

1.0 Introduction

During the Spring of 2000, the Chesapeake Bay Bridge-Tunnel (CBBT) Commission considered implementation of toll discount for commuters on its facility connecting the Eastern Shore of Virginia with the Hampton Roads metropolitan area. Later in the year, further discussion of discount proposals was postponed so that Northampton and Accomack Counties of the Eastern Shore could have an opportunity to review information regarding potential discounts and assess their potential impacts. It is the objective of this study, commissioned by the Bi-County CBBT Commuter Toll Impact Study Committee and the Accomack-Northampton Planning District Commission, to assess the potential for land use, environmental, and community impacts related to toll rates on the CBBT. The study has been divided into two phases: Phase 1 to develop information on existing conditions and trends, conduct public involvement workshops, and produce a draft impact assessment, and Phase 2 to develop responses and strategies for the future in consultation with the residents of the Eastern Shore. This final draft report represents the work product of Phases 1 and 2.

Considerable study has been devoted to the subject of commuter toll discounts on the CBBT. It is the intention of this study to build upon and extend those previous efforts so the residents of the Eastern Shore can be better informed about issues related to toll discounts.

This report includes the following elements:

- A review of existing conditions, trends, and concerns in six topic areas: Transportation, Tourism, Economic Development, Agriculture/Aquaculture, Environmental Resources, and Quality-of-Life/Livable Communities;
- A summary of four public involvement events held in April 2001, and October 2001, to inform the public of the study and solicit views in workshops on each of the six topic areas;
- An assessment of the potential development activity on the Eastern Shore including a regional accessibility analysis, projections for population and housing for 2025, an analysis of the holding capacity for future development, an evaluation of likely locations for induced residential growth, and an assessment of potential land consumption impacts;
- A qualitative and quantitative assessment of the potential impact related to induced growth organized by topic area.
- A review of land use and growth management strategies adopted by other communities facing escalating residential and tourism growth.
- Recommendations for future action developed by members of the Bi-County Study Committee.

1.1 Scenarios Considered

To provide the groundwork of assumptions necessary to complete the impact analysis, three toll discount scenarios were chosen. These scenarios are summarized below—further detail can be found in Section 3.1.

- 1) *No-Action* – Conditions in the future without a discount or change of any sort in the current toll structure are analyzed in this scenario. The No-Action Scenario serves as a baseline to which the other scenarios are compared, allowing for the incremental change of the toll discount scenarios to be identified. To promote consistency with other planning studies being conducted, population and employment projections for the forecast year of 2025 are based on the moderate growth scenario outlined in the U.S. Route 13 Corridor Plan – Eastern Shore of Virginia (A-NPDC, 1999)
- 2) *Commuter Toll Discount (\$7 Each Way for One-Day Round Trips)* – Under this scenario, the one-way toll would be reduced to \$7.00 for travelers completing a round-trip within a 24-hour period (\$14 round-trip). This discount has been discussed at CBBT Commission meetings and provides a reasonable center point for the three-scenario evaluation.
- 3) *Maintenance Toll* – In calendar year 2000, operating costs for the CBBT were approximately \$8.6 million or 23 percent of total toll revenues. This scenario would examine the impacts of a reduction in the toll to cover maintenance costs only, assuming that debt service and other capital obligations have been retired prior to the 2025 horizon year. Rounding up from a reduction of the toll to 23 percent of its current level, the maintenance toll for this scenario was set at \$3 one-way for Class 1 vehicles in current dollar terms.

1.2 Indirect Effects of Transportation Actions

Transportation improvements or policy actions such as toll change can reduce the time and monetary costs of travel, enhancing the attractiveness of surrounding land to developers and consumers. Development on vacant land, or conversion of the built environment to more intensive uses, is often a consequence of these transportation decisions. Growth in population and employment attributable to a direct project effect (change in accessibility) is an indirect effect that, in turn, produces its own effects on the environment.

In order to understand the nature and extent of indirect effects that can be anticipated as a result of the toll discount alternatives, it is important to understand general trends in regional development and the motivations of key actors in the development process.

Throughout the last half of the 20th Century, American cities have moved away from the monocentric form. Cities today are characterized by multiple employment centers with concentrations in traditional central business districts, outlying town centers, and newer suburban areas. The decentralization of metropolitan areas has been the product of the individual decisions of households, businesses, and developers. (NCHRP 423A, 1999)

Research has shown that households consider a wide range of factors when choosing where to locate—accessibility to jobs is one factor, but not necessarily the most important. (NCHRP 456, 2001)

- Households often rank other factors such as housing cost, distance from heavily urbanized areas, access to amenities, quality of schools, and quality and cost of other public services above access to job opportunities.
- The rise in suburbanization of households has not been accompanied by large rise in commute times, suggesting that there are limits on how far most people are willing to live from work. Average commutes range from 20 to 30 minutes in most urbanized areas.
- In small urban areas where many locations enjoy good access to jobs, changes in accessibility by auto may not be a significant determinant of household location.

Accessibility is also a factor in the location decisions of business establishments, which value access to markets, suppliers, and labor.

