

# **Where are the Eastern Shore's Roads Taking Us?**

An Exploration of Cross-Bay Travel Demand Management and Regional  
Transportation-Land Use Solutions

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## Prologue

The Eastern Shore Land Conservancy (ESLC) is a conservation nonprofit that has for nearly twenty years advanced strategic land conservation and sound land use planning on the Eastern Shore. As part of these efforts, in 2002, we worked with the Counties of the Middle and Upper Shore to together sign onto a regional land use agreement, called Eastern Shore 2010. This landmark agreement articulates aggressive County-by-County goals through the year 2010 concerning conservation and land use planning.

With progress being made on several goals, we have turned our full attention to the fourth and perhaps most difficult goal of Eastern Shore 2010. This calls for the Counties to pull together to create a region-wide vision for transportation—a vision that can enable the region to harness transportation policy as an ally in sustaining the Eastern Shore landscape and way of life.

To catalyze action, in the spring of 2008, we launched a full effort to gather the research, perspectives, and ideas on how best to manage Chesapeake Bay Bridge demand by making the most out of existing infrastructure, and multi-modal and user friendly regional transportation planning for what comes next. Included in this effort was a coalescing of a diverse network of transportation practitioners and local leaders into an Advisory Council. With this Council, research was begun on the subject of Eastern Shore transportation challenges and opportunities, and a regional conference was hosted in the fall of 2009 to vet emerging solutions.<sup>1</sup>

By initiating this effort, ESLC hopes to begin framing the issues and identifying potential solutions. It is not meant to be the final word, but rather a starting point in a dialogue with residents and regional leaders about setting the right course for the future of the Eastern Shore. We extend our heartfelt thanks to all who have been engaged in this research effort, and to the Eastern Shore leaders who are being asked to use this effort as a springboard for action. We stand ready and willing to help the you on the next steps on this important path.

*Eastern Shore Land Conservancy  
April 2009*

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<sup>1</sup> Note: Over the past decade, a new bridge has been discussed in varying degrees to solve congestion problems on the current Chesapeake Bay crossings. ESLC is opposed to a new auto oriented Bay crossing. This current transportation inquiry does not consider a new Bay span because Goal 4 of Eastern Shore 2010 commits this region to finding alternatives to a new Bay crossing.

## **Statement from the Eastern Shore Sustainable Transportation Advisory Council**

This Transportation Advisory Council was formed by the Eastern Shore Land Conservancy in spring 2008 to explore transportation issues and planning on the Eastern Shore. We represent a wide array of interests and expertise, from county and economic development staff to transportation practitioners. Our purpose was to guide research on framing the issues and identifying potential solutions to the Eastern Shore's unique transportation challenges. The full suite of ideas explored are available in the research brief, entitled **Where are the Eastern Shore's Roads Taking Us? An Exploration of Cross-Bay Travel Demand Management and Regional Transportation-Land Use Solutions**.

After nearly a year of work together on this important topic, the Advisory Council offers the following broad conclusions to the leaders of the Eastern Shore:

**Time is Now for the Eastern Shore to Take Action:** From the Bay Bridges to Reach the Beach, transportation policy has had a profound impact on the Eastern Shore. Today, shifts in fuel, population dynamics, funding, and climate change consideration have placed transportation policy at a crossroads. Available now is a window of opportunity for Eastern Shore leaders to take the reins on the powerful force of transportation policy--harnessing it to be an ally in sustaining the Eastern Shore landscape and way of life.

**Thinking Differently:** There is a mounting body of evidence and growing consensus that the conventional approach of "solving" traffic congestion by expanding roadway capacity is ineffective. Needed is a new approach to our transportation planning – one that emphasizes transit and other forward-thinking measures to make the most out of the infrastructure we have, and emphasizes local land use decisions that decrease auto-dependence and increase transportation choices.

**Realizing the Power of Local Decisions:** One of the strongest themes to emerge in our work together was realization that local land use decisions collectively are the biggest drivers of transportation policy on the Eastern Shore. Needed is a policy shift towards greater emphasis on improved transit services and facilities (e.g., Delmarva Community Services), improved pedestrian and bicycle infrastructure, and fostering compact development patterns in and around existing towns and villages.

