

4.0 Potential Impacts

Potential impacts related to the action scenario have been identified and evaluated for their significance. These impact assessments have been organized into the six topic areas considered in this study and are presented below.

4.1 Transportation

To ensure consistency with previous planning studies for the Eastern Shore, the estimation of local trips generated by induced development activity was based on the U.S. Route 13 Corridor Plan (A-NPDC, 1999). The following steps were used to estimate average daily traffic for each zone in the study area.

- Average daily traffic (ADT) for the moderate growth scenario presented in the U.S. 13 plan was extrapolated from 2020 to 2025 using straight-line projection
- ADT attributable to residential and commercial activity were further inflated by the growth rate anticipated for each activity in each zone under the Commuter Toll and Maintenance Toll Scenarios examined in this report.
- Through trips observed in the base year were inflated by an additional 2.2 percent annually under the Maintenance Toll Scenario to reflect the increase in travel across the facility estimated in a recent study commissioned by the CBBT Commission. (CBBT, 2000) This calculation assumes that no increase in through traffic will be attributable to a round-trip commuter toll and that the elasticities observed for same-day round trips also apply to across-the-board discounts.

Table 4.1.1 presents the estimate of ADT by zone for each scenario. Overall, traffic on the Eastern Shore is expected to double by 2025, increasing from an average of 15,000 trips in 1995 to nearly 30,000 in 2025 under the No-Action Scenario. With an increase in the level of household and commercial activity anticipated for the southern portion of Northampton County, traffic growth will be the highest in this location. In Zone 1 (Cape Charles/Cheriton), for example, ADT can be expected to grow nearly 13 percent under the Commuter Toll Scenario and 31 percent under the Maintenance Toll Scenario. Because of the low levels of development activity seen for areas far from the CBBT areas in Accomack County are expected to experience growth of less than 7 percent under the action scenarios, reflecting only an increase in through traffic.

4.1.1 Through Traffic

As indicated above, through traffic can be expected to increase as more travelers are attracted to the bridge by its lower cost. In 2025 average daily through travel is estimated to total:

- 11,806 under the No-Action Scenario
- 13,555 under the Maintenance Toll Scenario (an increase of 1,312)

Table 4.1.1
Estimated Average Daily Traffic By Zone
Eastern Shore, 2025

Zone	Average Daily Traffic			
	1995	No-Action	Commuter	Maintenance
1	12,150	22,308	25,202	29,168
2	13,820	22,408	26,525	29,491
3	15,900	30,942	33,497	35,922
4	15,970	26,286	27,291	29,198
5	15,750	27,070	27,401	29,262
6	15,580	32,759	32,871	34,642
7	16,080	26,292	26,369	28,205
8	15,840	25,581	25,596	27,362
9	15,620	34,499	34,497	36,280
Average	15,190	27,572	28,805	31,059
<i>Northampton</i>	13,957	25,219	28,408	31,527
<i>Accomack</i>	15,807	28,748	29,004	30,825

Source: A-NPDC, 1999; The Louis Berger Group, Inc. 2001.

- No increase in through traffic is assumed for the Commuter Toll Scenario as that toll will be collected on a 24-hour round-trip basis.

Much of the through traffic is likely to be trucks using the route as an alternate to I-64 and I-95 when traveling to points in the Northeast. An increase of this magnitude would represent an increase of approximately 10 percent in the overall share of truck travel the CBBT carries in the Hampton Roads region (27 percent of total daily freight traffic up from 17 percent). (HRPDC, 1998)

These estimates are based on a toll study conducted for the CBBT which used survey work conducted at toll plazas and by mail as a key dataset. (CBBT, 2000) This method was not specifically tailored to estimate alternate route choices by truckers and therefore may underestimate the potential for additional truck travel on the facility with a maintenance toll.

4.1.2 Tourist Traffic

Tourist traffic is not expected to increase significantly under the Commuter Toll scenario due to the 24-hour round trip collection scheme. Applying the elasticity for demand estimated in the CBBT Toll Study (2000) to the percentage of total recreational trips observed yields an estimate of 94 additional daily trips. Using the same technique to estimate recreational trips under the Maintenance Toll Scenario yields an estimate of 407 daily trips. As with the through traffic estimate, the method employed was not tailored to this purpose and is likely to underestimate the potential for increased tourist traffic.

4.1.3 Traffic Safety

Without roadway design improvements, increased levels of local and through traffic, particularly in the southern portion of Northampton County are likely to produce an increase in the number of accidents and traffic safety problems. The magnitude of this effect in the future depends upon design alternatives implemented. A study of the needs for the U.S. 13 corridor is currently underway.

4.1.4 Summary

Due to higher levels of local traffic, through-traffic, and tourism-oriented traffic, traffic flows under the Commuter Toll and Maintenance Toll Scenarios are substantially higher (10 percent to 30 percent) than No-Action conditions. These impacts are limited to the southern portion of Northampton County but through traffic increases are expected to produce a minor increase in traffic throughout the northern portion of the corridor. Estimates outlined here were based on extrapolations of U.S. 13 study data. Transportation needs for the U.S. 13 Corridor are currently being reviewed and are beyond the scope of this study. The findings suggest, however, that further investigation is necessary to review transportation needs in light of estimates for toll-discount induced growth.

4.2 Tourism

Tourism and the development of second homes have become more prominent on the Eastern Shore. The potential of a toll change on the CBBT to effect these features is presented below.

4.2.1 Tourist Activity

The Eastern Shore offers a great number of natural amenities, making this area a tourist attraction. Types of tourism on the Eastern Shore include fishing, boating, hiking, bird watching, camping, water sports, and other recreational activities. This region can be considered a seasonal destination location—lodging facilities experience close to full occupancy in the summer and fall, the height of the busy season.

Tourism is a generator of jobs on the Eastern Shore where 20 percent of the total jobs is in the lodging and retail sectors. In addition, tourism generates a significant contribution to local tax revenues in the form of locally levied lodging and meal taxes.

Tourists consist of both daytrippers, which could increase with a commuter toll reduction, as well as overnighters. In addition, due to the natural amenities of the Eastern Shore, visitors may also become second home buyers. Second home development is occurring in Cape Charles, Belle Haven, Onancock and Chincoteague. Real estate experts indicated the price of bayfront property has tripled in Northampton County over the past 3 years and property has been sold mostly to second home buyers. Historic homes are also being restored and sold as well to these buyers. These properties could potentially spur economic effects in the home construction industry as well as in the retail and service industries. These types of properties also typically demand less in community services than other single-family residences.

Estimation of the growth in tourism involved the following assumptions:

- Expenditures by tourists on the Eastern Shore and throughout Virginia have increased throughout the 1990s at a rate faster than the increase in the number of visitors. Virginia Tourism Corporation Records show an average growth rate of over 5 percent throughout the period, reflecting inflation, larger visitor travel budgets, and a greater range of tourist activities, and spending opportunities. For the purpose of this analysis it was assumed that growth in tourism revenues, encompassing lodging, meals, retail sales, and other recreational expenditures would continue at 5 percent throughout the study period. This was adjusted to 2 percent to compensate for an estimated annual inflation rate of 3 percent.
- Growth in visitors on the Eastern Shore has occurred at a much lower rate, reflecting in part, high occupancies for lodging and limited capacity for lodging growth. Forecasts for visitor growth on the Eastern Shore are unavailable from official sources so it was assumed that the recent historical average growth rate of 1 percent would be maintained.