- The Interstate Highway System offers low transportation costs for the movement of goods and passengers over long distances (line-haul benefits). Firms that value this sort of transportation access, such as those producing for regional or national markets will cluster at interchange locations. Access to transportation is also increasingly important as businesses move to “just-in-time” inventory systems.
- As the steady nature of commute times suggests, suburbanization of households has been accompanied by the decentralization of employment on a regional level. Employers seeking to attract and retain labor have located in suburban areas leading to an increase in the number of suburb to suburb commutes over the traditional suburb to central city pattern. Highway access has made outlying locations as accessible or more accessible for businesses than central cities.
- The trend toward decentralization does not weaken trend for businesses to cluster together, however. The benefits of agglomeration economies still lead business establishments to cluster in activity centers and industrial and commercial parks.
- Surveys of firms indicate that the cost of space is one of the most important factors in the decision process along with accessibility. The availability of low cost space in suburban and fringe areas contributes to the suburbanization of business establishments.
- Highway access is important because it is the dominant form of transportation for employees and movement of goods in most areas. Firms and employees also value reliability of travel times, however. In smaller cities where congestion is not a problem location near high quality routes not as vital a concern.

Land developers--individuals, businesses, or public agencies--convert land from one use to another either for their own purposes or for sale or lease to others. The location decisions of developers reflect the preferences and requirements of the households or businesses that will utilize the development but are also based upon factors that will affect their own business decisions.

- Transportation projects can have an influence on the value of land in the vicinity of the project. Studies have found correlation between home sale prices and accessibility to employment centers and commercial and industrial property rents and proximity to freeway interchanges.
 - Prices connected to the incremental effect of accessibility—new access in mature metropolitan highway networks will have less of an impact than new interstate access in a rural area.
 - Land value effects associated with local improvements in accessibility not just significant improvements in regional accessibility. Local effects found very near project access points.
 - Land value increases seen near transportation access points, decreases in land values observed in other areas along the corridor due to noise, visual impacts, and other pollution effects.

- Accessibility to highways and other forms of transportation and visibility from major travel routes make sites more marketable especially for non-residential uses. These factors are also important to developers seeking to market residential property, but residential developers are often outbid by developers of commercial and industrial properties for the most accessible sites. When considering accessibility, residential developers are looking for access to job opportunities as well as shopping and recreational opportunities.

- Characteristics of the community (e.g., existing land uses, socioeconomic characteristics of residents) and the site under consideration (e.g, slope, views) are also important factors developers consider.

- Favored growth corridors, outward moving areas of a region experiencing increases in higher income households, suburban development, and upscale retailing, are usually the focus of future development because of the potential for higher return to developers. Higher income areas with good or improving access to the interstate system are often indicators of favored corridors that will support growth in office or retail uses at interchange nodes.

- Governmental regulations and incentives influence both the cost and potential return of a site to a developer. General attitudes toward development and political considerations are important in addition to site specific bulk and use regulations. Developers are sometimes willing to take on the risk of applying for a variance or rezoning of a particular site based on expected return and the probability of approval.

As the review of household, business, and developer behavior suggests, an accessibility gain attributable to a transportation decision such as a toll change is one of many factors that can influence the location choices of firms and households. This study will examine the consequences of a toll change on the accessibility of the Eastern Shore and will evaluate other factors likely to influence the location and magnitude of development. Once the location and magnitude has been reasonably established the environmental, community and economic consequences will be assessed.

1.3 General Methodology

In assessing the potential for indirect land use, community, economic, and environmental effects of a CBBT toll change on the counties of the Eastern Shore, this study relied on the basic methodology outlined in *National Cooperative Highway Research Program (NCHRP) Report 403: Guidance for Estimating the Indirect Effects of Proposed Transportation Projects*. (Louis Berger & Associates, 1998).

The process outlined in the Guidance was adapted for this project as follows:

- 1) Identify Study Area Features, Trends, and Goals – Broad knowledge of study area resources and features and their value to the residents is a key element in an indirect effects impact study. A review of existing published information was supplemented with interviews, government statistics, and other resources. A Citizens Advisory Committee was formed to provide comments on work product and guidance on technical issues. Two public involvement workshops were also held, one in each county, to allow the public to provide input on valued community resources. Topic reports in six key areas of interest were submitted for review and are incorporated in this report (see Section 2.3).
- 2) Identify Magnitude of Potential Induced Activity – To gauge the magnitude of induced residential development on the Eastern Shore, a review of commuting and housing market trends was coupled with an analysis of regional accessibility. Centers of population and employment were identified and a regional model incorporating Hampton Roads and Eastern Shore was constructed. Using changes in accessibility under each of the toll scenarios as a guide, regional population projections were reallocated to subareas so that the potential for growth on the Eastern Shore could be quantified.
- 3) Identify Potential Geographic Locations for Induced Activity - Growth projections for each scenario were compared against the holding capacity of the subareas and smaller geographic areas were reviewed for their susceptibility to change. Maps and aerial photographs are presented to document the process and inform the impact assessment.
- 4) Identify and Describe Impact of Induced Activity – Likely regional and local consequences of the induced development projections were assessed and quantified

with order of magnitude estimates were possible. Impacts were organized by topic area following the format of the Step 1.

This impact assessment is designed to inform citizens and decision-makers on the range of likely impacts. Strategies for coping with these impacts derived from case study research and discussions with the Bi-County Study Committee are presented in Section 5.