**The True Solution is Regional:** None of the solutions presented will meet our region's transportation challenges in isolation. Rather, the best answer can be found in Eastern Shore leaders developing together a regional plan based on a common vision for sustainable transportation and land use. This could further entail revisions to Eastern Shore comprehensive plans to ensure consistency with such a vision. It could also include establishment of a regional Transportation Management Association (TMA). A TMA could be useful in coordinating all demand management programs (universal transit passes, guaranteed ride home, etc.) on the Eastern Shore. This model has been used effectively in other locations including in Delaware, where TMA Delaware administers an array of coordinated transportation services including vanpooling, pre-tax commuter benefits, and rideshare matching, to name a few.

In conclusion, Eastern Shore County leaders stand at a pivotal opportunity for shaping the future of transportation policy, and by effect, the future of the region's landscape. It is in your hands to take action now to evaluate options and together chart a sustainable course for the Eastern Shore.

## **BUILDING A VISION FOR REGIONAL TRANSPORTATION Advisory Council**

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## Executive Summary

The construction of the Chesapeake Bay Bridge and construction of major highways has had profound and far-reaching impacts on the Eastern Shore and its relationship to the rest of Maryland. During the second half of the 20<sup>th</sup> century, living on one side of the Bay and working on the other became an increasingly attractive option for many Marylanders, and made possible an ever-increasing tourism industry at coastal resort destinations. The extraordinary level of cross-Bay automobile access made possible by the Bay Bridge also brought with it unprecedented amounts of development to the Eastern Shore. In the past, much of the development that has occurred on the Eastern Shore, like in most places in the U.S. since the end of World War II has been in a suburban pattern of relatively low density housing subdivisions spread across the countryside and shopping centers along highway strips.

This pattern has resulted in a high degree of dependence on automobiles, the unintended consequences of which are only now starting to become clear on the Eastern Shore. Growing concerns about the loss of agricultural and environmentally sensitive lands, increasing traffic congestion, the negative health effects of automobile dependence (particularly on children), and more recently, our vulnerability to unstable energy prices and climate change, have all led to a realization that sprawl development and current transportation no longer sustainable.

A sense of urgency has emerged for finding long-term solutions to these challenges. In order to find real solutions to the challenges the Eastern Shore is facing, a new direction is clearly needed. There is a mounting body of evidence and growing consensus that the conventional approach of “solving” traffic congestion by expanding roadway capacity is ineffective. In fact, it can actually have the unintended consequence of exacerbating congestion over the long term by inducing additional traffic and development that would not have occurred otherwise had the facility not been widened or built. This leads to a vicious cycle of roadway expansion, increased travel demand and development, increased traffic congestion, new roadway expansion, and so on. It is analogous to treating the symptom of a problem rather than the root cause itself.

In order to break out of this cycle, the answer lies in treating congestion as a mobility issue, rather than as a traffic issue. The Eastern Shore Land Conservancy (ESLC) recognizes this, and believes that bold action and leadership is needed to change the status quo towards a more sustainable future.

As part of its Eastern Shore 2010 Initiative, ESLC has recognized that addressing transportation issues in a meaningful way is key to preserving rural lands on the Eastern Shore. It also recognizes the importance of integrating transportation and land use in creating a sustainable Eastern Shore. In order to find sustainable transportation solutions for the Eastern Shore, ESLC is focusing on two primary topics: 1) Cross-Bay “travel demand management”, which deals with inter-regional mobility and 2) Regional transportation and land use planning, which deals primarily with intra-regional mobility. These topics are closely linked and one affects the other.

By initiating this effort, ESLC hopes to begin framing the issues and identifying potential solutions. It is not meant to be the final word, but rather a starting point in a dialogue with residents and regional leaders about setting the right course for the future of the Eastern Shore.

## **Efforts to Improve Cross-Bay Travel Options**

*Studies:* In recent years, the State of Maryland has conducted a number of studies dealing with Chesapeake Bay-related transportation issues that were useful in highlighting issues and challenges regarding traffic congestion on the Bay Bridge, and the feasibility of ferry service across the Bay. However, the studies focused on specific transportation facilities or services, and were not part of a comprehensive effort to develop solutions for cross-Bay mobility. In general, there has been no comprehensive effort to date by any entity to develop a vision or plan to guide investments in cross-Bay transportation infrastructure and mobility.

*Commuter transit and ridesharing:* The Maryland Transit Administration (MTA) operates two commuter bus routes from Kent Island in Queen Anne's County to stops in downtown Washington, DC. These services have been growing in popularity in recent years. However, no bus service currently exists to other employment markets including downtown Annapolis, Baltimore, or BWI/Ft. Meade areas, which collectively represent a substantial proportion of the work destinations of Eastern Shore commuters. Ridesharing activity on the Eastern Shore, which includes carpooling and vanpooling, has generally been low, although the recent spike in gas prices resulted in increased interest in this option.