- The ratio of locally levied lodging and meal tax revenues to total visitor spending was estimated for 2000 and extrapolated for the 2025 No-Action Scenario.
- Elasticities for recreation travel on the CBBT estimated in Section 4.1 above, were applied to the No-Action Scenario to reflect the impact of a toll change. This technique yielded a 1.4 percent increase in the measures for the Commuter Toll Scenario and a 4.9 percent increase over the No-Action Scenario for the Maintenance Toll Scenario.

Based on these assumptions it is estimated that tourism expenditures under the No-Action Scenario will increase by 50 percent through 2025, amounting to nearly \$220 million. The effect of a toll decrease under the Commuter and Maintenance Toll Scenarios is expected to be significant but modest amounting to over \$3 million for the Commuter Toll Scenario and nearly \$8 million for the Maintenance Toll Scenario (see Table 4.2.1). Visitor effects of a toll change are expected to amount to 21,000 and 74,000 visitors in 2025 based on the level of the toll reduction.

Depending on the level of overnight guests anticipated in these estimates, this level of visitors, particularly under the Maintenance Toll Scenario could require additional lodging capacity. Currently on the Eastern Shore there is approximately 52 percent more annual capacity than annual visitors when campgrounds are included in the total (Virginia Tourism Commission, 2000). This allows for accommodation of seasonal peaks and visitor preferences. To maintain this ratio approximately 25 additional rooms would be necessary under the Commuter Toll Scenario and 100 rooms under the Maintenance Toll Scenario.

4.2.2 Second Home Development

The growth in second home development on the Shore is incorporated into the growth projections, and land use consumption estimates, and other impacts outlined in this report. Second home use on the Eastern Shore has increased in recent years. In 2000, the percentage of units classified as second homes was 13.2 percent, up from 8.9 percent in 1990. In Northampton County the increase in second home use was more modest—7.5 percent in 2000, up from 5.6 percent in 1990. Overall there are approximately 2,500 second home units in Accomack and 480 in Northampton. The number of second homes can be expected to increase substantially in Northampton through 2025 with the marketing of the Bay Creek development in Cape Charles geared toward resort and retirement home ownership. The decreased household size, auto usage, and school services required for this type of property has been incorporated into the estimates presented in this report.

Because of the number of variables influencing second home ownership and the lack of detailed trend data, no effort has been made to quantify second home usage in the future. It should be noted however that in general terms, second home development will tend to mitigate negative impacts related to traffic, resource consumption, and community services, outlined elsewhere in this report, due to the part-time nature of occupancy.

Table 4.2.1
Potential Tourism Revenues and Number of Visitors
Eastern Shore, 2025

(Year 2000 \$)

	2000	No-Action	Commuter Toll	Maintenance Toll
Expenditures	\$146,551,000	\$219,827,000	\$222,905,000	\$230,599,000
% Change	-	50.0%	1.4%	4.9%
Visitors	1,200,000	1,500,000	1,521,000	1,574,000
% Change	-	25.0%	1.4%	4.9%
Local Taxes	\$986,000	\$1,479,000	\$1,500,000	\$1,552,000

Source: Virginia Tourism Corporation, 2000; The Louis Berger Group, Inc., 2001

Likely locations for second home development activity are discussed above in Section 3.3.3.

4.2.3 Summary

While tourism and second home development are expected to grow throughout the study period, the action scenarios are expected to have limited influence on the timing and direction of these growing sectors, due to the nature of the discounts considered and the limited area of anticipated changes in accessibility.

4.3 Economic Development

4.3.1 Industry Mix

The Eastern Shore supported nearly 23,000 jobs in the 1990s, when employment increased slightly in Northampton County and remained steady in Accomack County. The civilian labor force declined throughout the 1990s, however, and the number of low wage jobs grew relative to higher wage employment (see Section 2.3.3 for existing economic conditions). Services and retail/wholesale businesses were the biggest employers in Northampton County throughout the 1990s, while the manufacturing sector declined by 50 percent.

The economic base is comprised of the following main industry sectors:

- Agriculture
- Manufacturing
- Federal government agencies
- Tourism

The cost and availability of transportation is important to each of these base industries and the service industries that support them. With a potential toll reduction, impacts may include an increase in the number of emerging industry clusters on the Eastern Shore due to lower transportation costs and an increase in second construction activity. On the other hand, potential impacts that may decrease economic development would be the migration of skilled Eastern Shore residents across the CBBT to higher paying jobs in the Hampton Roads area, where greater job opportunities abound

To assess the potential impacts of economic development on the Eastern Shore based on a possible toll reduction, the following factors must be identified and evaluated to determine how local business activity may respond (Forkenbrock and Weisbrod, 2001).

- Business travel costs – transportation improvements would reduce costs of freight shipping and business-related passenger travel. Businesses relocate where they have low costs and can be more profitable.

- Business market reach – transportation improvements expand the markets for business suppliers, customers and workers. This may result in productivity savings with increases in economies of scale.
- Personal travel costs – transportation improvements reduce personal travel, increasing personal income, increasing standards of living and spending, supporting retail business activity.
- Job access – transportation improvements may increase the employment and incomes of local residents by increasing access to outside business locations.
- Quality of life – improvements to transportation affects the level of noise, congestion and accessibility to destinations which impact the attractiveness of an area to live or work, which may increase property values if businesses are attracted to an area and have the incentive to stay and grow.
- Local residential development – An increase in residential development induced by a transportation improvement may spur additional retail and service activity in the local economy over the long term and construction employment during the initial period of growth.
- Business location changes – Changes in the pattern of settlement coupled with nationwide trends for the location of businesses in shopping centers may work to drain business away from traditional central business districts particularly those not centrally located along major travel corridors.

To assess economic development impacts under the scenarios studied, qualitative and quantitative evaluations of the factors listed above are discussed below.

4.3.2 Business Costs and Reach

It is likely that business travel costs will be affected only marginally under the Commuter Toll Scenario. The round trip requirement for discount may be beneficial for metro area deliveries and meeting travel. Business trips to and from Hampton Roads made up 31 percent of all trips across the CBBT in 2000. Only 29 percent of these business-related trips (or 9 percent of all trips) were round trips that would qualify for a discount, however. (CBBT, 2000). Applying the elasticities estimated in the CBBT study (see discussion in Section 4.1), yields an estimate of 34 daily trips qualifying for the discount. Since business-related trips are valued at the full cost of labor hours and expenses it is unlikely that cost savings at this level will influence the location decisions of business.

