed east to the business area, or onto Route 3, with most of the through traffic already diverted to Route 6 south. They will have less mobility during the Sunday afternoon and evening peak period, but travel times westbound will improve even in these heavy traffic conditions. During all peak times, substantial travel time savings are expected for users of State Road and Meetinghouse Lane. For all residents within a 2-minute drive of the Rotary, most of whom must pass through the Rotary for most of their out of area trips, accessibility to destinations within and outside the project area will improve substantially. A 20% increase in residential property value overall within this area would yield the Town of Bourne over \$600,000 in increased property taxes annually.

Within 5-minutes of the Rotary, the population is approximately 9,500 in 3,600 households. There are 4,300 dwelling units, 16% of which are seasonal homes. In 2000, the median value of owner-occupied homes (80% of total dwellings) in this area was about \$240,000. Residential property value overall is estimated at \$786 million. For these residents, Route 3, Route 6, and the Rotary are a significant factor in their daily tripmaking, whether commuting to work or on leisure or shopping trips. Travel time improvements, even during peak conditions, are also expected on Meetinghouse Lane and State Road. The mobility of these residents in the larger geographic area will improve in similar ways to that expected for closer-in residents, and their accessibility to many destinations within and outside the project area will improve substantially. A 10% increase in residential property value within this area would yield the Town of Bourne over \$1 million in increased property taxes annually.