*Discounted Tolling for EZ-Pass.* Despite its intended purpose, the EZ-Pass program offering commuters 60% discounted toll rates has had the unintended consequence of encouraging long distance, single-occupant vehicle commuting and increasing development pressure.

*Telecommuting.* Telecommuting on the Eastern Shore has become more feasible in the past 3 to 5 years through significant efforts to introduce broadband internet service.

## **Transportation and Land Use Planning in the Region**

*Regional cooperation:* There has been significant progress over the last decade in establishing "regional councils" which engage in the promotion of business, employment, tourism, and economic development. These entities have also been instrumental in restructuring county-based public transit services into regional transit providers and in working with MTA to develop Coordinated Transit Plans. While these transit services provide vital transportation to largely disadvantaged populations, they operate primarily as a "human service" and are not generally an attractive alternative for those who have access to automobiles.

Transportation and land use planning activities at the county and municipality levels have not had a great deal of inter-jurisdictional integration. The Reality Check Plus workshop on the Eastern Shore showed strong support for focusing new development in designated growth areas and preserving open space, but policies that encourage alternatives to driving did not appear as part of the synthesized results.

*Local Policies and Practices:* Recently there has been growing interest in developing alternative forms of transportation and promoting compact development patterns on the Eastern Shore. Historically, most comprehensive plans of Eastern Shore jurisdictions have traditionally had transportation elements that emphasize the automobile as the primary means of transportation for most people. Moving ahead, Eastern Shore communities will realize gains by continued investment in bicycle and pedestrian infrastructure as a recreational amenity than as a transportation mode, while growing efforts toward transit as a viable alternative transportation mode.

Like many rural areas across the country, land use policies in the Eastern Shore for years have enabled low density development outside of existing towns and Growth Areas, as well as the separation of uses. Particularly in the past decade, however, there has been a significant shift in this trend: conservation work and rural zoning has tightened up development in agricultural areas and a number of Eastern Shore jurisdictions have begun to introduce language into their comprehensive plans that promote compact growth and infill development. Still helpful though are zoning ordinances or design standards in municipalities and Growth Areas that allow the kind of development densities and mix of uses that support transit or walkability. This would be further enhanced by an emphasis by local public works on creating inviting environments for pedestrians, bicyclists, and transit patrons.

## Potential Strategies

**Cross-Bay Travel Demand Management (TDM).** Rather than expanding highway capacity as a strategy in reducing traffic congestion, TDM focuses on creating convenient and attractive alternatives to driving. It also recognizes the inextricable link between transportation and land use as an integral part of the solution. Potential TDM strategies for Cross-Bay mobility include the following:

- **Inter-regional transit network.** Establish an inter-regional transit network linking the Eastern and western shores. Expanding commuter bus services that connect the Eastern Shore to major employment centers and rail connections to Baltimore, Washington, DC, Fort Meade, and BWI Airport; establishing a high quality inter-regional line haul “backbone” service between DC/Baltimore/BWI and Ocean City with stops on Kent Island, Chesapeake College, Easton, Cambridge, and Salisbury; re-establishing the “Reach the Beach” express bus service; and establishing a complimentary intra-regional bus network that links Eastern Shore towns and villages to the inter-regional line haul service and to each other.
- **Safety improvements.** Focus on safety improvements for the existing Bay Bridge and highway infrastructure. Additional safety improvements could be implemented at and near the Bay Bridge that could reduce incidents and delays.
- **Ferry network.** Establishing a Chesapeake Bay ferry network in markets and destinations where it makes sense from an economic and market standpoint. Such ferry service could be a tool for enhancing economic vitality and place-making in waterfront towns.
- **Replacing one or both of the existing Bay Bridge spans with a transit-friendly crossing.** At some point, it may become necessary to replace one or both of the existing spans, particularly the original eastbound span which opened in 1952.
- **Implement Managed Lanes.** “Managed Lanes” is a system of charging motorists variable tolls based on time of day or vehicle type in order to reduce traffic congestion. This involves changing pricing on existing lanes not adding new lanes. Managed Lane strategies regulate demand, making it possible to manage congestion without increasing roadway capacity, or supply. The methods for managing lanes in this method consist of 1) *Congestion Pricing*, which provides motorists an option of paying a higher toll during peak congestion periods in exchange for traveling in “express lanes” that are calibrated to remain congestion-free. Peak-period toll charges are set to a level that achieves free-flow speeds, and 2) *High Occupancy Toll (HOT) Lanes*, whereby registered carpools and vanpools with transponders are permitted to use express lane and pay either a deeply discounted toll or no toll at all, regardless of time of day.