Business travel costs will be affected more under the Maintenance Toll Scenario where discounts would apply to all trips. This scenario has the potential to spur up to 500 additional daily trips across the span by 2025. Although anecdotal evidence reported by economic development officials on the Eastern Shore suggests that low-cost access to the

Metro area is important to businesses considering locations, more research would need to be conducted to determine the propensity for businesses to locate on the Eastern Shore for the primary reason of cheaper access to the Metro core.

4.3.3 Personal Travel Costs and Job Access

The analysis of personal travel costs in Section 3.2.1 suggests that significant cost savings can be achieved under each of the action scenarios. When translated into time cost of travel these policies work to make the Eastern Shore comparable to other outlying areas of the Hampton Roads region. Costs savings will give Eastern Shore residents crossing the CBBT, particularly low income residents, additional disposable income. It is unclear without further research, however whether the net effect will be positive, given that development activity and closer ties to the Metro are likely to work to close the gap between the cost of living on the Shore and the metro area.

As the discussion in Section 3.2.1 demonstrates, the action scenarios will bring hundreds of thousands of metro area jobs within commuting reach of the Eastern Shore. This includes over 100,000 new jobs projected for Virginia Beach by 2025 (HRPDC, 2001). This will be an important benefit to current and future Eastern Shore residents. It is unclear, however, without further research whether closer connections to the Hampton Roads region will stem or promote the flow of young, educated and skilled workers out of the region. It is also important to note that job access improvements will be effectively limited to the southern portion of Northampton County due to the distances of travel on the Eastern Shore.

4.3.4 Quality-of-Life

Issues related to quality-of-life are discussed in more detail in Section 4.6 below, but a few issues are important to note here. The toll discount scenarios can be seen to have both positive and negative effects on local quality-of-life. On the positive side of the ledger, cheaper access to the amenities and services of the Metro area and the prospect of greater retail services and employment on the Eastern Shore could improve local quality-of-life. Potential negative impacts include loss of rural lifestyle in areas that would experience the highest growth, increase in the cost of living, the potential for residential displacement and strain on community facilities. Comments received during the public involvement segment of this study suggest that many current residents place greater emphasis on the factors that could be negatively effected than elements of the Eastern Shore that stand to gain. It is also important to note that quality of life is a factor in a the location decisions of businesses and their ability to retain and recruit employees.

4.3.5 Local Residential Development

The local residential development described in Section 3.3 is likely to stimulate a certain level of retail and service activity. This section will provide an order of magnitude estimate on the amount of additional retail activity that can be expected under the Commuter Toll and Maintenance Toll Scenarios.

The level of employment activity was estimated through the following steps:

- The ratio for population and retail employment was estimated and averaged for Accomack, Northampton, and Hampton Roads areas. This ratio was applied to estimated population to derive retail employment.
- Gross square footage was calculated by applying factor of 400 SF per employee (SCALDS model, FHWA, 1999).
- Total annual sales were derived for lower decile of community-level shopping centers as reported in the Dollars and Cents of Shopping Centers, 2000. Earnings derived from sales to earnings multiplier (see Appendix A for description of input-output economic impact model).

An analysis of the potential for additional retail and service employment induced by incremental increase in household activity reveals that a moderate level of retail activity on the scale of some of the community shopping centers already in place on the Eastern Shore will likely be required to meet the needs of growth in southern Northampton County (see Tables 4.3.1 and 4.3.2). In Northampton County, the Commuter Toll scenario can be expected to produce the need for approximately 364 additional full and part time retail and service positions by 2025 in a center or centers with gross floor area of 145,000 SF and annual sales of approximately \$16.8 million in current dollar terms. Under the Maintenance Toll scenario this additional employment need can be expected to reach 583 employees with \$27 million in annual sales with a gross floor area of 233,000 SF.

The job growth induced by residential activity represents economic development for the Eastern Shore but is expected to be concentrated in the relatively low wage retail and service sectors.

See Section 3.3.3 for the likely location of retail development.

4.3.6 Construction Employment

The development of housing units on the Eastern Shore over the next 25 years has the potential to stimulate a local construction industry and provide employment at the higher end of the wage scale for the region. Because of the lower levels of development and housing values on the Eastern Shore to date, the assembly of modular homes has been the most prevalent form of new construction (see Section 2.3.6 for details) and the local construction industry has been small. Interviews with local developers indicates that with construction starting at Bay Creek it may be possible to cultivate a local construction employment and business base. Until that happens, construction jobs on the Shore may be held by those from Hampton Roads and Maryland, letting the benefits of wages and spending leak out of the region. Development of a local industry may require the provision of training opportunities and small business assistance.

Table 4.3.3
Potential Construction Related Employment, 2000-2025
Eastern Shore, Commuter Toll Scenario

	Dwelling Units	Construction Cost	Total Sales	Total Earnings	Total Employment
Zone 1	790	\$39,513,000	\$84,791,000	\$23,973,000	1,100
Zone 2	211	\$10,537,000	\$22,611,000	\$6,393,000	300
Zone 3	156	\$7,810,000	\$16,759,000	\$4,738,000	200
Zone 4	118	\$5,888,000	\$12,635,000	\$3,572,000	200
Zone 5	33	\$1,653,000	\$3,547,000	\$1,003,000	0
Zone 6	14	\$723,000	\$1,551,000	\$439,000	0
Zone 7	6	\$310,000	\$665,000	\$188,000	0
Zone 8	5	\$269,000	\$577,000	\$163,000	0
Zone 9	0	\$0	\$0	\$0	0
Total	1334	\$66,703,000	\$143,136,000	\$40,469,000	1,800
<i>Northampton</i>	1157	\$57,860,000	\$124,161,000	\$35,104,000	1,600
<i>Accomack</i>	333	\$8,843,000	\$18,975,000	\$5,365,000	200

Source: The Louis Berger Group, Inc., 2001.

Table 4.3.4
Potential Construction Related Employment, 2000-2025
Eastern Shore, Maintenance Toll Scenario

	Dwelling Units	Construction Cost	Total Sales	Total Earnings	Total Employment
Zone 1	1,585	\$79,265,000	\$170,095,000	\$48,090,000	2,300
Zone 2	281	\$14,070,000	\$30,193,000	\$8,536,000	400
Zone 3	198	\$9,876,000	\$21,193,000	\$5,992,000	300
Zone 4	136	\$6,818,000	\$14,631,000	\$4,136,000	200
Zone 5	44	\$2,211,000	\$4,745,000	\$1,341,000	100
Zone 6	17	\$868,000	\$1,863,000	\$527,000	0
Zone 7	13	\$661,000	\$1,418,000	\$401,000	0
Zone 8	12	\$579,000	\$1,242,000	\$351,000	0
Zone 9	7	\$0	\$0	\$0	0
Total	2294	\$114,348,000	\$245,380,000	\$69,374,000	3,300
<i>Northampton</i>	2064	\$103,211,000	\$221,481,000	\$62,618,000	3,000
<i>Accomack</i>	428	\$11,137,000	\$23,899,000	\$6,756,000	300

Source: The Louis Berger Group, Inc., 2001.