- **Explore the potential for shifting truck freight to rail and waterborne modes.** Trucks account for approximately 15% of all vehicles on the Bay Bridge, which translates into more than 8,000 trucks on an average weekday. Shifting some portion of freight to other modes could have benefits for safety, congestion, and the environment.
- **Institute “pay-as-you-drive” (PAYD) auto insurance.** PAYD auto insurance bases insurance premiums on the number of miles driven annually. This provides a strong incentive to drive fewer miles, especially by seeking alternatives to commuting by single occupancy vehicle.
- **Implement a “Guaranteed Ride Home” Program.** A “Guaranteed Ride Home” program allows commuters who use transit to get home from work during midday periods in when transit service may not be available or convenient. Transit agencies typically contract with a taxi service to provide on-demand service to transit patrons during off peak periods at a significantly reduced rate.

***Sustainable Transportation and Land Use Policies.*** In conjunction with the potential cross-Bay demand management strategies outlines in Part I, an equally important set of strategies will involve a shift towards more sustainable forms of transportation and land use patterns on the Eastern Shore itself. This includes greater emphasis on improved transit services and facilities, improved pedestrian and bicycle infrastructure, and by fostering compact development patterns in and around existing towns and villages to support walkability and transit use. Such strategies include the following:

- **Intra-regional transit network.** Develop a high quality “intra-regional” transit network on the Eastern Shore that evolves beyond its role of “human service” and provide an attractive alternative to driving for all segments of Eastern Shore’s population.
- **Pedestrian and bicycle infrastructure around transit.** Develop pedestrian and bicycle infrastructure around transit stops, town centers, and job centers in conjunction with expansion of transit services. This includes sidewalks, crosswalks, bikeways and bike lanes, “bike stations”, and other amenities.
- **Complete Streets.** Create “Complete Streets” that balance pedestrian, bicyclist, and transit mobility with that of through-traffic and local traffic circulation. The concept of Complete Streets provides the tools for making streets more pedestrian and bike friendly through street design modifications such as bike lanes, wider sidewalks, street trees, and pedestrian level lighting.
- **Establish regional planning efforts.** Establishing regional planning efforts among Eastern Shore Counties in order to guide new policies that foster compact land use, walkable communities, and creation of a high-quality transit network. Such efforts could include development of a regional plan based on a common vision for sustainable transportation and land use in the region. It could also include establishment of a regional Transportation Management Association (TMA) to coordinate all demand management programs (universal transit passes, guaranteed ride home, etc.) on the Eastern Shore.
- **Build support for sustainable transportation and land use policies and practices at all levels throughout the region.** With greater public support, the Eastern Shore could become a national model for implementing these kinds of policies and practices.

- **Develop funding criteria for transportation projects that lead to sustainability.** This involves developing new criteria for evaluating potential transportation projects based on a broader set of indicators such as public health, climate change, equity/socioeconomic, and life-cycle costs.
- **Develop an “auto trips generated” transportation impact fee.** This policy would require new development to pay an impact fee per “new auto trip generated”, thereby creating an incentive for developers to reduce auto trips associated with their projects through demand management programs.
- **Develop programs to reduce school-related travel.** School-related travel is one of the largest contributors to AM peak congestion and one of the main reasons that parents cite for not commuting by transit. Where school districts are not providing transportation, potential strategies to reduce school-related travel include “Safe Routes to School” Programs and Childcare Transportation Shuttles.
- **Implement a regional car-sharing program.** Car-sharing is a membership system in which members can reserve and use cars on an hourly basis at low cost. Cars are located at one or more central facilities, typically in walkable town centers and at major transit stops.
- **Promote telecommuting.** Provide incentives for employers to offer telecommuting, flexible work schedules, and 9/80 work weeks and other strategies that reduce commuting or shift it to off-peak periods.
- **Provide universal transit passes.** Provide incentives to employers and major development projects to provide universal transit passes (or “Eco-Passes”). These are low-cost or free transit passes that employees or residents automatically receive, provided by employer, developer, and/or transit agency.
- **Foster compact development.** Require/incentivize new development to be within Growth Areas and designed to be mixed-use, pedestrian-friendly, and concentrated in and around walkable town centers where new transit services and facilities will be implemented.
- **Regional Transfer of Development Rights (TDR) program.** A TDR program might work at the regional level to allow underdeveloped counties to “give” some of their development capacity to already urbanized areas in exchange for some revenue.
- **Provide “Transportation-Efficient Mortgages (TEM).”** TEM’s encourage homebuyers to locate close to transit by offering them more favorable financing in “transit efficient” neighborhoods because transportation costs are often lower than living in automobile-dependent locations where transit and walk options often don’t exist.
- **Adopt progressive parking policies.** Require that parking for new development be unbundled from the sales/lease costs of the habitable area. Requiring that off-street parking at new residential development be optional, gives consumers the option of lower their housing costs and provides an incentive to buy or rent a home that is located near transit or is walkable to other destinations. Adopt innovative parking standards that enable compact, mixed-use walkable, transit-supportive land use.

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## **Introduction**

### **The Dawn of a New Era**

The Chesapeake Bay Bridge has a history of confounding expectations. In the 1930's when an automobile bridge linking the Eastern and western shores of Maryland was first proposed, H.L. Mencken dismissed the idea as "lunacy worthy of Jules Verne." When the first span opened in 1952, the original forecasts for anticipated traffic volumes and toll revenue were exceeded faster than anyone ever imagined. As the bridge became more congested, plans for an additional span were developed and a second parallel bridge was constructed and opened to traffic in 1973. In the decades to come, traffic volumes have continued to increase steadily and backups at the Bridge, especially during the summer months have become expected.

Building the Chesapeake Bay Bridge had profound and far-reaching impacts on the Eastern Shore and its relationship to the rest of Maryland. Living on one side of the Bay and working on the other became an increasingly attractive option for a growing number of Marylanders, and made possible an ever-increasing tourism industry at coastal resort destinations.

The extraordinary level of cross-Bay automobile access made possible by the Bay Bridge also brought with it unprecedented amounts of development to the Eastern Shore, fueled by the lure of "rural lifestyle", lower housing costs and taxes, low crime rates, and less traffic congestion than in the large metropolitan areas. Nearly all of this growth and development was made accessible by widespread availability of private automobiles, which itself was made practical by vast upgrades to the highway network throughout the Eastern Shore. Historically, much of the development that has occurred on the Eastern Shore, like in most places in the U.S. since the end of World War II has been in a suburban pattern of relatively low density housing subdivisions spread across the countryside and shopping centers along highway strips. For much of the second half of the 20<sup>th</sup> Century, this arrangement seemed to work fine for most people.

### **The Free Ride Ends**

Beginning gradually in the 1980's and accelerating through the 1990's until today, a growing realization began to set in about problems associated with the automobile-centric transportation system and development pattern that is now taken for granted. The first real sign of trouble came in the form of concerns over the alarming consumption of agricultural land and open space by "sprawl", its negative effects on the environment, especially the Chesapeake Bay and its tributaries.

This was followed by growing recognition of sprawl's impact on public health, particularly towards children, and the lack of opportunity to walk or bike in suburban and rural communities. At the same time, there has been growing concern about the effects sprawl has on traffic congestion, long commutes, the growing percentage of household income devoted to transportation costs, social isolation, housing affordability, and quality of life in general. This has been echoed throughout the country as well as on Maryland's Eastern Shore.

Moreover, in addition to those problems, recent global events including the current economic crisis, which may last for years, unstable energy and food prices, and growing awareness of

climate change, have left the Eastern Shore particularly vulnerable. This vulnerability has to do with the disproportionately high imbalance between households and jobs in the region, as well as the lack of alternative transportation options to reach those jobs. From an environmental standpoint, *The Maryland Climate Change Commission's Climate Action Plan*, Released in August, 2008, concluded that the Eastern Shore is particularly vulnerable to the effects of global warming. The report concluded that global warming will likely have significant adverse impact on water resources and aquatic environments, forests and farms, Bay and coastal ecosystems, and public health. Moreover, it will result in a receding shoreline and significant loss of land mass in low lying areas due to rising sea levels.