In order to provide an order of magnitude estimate, multipliers relevant to the construction industry in the region were generated through the use of an input-output economic impact model. The model uses national level data on the production and consumption relationships between industries in the economy to evaluate the effect of increased activity in one industry on others in the economy. The model uses county level data on employment and earnings to tailor the output to a specific region (see Appendix A for more on the regional I/O model).

Estimates produced in the model reveal the maximum potential employment, earnings, and sales in the local economy based on the following assumptions:

- For the purposes of this estimate it is assumed that the construction cost per dwelling unit total \$50,000.
- Estimates reflect a 100 percent capture of employment. This level is prevalent in many industries on the Shore but is not likely for construction as described above. Estimates therefore represent maximum potential benefit during the period of construction.
- The measures reported represent activity in the construction industries and all other local industries supporting the construction industry and their suppliers.

The analysis reveals that construction of 1,334 dwelling units expected under the Commuter Toll Scenario could produce sales of \$143 million, earnings of \$40 million, and full and part time jobs totaling 1,800 positions over the 25-year period of construction.(see Table 4.3.3) For the Maintenance Toll Scenario sales could reach \$245 million for construction of 2,294 units with employment of 3,300 and earnings of \$69 million (see Table 4.3.4).

4.3.7 Business Location Changes

All of the effects described in this section can reinforce the trend for businesses to locate in newer properties outside of traditional business districts. This trend is likely on the Eastern Shore under all Scenarios including the No-Action scenario. Business vacancies may be especially apparent in village centers away from Route 13 and outside the service areas of sewage and water districts. An exception to this trend may be Cape Charles. It does have utilities and may with careful and continued planning, benefit from the activity in the nearby Bay Creek development. To the extent that the level of toll on the CBBT encourages through traffic the geographic extent of this effect may encompass the entire Eastern Shore as business activity becomes more concentrated along Route 13. Local zoning regulations, and access management initiatives related to Route 13 improvements may counter this effect in some locations.

Table 4.3.1
Potential Employment Change on the Eastern Shore, 2025

	1990	No-Action	Change	% Change over 1990	Commuter	% Change over No-Action	Maintenance	% Change over No-Action
Zone 1	1965	2193	228	11.6%	275	12.5%	467	21.3%
Zone 2	1241	1324	83	6.7%	51	3.9%	68	5.1%
Zone 3	2172	2854	682	31.4%	38	1.3%	48	1.7%
Zone 4	435	739	304	69.9%	29	3.9%	33	4.5%
Zone 5	815	1522	707	86.7%	8	0.5%	11	0.7%
Zone 6	1956	2695	739	37.8%	4	0.1%	4	0.2%
Zone 7	815	869	54	6.6%	2	0.2%	3	0.4%
Zone 8	6630	6760	130	2.0%	1	0.0%	3	0.0%
Zone 9	3587	4760	1173	32.7%	0	0.0%	2	0.0%
Total	21606	23716	4100	19.0%	406	1.7%	639	2.7%
<i>Northampton</i>	5378	6371	993	18.5%	364	5.7%	583	28.1%
<i>Accomack</i>	16410	20199	3789	23.1%	81	0.4%	104	7.4%

Source: The Louis Berger Group, Inc., 2001.

Table 4.3.2
Potential Square Footage, Sales, and Wage Earnings, Incremental Retail/Service Eastern Shore, 2025

	(Year 2000 \$)							
	Employment Commuter Toll	Gross SF	Sales	Earnings	Employment Maintenance Toll	Gross SF	Sales	Earnings
Zone 1	275	109,880	\$12,746,000	\$7,456,000	467	186,840	\$21,673,000	\$12,679,000
Zone 2	51	20,400	\$2,366,000	\$1,384,000	68	27,240	\$3,160,000	\$1,849,000
Zone 3	38	15,120	\$1,754,000	\$1,026,000	48	19,120	\$2,218,000	\$1,298,000
Zone 4	29	11,400	\$1,322,000	\$773,000	33	13,200	\$1,531,000	\$896,000
Zone 5	8	3,200	\$371,000	\$217,000	11	4,280	\$496,000	\$290,000
Zone 6	4	1,400	\$162,000	\$95,000	4	1,680	\$195,000	\$114,000
Zone 7	2	600	\$70,000	\$41,000	3	1,280	\$148,000	\$87,000
Zone 8	1	520	\$60,000	\$35,000	3	1,120	\$130,000	\$76,000
Zone 9	0	0	\$0	\$0	2	0	\$0	\$0
Total	406.2	162520	\$18,851,000	\$11,027,000	639	254760	\$29,551,000	\$17,289,000
<i>Northampton</i>	363.5	145400	\$16,866,000	\$9,866,000	583	233200	\$27,051,000	\$15,826,000
<i>Accomack</i>	80.5	32240	\$3,739,000	\$1,161,000	104	40680	\$4,718,000	\$1,463,000

Source: Dollars & Cents of Shopping Centers, 2000; The Louis Berger Group, Inc., 2001.

4.3.8 Summary

The action scenarios have the potential to improve levels of business activity in all industries, but given the magnitude of the accessibility changes, it is anticipated that effects will be concentrated in the secondary impacts of residential development in Northampton County. A measurable effect on the potential for new cluster industries can not be determined. There is significant potential for employment in the retail and service sectors at relatively low wages and the construction industry at higher wages. Concentration of business along the Route 13 corridor is likely—this may have impacts on traditional village commercial areas.

4.4 Agriculture/Aquaculture

The decline of farmland and the pollution of tidal waters that are productive for watermen are key issues for the Eastern Shore. Impacts related to agriculture and aquaculture include:

- *Land Consumption* – To the extent that a toll reduction makes the Eastern Shore more attractive to residential development, it is expected that land currently in agricultural or forestal use will be converted to residential use. The potential for loss of farmland and woodland is significant (particularly in southern Northampton County). Potential impacts are outlined in Section 2.3.3 above.
- *Fragmentation/Land Use Conflicts*– The precise pattern and form of future residential development is subject to various future market preferences and conditions as well as the local land use regulatory environment. It is difficult to predict whether this development will be concentrated or dispersed and how it will affect future patterns of farming. The potential exists however, for fragmentation of large farms into smaller, less productive, and ultimately less viable properties as lands are subdivided for residential development. This fragmentation has been experienced in rural communities throughout the nation that have undergone population growth. (American Farmland Trust, 1997) Another impact of residential development in rural communities is the emergence of conflicts between new residents and the activities of working farms that some residents may consider to be nuisances (noise, odor, visual impacts). Communities have addressed these impacts with special requirements for buffers and screening (see Section 5).
- *Displacement/Tax Burden* – Farm owner-operators will benefit from the increasing property values that residential development may bring if they choose to subdivide their properties. If they would like to maintain their properties intact, an increase in property values and tax rates (see Section 4.6.4) may prove to be a burden on the finances of their businesses. Displacement is an important potential impact for farmers who rent the land they farm. They may experience increasing rental rates and would not enjoy the benefits of rising property values. Displacement is discussed in greater detail in Section 4.6.3 below.

- *Pollution* – The primary impact of importance to watermen is the potential for an increase in non-point source pollution in the waters surrounding seafood beds. The potential range of nutrient loading and other runoff pollutants are discussed below in Section 4.5.

4.5 Environmental Resources

The Eastern Shore supports a diversity of habitats and species and is characterized by its unspoiled, fragile ecological resources. The undeveloped land of the Eastern Shore provides a significant economic resource to the area, offering opportunities for tourism, fishing and forestry, and agriculture and aquaculture.

4.5.1 Development Impacts

The landscape and topography of the Eastern Shore will determine the location and type of future development. There are prime development areas around the coasts and central corridor, many of which contain previously subdivided, but vacant lots. Development of these areas may result in localized impacts such as consumption of forestland and open space, loss or fragmentation of habitat important to threatened species. Areas susceptible to such development are identified in Section 3.3 above.

Surface and groundwater are vulnerable to development impacts. With a toll reduction, the impacts to both water consumption and water quality are likely.

In addition, soils play an important part in determining land use. Those soils suitable for agriculture are also suitable for development, which will put a strain on the current groundwater supply and infrastructure. Loss of vegetation can lead to increased erosion and runoff, which also has impacts on water quality. The range of potential land consumption effects is outlined in Section 3. It is anticipated that these effects will be concentrated in Northampton County south of Eastville.

4.5.2 Wetlands

Wetlands are valuable productive ecosystems on the Shore, where about 90 percent of the commercial fish and shellfish are dependent on tidal wetlands. Wetlands play a key role in maintaining water quality through erosion control and are also responsible for flood protection, water supply and groundwater recharge and climate control. Regulations in place provide protection from encroachment on wetland areas (see section 2.3.5) However, with increases in development, localized impacts to involving non-point source pollution (run-off, nutrient loading) may occur.

Information outlined in Section 3 illustrated those areas that are most susceptible to development based on a set of factors that are favorable to development. Many of these locations are in the vicinity of wetlands and marshlands. A review of those map areas in Northampton County most susceptible to development under the action scenarios reveals numerous water features that could be affected by localized non-point source pollutants including nutrient loading. These features include:

Map Area 112:

Tidal Wetlands
Kiptopeke Beach area

Map Area 104:

Tidal Wetlands
Pond Drain

Map Area 105:

Pond Drain
Dixons Pond
Walls Landing Creek

Map Area 90:

Tidal Wetlands
Old Plantation Creek

Map Area 91:

Long Pond

Map Area 85:

Tidal Wetlands
Narrow Channel Branch
Oyster Slip
Cobb Mill Creek
Point of Rock Drain

Map Area 58:

Mattawoman Creek

Patterns of localized development affects cannot be estimated with any precision, however the presence of water features in susceptible areas indicates further study is warranted.

4.5.3 Woodlands and Migratory Bird Habitats

The Delmarva Cape is located within the “Zone 1” area delineated in Section 3.2.2.4 of this study. Section 3.3 of this report identifies Zone 1 as the area where the highest growth rates are expected under future toll scenarios. The total land area of Zone 1 is approximately 30,000 acres,¹ inclusive of developed land (e.g. Cape Charles, Cheriton,

¹ Area approximation derived from Northampton County Land Assessment records.

Bay Creek), conservation land (e.g., Eastern Shore of Virginia National Wildlife Refuge), public parkland (e.g., Kiptopeke State Park), prime agricultural land, and forested land. Of the land remaining available to development, Tables 3.3.7 and 3.3.8 of this study provides the following information about additional land projected to be consumed for future development in Zone 1:

ZONE 1 PROJECTED LAND CONSUMPTION/HABITAT LOSS

- Commuter Toll Scenario
- 2,136 Dwelling Units
- Up to 6,561 acres of land consumed/habitat lost (5,708 acres of farmland, 853 acres of forested land)

- Maintenance Toll Scenario
- 2,931 Dwelling Units
- Up to 10,536 acres of land consumed/habitat lost (9,167 acres of farmland, 1,370 acres of forested land)

Under the maintenance toll scenario, up to 35% of the land in Zone 1 could be lost to development. Under either toll scenario, new development would replace the existing farmland and forested land on a per acre basis, equating to a per acre loss of habitat. As previously discussed, there is a direct correlation between loss of habitat and loss of food supply available for neotropical migrants. Consequently, loss of habitat in Zone 1 will lead to a per capita reduction in food supply. Initially, loss of habitat will lead to over-utilization of remaining habitats. Eventually, as remaining habitat food supplies dwindle, migratory bird survival rates could decline significantly.

Projected development, changing land use patterns and population increases in the Delmarva Cape will also significantly impact the migratory shorebirds and colonial nesting birds on and around the barrier islands. Increases in population combined with increases in fishing and tourism in Zone 1 will bring more boat and pedestrian traffic to the barrier islands and surrounding marshes, mudflats, and bays increasing human intrusions on habitats of colonial nesting birds and foraging migratory shorebirds. Colonial nesting birds are at risk because there are limited sites available for nesting purposes. Threats to nesting colonies include vandalism, eggging, pedestrians, pets, and off-road vehicles, among others. Human presence, even at a distance, could lead to significant nest disturbances. Studies have shown that Black Skimmers and Common Terns, both declining species, are the most sensitive to human intrusion and will flush from their nests when humans approach at a distance of 150 meters (492 feet) or closer. Furthermore, prospecting for nest sites early in the season may be adversely affected if disturbance by pedestrians, pets or vehicles occurs anywhere in the vicinity.² Consequently, it is likely that under either toll scenario, colonial nesting birds will be adversely impacted.

² Responses to Human Intruders by Birds Nesting in Colonies: Experimental Results and Management Guidelines, by R. Michael Erwin, U.S. Fish & Wildlife Service. Colonial Waterbirds 12(1): 104-108, 1989.

Shorebirds have narrow habitat requirements that limit them to relatively few, highly productive stopover sites during migration, where they must increase their body mass up to 100% to fuel their long distance migration. Shorebirds in the Delmarva Cape utilize the wave wash zone of the beaches, the mudflats of the tidal waters and the high salt marshes for feeding and roosting. Disruption of feeding shorebirds - by walking on a beach, motoring a boat, or other fright-inducing activities - typically results in premature flight from feeding grounds.³ In an area such as the Delmarva Cape where significant proportions of the Western Hemisphere's shorebird population utilize the region as a staging area, wide-scale, frequent disturbances on feeding grounds resulting from increases in fishing and boating in Zone 1 could lead to major population declines.

Seaside water quality degradation that would result from the high levels of population growth and development projected for Zone 1 under both toll scenarios would also negatively impact the avian and marine species in the Delmarva Cape. Water quality degradation from suspended particulates, toxics, and nutrient overload would inhibit the growth of primary producers in the food web, disrupt existing habitats, and alter existing water chemistry. Consequently, available food supply for all species utilizing the seaside marshes, lagoons and islands would be drastically reduced.