## **Charting a New Course**

A sense of urgency has emerged for finding long-term solutions to these challenges. There is a mounting body of evidence and growing consensus that the conventional approach of “solving” traffic congestion by expanding roadway capacity is ineffective. In fact, it can actually have the unintended consequence of exacerbating congestion over the long term by inducing additional traffic and development that would not have occurred otherwise had the facility not been widened or built. This leads to a vicious cycle of roadway expansion, increased travel demand and development, increased traffic congestion, new roadway expansion, and so on. It is analogous to treating the symptom of a problem rather than the root cause itself.

A prime example of this is that despite massive expenditures in highway expansion that were designed to ease traffic congestion on the Eastern Shore, particularly along beach routes, congestion has persisted and only continues to worsen. In order to break out of this cycle, the answer lies in treating congestion as a mobility issue, rather than as a traffic issue. The Eastern Shore Land Conservancy (ESLC) recognizes this, and believes that bold action and leadership is needed to change the status quo towards a more sustainable future.

As part of its Eastern Shore 2010 Initiative, ESLC has recognized that addressing transportation issues in a meaningful way is key to preserving rural lands on the Eastern Shore. It also recognizes the importance of integrating transportation and land use in creating a sustainable Eastern Shore. In order to find sustainable transportation solutions for the Eastern Shore, ESLC is focusing on two primary topics: 1) Cross-Bay “travel demand management”, which deals with inter-regional mobility and 2) Regional transportation and land use planning, which deals primarily with intra-regional mobility. These topics are closely linked and one affects the other.

By initiating this effort, ESLC hopes to begin framing the issues and identifying potential solutions. It is not meant to be the final word, but rather a starting point in a dialogue with residents and regional leaders about setting the right course for the future of the Eastern Shore.

## 2.0 Current Situation

This section provides a synopsis and assessment of efforts to date for addressing traffic congestion and providing alternative travel options across the Chesapeake Bay, as well as about the state of transportation and land use planning on the Eastern Shore.

### 2.1 Efforts to Improve Cross-Bay Travel Options

#### Studies

In recent years, the State of Maryland has conducted a number of studies dealing with Chesapeake Bay-related transportation issues, including the following:

- Chesapeake Bay Ferry Evaluation (2003).
- Bay Bridge Needs Report (2004)
- Task Force Report on Bay Bridge Traffic Capacity (2006)
- Transit-Only Concepts to Address Capacity Across Bridge (2007)

These studies were useful in highlighting issues and challenges regarding traffic congestion on the Bay Bridge, and the feasibility of ferry service across the Bay. However, the studies focused on specific transportation facilities or services, and were not part of a comprehensive effort to develop solutions for cross-Bay mobility. Moreover, these studies did not take into account emerging global changes in economic conditions, instability of energy prices, or climate change issues, all of which have profound affects on the movement of people and goods across the Chesapeake Bay and the transportation system in general. The studies also largely assumed a continuation of the status quo of travel trends and land use policies and were not designed to develop a vision or plan for addressing these fundamental challenges. In general, there has been no comprehensive effort to date by any entity to develop such a vision or plan to guide investments in cross-Bay transportation infrastructure and mobility.

In 2007, a volunteer ad-hoc committee, sponsored by the City of Annapolis, produced a study to examine the concept of ferry service on the Chesapeake Bay. The committee's approach differed significantly from that of the State of Maryland, in that the ad-hoc committee sought to identify markets for potential ferry services that would create revitalization and economic development opportunities along waterfront locations, in conjunction with walkable and transit-oriented travel. In addition, unlike the State's study, it focused on ferry service that would carry pedestrians only, as opposed to services that would be primarily for transporting vehicles.

#### Services and Programs

*Commuter Bus Services and Ridesharing.* For the past several years, MTA has operated two commuter bus routes from Kent Island in Queen Anne's County to stops in downtown Washington, DC. These routes provide a total of ten trips each way during peak travel periods. These services have been growing in popularity in recent years, particularly during the spike in gas prices in the summer of 2008. No commuter bus service currently exists, however, to other employment markets including downtown Annapolis, Baltimore, or BWI/Ft. Meade areas, which collectively represent a substantial proportion of the work destinations of Eastern Shore commuters. Ridesharing activity on the Eastern Shore, which includes carpooling and vanpooling, has been relatively low, although high gas prices have led to increased interest in this option.

*Discounted Tolling for EZ-Pass.* As a congestion reduction strategy at the Bay Bridge, the EZ-Pass program began offering significantly discounted toll rates to frequent bridge users several years ago. However, these discounts, which equal 60% off the regular toll, actually have the opposite effect on congestion when placed in the larger context of regional travel demand. This benefit is a strong inducement for commuting from the Eastern Shore, where housing is less expensive, to jobs on the western shore, where salaries are higher and where most jobs are located. An unintended consequence of this benefit has been to encourage long distance, single-occupant vehicle commuting and increase development pressure.

*Telecommuting.* The potential for working remotely, either at home or at “telework” centers, on the Eastern Shore has become more feasible in recent years with efforts to introduce broadband internet service. There has been significant progress within the past 3 to 5 years in expanding broadband service on the Eastern Shore, but there have been no published surveys or studies to date that have tracked telecommuting levels or patterns on the Eastern Shore, either before or after the introduction of broadband.

## **2.2 Transportation and Land Use Planning in the Region**

### **Regional Cooperation**

There has been significant progress over the last decade in establishing entities that have fostered certain forms of regional cooperation. This has included the creation of several “regional councils” for the promotion of business, employment, tourism, and economic development. These include The Upper Shore Regional Council, The Mid-Shore Regional Council and the Tri-County Lower Shore Regional Council.

Another important aspect of these entities has been in facilitating the restructuring of county-based public transit services into regional transit providers. Including the Maryland Upper Shore Transit (MUST) and Shore Transit, which provide fixed route and demand responsive transit services on the Eastern Shore. These entities have also worked with MTA to develop Coordinated Transit Plans.

It should be noted, however, that while these transit services provide vital transportation to largely disadvantaged populations, they currently operate primarily as a “human service”. The level of transit service provided, in terms of frequency, locations served, and amenities, are not yet structured or funded at levels that this a viable alternative for the broader population. .

In contrast with the increased activity in regional cooperation regarding economic development and public transit, there has been less so regarding transportation and land use planning on the Eastern Shore. Transportation and land use planning activities have largely been done at the County and municipality levels, without a great deal of inter-jurisdictional integration. Moving toward regional transportation, one of the stated goals of the Eastern Shore 2010 Agreement, which was signed by the six upper shore Eastern Shore Counties, was to create a regional transportation plan that would positively affect land use patterns, and to work cooperatively to identify alternatives to a new Bay Bridge span.

## **Local Policies and Practices**

Until the past decade, there was much work to be done in the region to develop alternative forms of transportation or promote compact development patterns on the Eastern Shore. This was due in large part to decades of relatively inexpensive gasoline prices, greater housing affordability, and lack of information of climate change issues. Most comprehensive plans of Eastern Shore jurisdictions have traditionally had transportation elements that emphasize the private automobile as the primary means of transportation for most people. From a statewide perspective, this has also been reflected in infrastructure investments which have predominantly favored roadway expansion and the convenience of the automobile.

Looking ahead, there is a good deal of potential for investing in bicycle and pedestrian infrastructure as both a recreational amenity and a viable alternative transportation mode. Further, great gains could be realized in expanding public transit reach into the broader population.

Like many rural areas across the country, land use policies in the Eastern Shore for years have enabled low density development outside of existing towns and Growth Areas, as well as the separation of uses. Particularly in the past decade, however, there has been a significant shift in this trend: conservation work and rural zoning has tightened up development in agricultural areas and a number of Eastern Shore jurisdictions have begun to introduce language into their comprehensive plans that promote compact growth and infill development. Still needed though are zoning ordinances or design standards in municipalities and Growth Areas that allow the kind of development densities and mix of uses that support transit or walkability. This would be further enhanced by an emphasis by local public works on creating inviting environments for pedestrians, bicyclists, and transit patrons.

In addition, most local public works departments on the Eastern Shore use street design standards which favor automobiles. Improvements could be found in emphasizing inviting environments for pedestrians, bicyclists, and transit patrons.

In 2008, the Maryland Department of Planning issued a report entitled, "A Shore for Tomorrow," which outlined the growth challenges facing the Eastern Shore and provided a series of recommendations for implementing policy changes at the local level. While the report did not address transportation policy, the land use recommendations it provided focused on creating compact development patterns that lead to increased transportation choice. These recommendations are advisory in nature since land use controls are at the local level. Therefore, the extent to which these recommendations will be embraced and implemented lie with individual Eastern Shore municipalities.