4.5.4 Ground and Surface Water

Areas most susceptible to development in Accomack and Northampton counties under the No-Action condition are in many cases coincident with the groundwater recharge spine running the length of the Shore (see Section 2.3.5). Areas that could be subject to development pressure in southern Northampton County under the Commuter Toll and Maintenance Toll scenarios are also centered along the recharge spine. Development in these areas may have the following impacts:

- Impervious surface accompanying this development may hamper the capability of the aquifer to recharge itself and impact groundwater quality most often by contamination
- Nutrient loading from septic systems and fertilizer use and other non-point source pollution may contaminate groundwater
- The cumulative effect of water withdrawals from centralized public and private systems and individual private wells may cause localized or widespread supply effects (interference, drawdown, saltwater intrusion).

Specific groundwater impacts are dependent on local area development that can not be foreseen with detail. This section will describe the range of potential effects in general terms, however.

³ Shorebird Management Manual, by Douglas L. Helmers. Western Hemisphere Shorebird Reserve Network, Manomet, MA. 1992.

According to the May 1992 Ground Water Supply Protection and Management Plan for the Eastern Shore of Virginia, the Columbia Aquifer is drawn for both agricultural and private well usage where 324 million gallons per day is needed to recharge the Columbia aquifer. Agricultural water usage ranges from 1.94 to 5.17 million gallons per day (mgd) and private homes use between 1.7-2.3 mgd. Water quality in this aquifer is threatened by many land uses that discharge and dispose of contaminants. Nitrate-nitrogen is the primary contaminant to the Columbia aquifer. Sources are septic systems, agricultural fertilizers, manure storage and animal disposal, septic lagoons and landfills. Pesticides and USTs are also threats. The average nitrogen concentration in the groundwater was 2 milligrams per liter, however, the drinking water standard is 10 milligrams per liter.

The Yorktown-Eastover aquifer is used for industrial and public water supplies as well as private wells. It has an estimated daily recharge rate of 11 million gallons per day. Current usage of the aquifer is in excess of 4.5 million gallons per day. Virginia State Water Control Board permits would allow withdrawals of up to 15.6 million gallons per day. This level of use is expected to produce serious problems with well interference and saltwater intrusion, however. Currently, the public water supplies use between 1.2 and 1.5 mgd and are permitted to withdraw 4.2 mgd. Industrial facilities use 3.1 to 3.4 mgd and are permitted to withdraw 10.7 mgd. Non-community public water supply facilities use 0.14 mgd and chicken watering requires 0.234 mgd.

Locally, in Northampton County, the 1990 withdrawal amount in Cape Charles was 134,000 gallons per day where the permitted usage is 261,000 gallons per day, and the amount of water used in Eastville was 60,000 gallons per day.

In 2025, under the No-Action Scenario the total amount of water used per day on the Eastern Shore should be 1.028 million gallons per day. In Northampton County, the number of gallons used per day would be about 398,000, while in Accomack County the number of gallons used per day would be close to 630,000. Locally, Cape Charles, in this scenario would be consuming the most amount in Northampton County, about 336,000 gallons per day. This would exceed the permitted level is 261,000 gallons per day, while Eastville would only use about 31,000 gallons per day.

With a commuter toll in place during 2025, additional water use can be anticipated to total about 1.3 million gallons for the region. This withdrawal will be concentrated in Northampton County about 687,000 gallons per day would be consumed and close to 674,000 gallons per day would be consumed in Accomack County. On a local level, Cape Charles would consume about 534,000 gallons per day, close to double the amount consumed when there is no toll change. Again, this amount would exceed the permitted withdrawal level of 261,000 gallons per day. Eastville would consume about 84,000 gallons per day, again a significant increase (more than 50 percent).

With a maintenance toll in place, during 2025, the number of gallons consumed per day for the region would increase by approximately 1.6 million gallons per day, with Northampton County consuming 914,000 gallons per day and Accomack County consuming 687,000 gallons per day. Again a significant increase would result in

Northampton County. Cape Charles would be consuming over 732,000 gallons per day (again above the 261,000 permitted levels) and Eastville would be using over 101,000 gallons per day.

It appears that, in general, the potable water supply has the capacity to support the water withdrawals anticipated under the No Action, Commuter Toll, and Maintenance scenarios evaluated in this study. A review of recent reports indicates, however, that localized effects of water withdrawals concentrated in specific areas can be significant.

In a study conducted for the A-NPDC in January 2001, water usage and land use modeling suggested that localized nutrient loading, saltwater intrusion, and drawdown effects could be significant under certain development conditions. Developments of over 50 lots were found to be supportable at any density. Developments larger than 50 lots were found to produce significant localized impacts requiring mitigating efforts such as centralized water systems, non-potable water withdrawals from the Columbia aquifer system and conservation efforts.

If new development in southern Northampton County, were to be confined largely to existing subdivided lots, concentrations of housing units may not exceed the local capacity of the aquifer. There is the potential, however for larger developments or a series of adjacent smaller developments filling in over time that would require mitigation efforts to preserve supply.

Table 4.5.1
Estimated Water Supply and Quality Measures
Increase Attributable to No-Action Scenario, 2025

Zone	Households	Potable Water gal/day	Waste Water gal/day	Nitrate Concentration mg/L
1	1,346	336,528	302,875	18-25
2	124	30,888	27,800	18-25
3	124	30,888	27,800	18-25
4	124	30,888	27,800	18-25
5	124	30,888	27,800	18-25
6	350	87,500	78,750	18-25
7	198	49,587	44,628	18-25
8	574	143,492	129,143	18-25
9	1,150	287,500	258,750	18-25
Total	4,113	1,028,159	925,346	
<i>Northampton</i>	1,593	398,304	358,475	
<i>Accomack</i>	2,519	629,855	566,871	

Table 4.5.2
Estimated Environmental Measures
Increase Attributable to Commuter Toll Scenario, 2025

Zone	Households	Potable Water gal/day	Waste Water gal/day	Nitrate Concentration mg/L
1	2,136	534,091	480,682	18-25
2	334	83,574	75,217	18-25
3	280	69,938	62,944	18-25
4	241	60,331	54,298	18-25
5	157	39,153	35,238	18-25
6	364	91,116	82,004	18-25
7	205	51,136	46,023	18-25
8	579	144,835	130,351	18-25
9	1,150	287,397	258,657	18-25
Total	5,446	1,361,571	1,225,414	
<i>Northampton</i>	2,750	687,603	618,843	
<i>Accomack</i>	2,696	673,968	606,571	

Table 4.5.3
Estimated Environmental Measures
Increase Attributable to Maintenance Toll Scenario, 2025

Zone	Households	Potable Water gal/day	Waste Water gal/day	Nitrate Concentration mg/L
1	2,931	732,851	659,566	18-25
2	405	101,240	91,116	18-25
3	321	80,269	72,242	18-25
4	260	64,979	58,481	18-25
5	168	41,942	37,748	18-25
6	367	91,839	82,655	18-25
7	212	52,893	47,603	18-25
8	586	146,384	131,746	18-25
9	1,157	289,360	260,424	18-25
Total	6,407	1,601,757	1,441,581	
<i>Northampton</i>	3,657	914,360	822,924	
<i>Accomack</i>	2,750	687,397	618,657	

4.6 Quality of Life/Livable Communities

The unique, rural lifestyle of the Eastern Shore makes the location an attractive place to live. Historic towns and villages are surrounded by farmlands and water, and large lots of land are characteristic of the traditional, low-density rural lifestyle on the Eastern Shore. This quiet lifestyle is highly valued by its residents as indicated in their comments during the public involvement efforts of this study. This section will outline potential effects that may arise from the action scenarios. Many of these effects have been described in more detail in other sections of this report. Those discussed here include:

- Access to Employment and Amenities
- Expansion of the Employment Base
- Community Character and Cohesion
- Fiscal Impacts/Community Facilities

4.6.1 Access to Employment and Amenities

As demonstrated in Section 3.2, a commuter toll discount or maintenance toll will offer a significant improvement in cost savings making the opportunities for employment, services, and amenities of the Hampton Roads region more easily accessible to Shore residents. Due to the limited shopping opportunities and health services on the Shore, many travel to Hampton Roads or Maryland for important health care services or purchases. Traveling one-day a week across the CBBT can expect to save \$300-\$700 per year in travel costs.

4.6.2 Employment Base

Regarding the employment base, the Shore's labor pool consists of a low-wage unskilled labor force. Many with a higher education relocate or out-migrate elsewhere for better-paying high-quality jobs. With a toll decrease, pressures to relocate may be minimized. Large changes in the base of employment are not expected as a result of the action scenarios (see section 4.3 above) but there will be significant opportunities for lower paying retail and service employment and potentially higher paying construction work.

4.6.3 Community Cohesion

The proposed toll reduction may result in impacts to community cohesion. For example, with increased development there is the potential impact of disruptions to existing communities and change in the character of these communities. With increasing property values based on the potential for new development, residential displacement could occur if those households cannot afford the higher land and property values. Those who are renters are at a greater risk of being displaced compared to those residents who own their

homes. About 30 percent of residents in Northampton County are renters and many of those renters are among the poor of the county.

In addition, the lack of affordable housing would be a concern since 7 percent of the housing stock is considered substandard and unsafe. The relocation/displacement of households disrupts a community and dismantles social networks which residents rely on. This also has the potential to change patterns of settlement and the concentration of business in tradition village cores (see Section 4.3).

Other factors due to the lower toll that may impact community cohesion thereby impacting their quality of life include the following:

- Effects of structural barriers - road improvements to accommodate through and regional commute traffic impeding pedestrian and local traffic flows.
- Indirect effects or psychological barriers – increased traffic due to a toll reduction creates these barriers that lessen the quality of social interaction. Some traffic-related barriers include increased noise and dust as well as safety impacts to residents with increased traffic in their neighborhoods.

4.6.4 Fiscal Impacts/Community Services

A growth in households on the Eastern Shore will add to county and town tax bases but will also cause an increase in demand for services. In many growing communities around the country, demand for services outstrips the rise in revenue that accompanies increases in property values and the tax base. This is due in part to capital outlays required when a community jumps significantly in scale and is also the result of preferences for higher standards of service as an area increases in value and density. In communities of a similar size to the Eastern Shore that have experienced growth rates that parts of the Shore could be facing, general government and school expenditures have run an average of 10 percent higher than revenues.(Burcell, 1985) The potential for this effect is also confirmed locally:

- Gloucester County, an outlying rural portion of the Hampton Roads area, experienced annual growth of one to six percent per year from 1980 to 1997. The county's tax base tripled during that period but the property tax rate also increased from \$0.65 per \$100 assessed value to \$0.92. Evidence suggests, then, that residents tax bills rose at a rate greater than inflation.
- In a study of the cost of community services in Northampton County (American Farmland Trust, 1999) researchers determined that residential uses require service expenditures 13 percent higher than the level of revenue they generate. The study found that commercial and industrial uses break even but that farmland and open space in private ownership require only \$0.23 in services for every dollar generated in

tax revenue. This suggests that as Northampton grows and farmland is consumed the County will lose revenue overall.

To estimate the fiscal effects of the level of development estimated for the action scenarios reviewed in this study, county government expenditures and revenues were estimated according to the methodology outlined below. Given the small level of residential growth anticipated for Accomack County under the action scenarios, this estimate was limited to Northampton County. Fiscal impact estimation involved the following steps:

- Per capita expenditures for general government services were estimated through a review of the county budget for Fiscal Year 1999. Expenditures per pupil were also estimated based on the number of students for the year reported by the Virginia School Census.
- Expenditures per square foot of commercial and industrial base were calculated by applying an estimate of business square footage for the county (A-NPDC, 1999) to expenditure requirements estimated for this use in the 1999 American Farmland study for Northampton.
- Total expenditures required in 2025 were calculated by applying the factors described above to the incremental change in residential and commercial uses estimated in this study.
- Government revenues were calculated by estimating revenue per student (from state and federal transfer payments) and by deflating the per resident and per square foot factors derived for expenses to account for the ratios for expenses to revenues revealed in the American Farmland study.

Tables 4.6.1 and 4.6.2 summarize the findings of the fiscal analysis for expenditures. Tables 4.6.3 and 4.6.4 outline the revenue calculation. Overall, residential and commercial development anticipated under the Commuter Toll Scenario is expected to require county expenditures of nearly \$5.8 million more than the No-Action conditions. The revenue estimate for this scenario is \$4.3 million resulting in a shortfall of \$1.5 million or 25 percent. The incremental growth described in the Maintenance Toll scenario can be expected to generate the same level of shortfall, with \$9.6 million in expenditures versus \$7 million in revenues.

This fiscal analysis provides a level of magnitude estimate that assumes that patterns in future fiscal conditions will approximate those seen today. This analysis does not take into account major infrastructure projects such water or sewer utility extensions that may be undertaken in the future. It also does not consider major changes in the mix of second home development or retirement living that could place less of a burden on future county expenditures.

Table 4.6.1
Northampton County Government and School Expenditure Estimate
Commuter Toll Scenario, 2025

Zone	Use	Dwelling Units	Residents	Students	Gross SF	Expenditures per Capita Government	Expenditures per Student School District	Expenditures per SF Government	Total Expenditures
1	Residential	790	2747	395		\$607.84	\$5,502.64		\$3,843,963
	Commercial				109,880			\$1.45	\$159,683
2	Residential	211	510	105		\$607.84	\$5,502.64		\$889,820
	Commercial				20,400			\$1.45	\$29,646
3	Residential	156	677	78		\$607.84	\$5,502.64		\$841,256
	Commercial				15,120			\$1.45	\$21,973
Subtotals	Residential	1,157	3,934	579		\$607.84	\$5,502.64		\$5,575,039
	Commercial				145,400			\$1.45	\$211,302
Total:									\$5,786,342

Source: Northampton County; The Louis Berger Group, Inc., 2001

Table 4.6.2
Northampton County Government and School Expenditure Estimate
Maintenance Toll Scenario, 2025

Zone	Use	Dwelling Units	Residents	Students	Gross SF	Expenditures per Capita Government	Expenditures per Student School District	Expenditures per SF Government	Total Expenditures
1	Residential	1585	4671	793		\$607.84	\$5,502.64		\$7,200,852
	Commercial				186,840			\$1.45	\$271,525
2	Residential	281	681	141		\$607.84	\$5,502.64		\$1,188,171
	Commercial				27,240			\$1.45	\$39,587
3	Residential	198	478	99		\$607.84	\$5,502.64		\$833,988
	Commercial				19,120			\$1.45	\$27,786
Subtotals	Residential	2,064	5,830	1,032		\$607.84	\$5,502.64		\$9,223,012
	Commercial				233,200			\$1.45	\$338,898
Total:									\$9,561,909

Source: Northampton County; The Louis Berger Group, Inc., 2001

Table 4.6.3
Northampton County Government and School Revenue Estimate
Commuter Toll Scenario, 2025

Zone	Use	Dwelling Units	Residents	Students	Gross SF	Revenue per Capita Government	Revenue per Student School District	Revenue per SF Government	Total Expenditures
1	Residential	790	2747	395		\$537.91	\$3,480.99		\$2,853,065
	Commercial				109,880			\$1.40	\$154,343
2	Residential	211	510	105		\$537.91	\$3,480.99		\$641,132
	Commercial				20,400			\$1.40	\$28,655
3	Residential	156	677	78		\$537.91	\$3,480.99		\$636,026
	Commercial				15,120			\$1.40	\$21,238
Subtotals	Residential	1,157	3,934	579		\$537.91	\$3,480.99		\$4,130,223
	Commercial				145,400			\$1.40	\$204,236
								Total:	\$4,334,458

Source: Northampton County; The Louis Berger Group, Inc., 2001

Table 4.6.4
Northampton County Government and School Revenue Estimate
Maintenance Toll Scenario, 2025

Zone	Use	Dwelling Units	Residents	Students	Gross SF	Revenue per Capita Government	Revenue per Student School District	Revenue per SF Government	Total Expenditures
1	Residential	1585	4671	793		\$537.91	\$3,480.99		\$5,271,766
	Commercial				186,840			\$1.40	\$262,444
2	Residential	281	681	141		\$537.91	\$3,480.99		\$856,100
	Commercial				27,240			\$1.40	\$38,263
3	Residential	198	478	99		\$537.91	\$3,480.99		\$600,904
	Commercial				19,120			\$1.40	\$26,857
Subtotals	Residential	2,064	5,830	1,032		\$537.91	\$3,480.99		\$6,728,769
	Commercial				233,200			\$1.40	\$327,564
								Total:	\$7,056,333

Source: Northampton County; The Louis Berger Group, Inc., 2001

Table 4.6.3
Northampton County Government and School Revenue Estimate
Commuter Toll Scenario, 2025

Zone	Use	Dwelling Units	Residents	Students	Gross SF	Revenue per Capita Government	Revenue per Student School District	Revenue per SF Government	Total Expenditures
1	Residential	790	2747	395		\$537.91	\$3,480.99		\$2,853,065
	Commercial				109,880			\$1.40	\$154,343
2	Residential	211	510	105		\$537.91	\$3,480.99		\$641,132
	Commercial				20,400			\$1.40	\$28,655
3	Residential	156	677	78		\$537.91	\$3,480.99		\$636,026
	Commercial				15,120			\$1.40	\$21,238
Subtotals	Residential	1,157	3,934	579		\$537.91	\$3,480.99		\$4,130,223
	Commercial				145,400			\$1.40	\$204,236
Total:									\$4,334,458

Source: Northampton County; The Louis Berger Group, Inc., 2001

Table 4.6.4
Northampton County Government and School Revenue Estimate
Maintenance Toll Scenario, 2025

Zone	Use	Dwelling Units	Residents	Students	Gross SF	Revenue per Capita Government	Revenue per Student School District	Revenue per SF Government	Total Expenditures
1	Residential	1585	4671	793		\$537.91	\$3,480.99		\$5,271,766
	Commercial				186,840			\$1.40	\$262,444
2	Residential	281	681	141		\$537.91	\$3,480.99		\$856,100
	Commercial				27,240			\$1.40	\$38,263
3	Residential	198	478	99		\$537.91	\$3,480.99		\$600,904
	Commercial				19,120			\$1.40	\$26,857
Subtotals	Residential	2,064	5,830	1,032		\$537.91	\$3,480.99		\$6,728,769
	Commercial				233,200			\$1.40	\$327,564
Total:									\$7,056,333

Source: Northampton County; The Louis Berger Group, Inc., 2001

Table 4.6.5
Estimated Households and School Age Children
No-Action Scenario, 2025

Zone	Households	School-Age Children				Total
		Pre-School	Primary	Middle	H.S.	
1	1,346	5	31	9	22	67
2	124	5	28	9	20	62
3	124	5	28	9	20	62
4	124	5	28	9	20	62
5	124	5	28	9	20	62
6	350	14	81	25	56	175
7	198	8	46	14	32	99
8	574	23	132	40	92	287
9	1,150	46	265	81	184	575
Total	4,113	116	667	203	464	1,451
<i>Northampton</i>	1,593	15	88	0	61	191
<i>Accomack</i>	2,519	101	579	0	403	1,260

Source: Northampton County, 2000; The Louis Berger Group, Inc., 2001

Table 4.6.5
Estimated Increase in Households and School Age Children
Commuter Toll Scenario vs. No-Action Scenario, 2025

Zone	Households	School-Age Children				Total
		Pre-School	Primary	Middle	H.S.	
1	790	32	182	55	126	395
2	211	8	48	15	34	105
3	156	6	36	11	25	78
4	118	5	27	8	19	59
5	33	1	8	2	5	17
6	14	1	3	1	2	7
7	6	0	1	0	1	3
8	5	0	1	0	1	3
9	0	0	0	0	0	0
Total	1,334	53	307	93	213	667
<i>Northampton</i>	1,157	46	266	0	185	579
<i>Accomack</i>	176	7	41	0	28	88

Source: Northampton County, 2000; The Louis Berger Group, Inc., 2001

Table 4.6.5
Estimated Households and School Age Children
Commuter Toll Scenario vs. No-Action Scenario, 2025

Zone	Households	School-Age Children				Total
		Pre-School	Primary	Middle	H.S.	
1	1,585	63	365	111	254	793
2	281	11	65	20	45	141
3	198	8	45	14	32	99
4	136	5	31	10	22	68
5	44	2	10	3	7	22
6	17	1	4	1	3	9
7	13	1	3	1	2	7
8	12	0	3	1	2	6
9	7	0	2	1	1	4
Total	2,294	92	528	161	367	1,147
<i>Northampton</i>	2,064	83	475	0	330	1,032
<i>Accomack</i>	230	9	53	0	37	115

Source: Northampton County, 2000; The Louis Berger Group, Inc., 2001