### 3.0 Potential Strategies

A comprehensive, regional approach to developing long-term transportation solutions for cross-Chesapeake Bay and the Eastern Shore is needed. This section presents a menu of potential strategies for that purpose. Section 3.1 addresses cross-Bay “travel demand management”, and Section 3.2 addresses Regional Transportation and Land Use Planning. Each section has been organized into themes, as follows:

- Infrastructure
- Programs
- Funding
- Land Use
- Regional Cooperation
- Standards

These potential strategies do not represent a one-size-fits-all approach. However, if properly tailored for the Eastern Shore, it does identify the kind of progressive approaches that could form the foundation for long-term solutions needed for cross-Bay mobility.

It is important to note that the strategies in both sections will be most effective when done in tandem and in many cases will be dependent on each other. That is, cross-Bay demand management strategies will directly and indirectly influence the success of the regional transportation and land use planning strategies, and vice-versa. Implementing every strategy is not necessarily required for success, but a critical mass will be needed in order to achieve meaningful and transformative change. The more that can be implemented, the greater the positive net effect will be.

### 3.1. Cross-Bay Travel Demand Management

In order to create a sustainable future for the Eastern Shore, adopting new, innovative strategies for addressing mobility between the Eastern and western shores are imperative. Instead of attempting to alleviate traffic congestion by expanding roadway capacity, a more progressive and sustainable approach is the concept of “Travel Demand Management”, or TDM. TDM is a term that is used to describe policies and programs that reduce the demand for driving by creating convenient and attractive alternatives to driving. It also recognizes the inextricable link between transportation and land use as an integral part of the solution.

#### Infrastructure

During the second half of the 20th century, a great deal of public investment in transportation infrastructure went into improving access between the western and Eastern Shores of the Chesapeake Bay. Throughout this era, there has been an expectation that virtually all cross-Bay travel would occur by private automobile. As such, nearly all of this infrastructure came in the form of highways and bridges in order to facilitate this type of travel. Today, however, a more balanced approach to transportation infrastructure is required in order to achieve more sustainable solutions for cross-Bay mobility. Such strategies should consider the following:

- Establishing an **inter-regional transit network** linking the Eastern and western shores. Attractive transit options should increasingly be seen as a key part of a sustainable mobility

strategy for the Eastern Shore. Such a network could be implemented in phases over time, and could consist of:

- Expanding **commuter bus services** that connect the Eastern Shore to major employment centers and rail connections to Baltimore, Washington, DC, Fort Meade, and BWI Airport. This could include incorporating bus rapid transit features such as pre-paid boarding, dedicated travel lanes, signal pre-emption, etc. This service would originate in Queen Anne's and Talbot Counties in park and ride lots and select town centers. Park and Ride facilities and amenities would need to be significantly improved over what is provided today.
- Establishing a **high quality inter-regional "backbone" service** between DC/Baltimore/BWI and Ocean City with stops on Kent Island, Chesapeake College, Easton, Cambridge, and Salisbury. This could be an extension of the commuter service described above or by providing additional support for the expansion of intercity bus services between the Baltimore-Washington metropolitan areas and Eastern Shore destinations. This service would begin as rapid bus with premium amenities, with the eventual goal of becoming inter-regional rail service, using Diesel Multiple Unit (DMU) train-sets or similarly appropriate technology. DMU trains are self-propelled passenger rail cars that can be operated independently or in sets of two or three. DMUs are ideally suited for medium distance regional rail service that link towns together, especially in rural areas where demand is high enough to support rail service, but not high enough to justify longer train-sets pulled by locomotives.
- Re-establishing the **"Reach the Beach" express bus service** for beach-bound tourists from the western shore that was discontinued in the early 1990's due to recession and budget cuts. To maximize opportunities for success, this updated service should include premium amenities, express service, and potentially "queue-jumping" capabilities on shoulder lanes to bypass congested intersections.
- Establishing a **complimentary intra-regional bus network** that builds on existing transit services, in order to link Eastern Shore towns and villages to the inter-regional line haul service and to each other. This will be more fully described in Part II.

#### Benefits

- Implementing a true public transit system on the Eastern Shore will create increased mobility choices for many Eastern Shore residents and can significantly reduce the dependence on driving, particularly for those who regularly travel across the Chesapeake Bay.
- Transit can be used as an economic development tool for revitalizing traditional town centers and shaping compact growth that reduces sprawl and land consumption.
- Transit provides an alternative to single occupant vehicle driving and can reduce Vehicle Miles Traveled (VMT) and congestion on Bay Bridge and on US 50/301.
- Shifting trips from automobiles to transit reduces harmful greenhouse gas emissions, and helps improve regional air and water quality.

- Transit has the potential to provide commuters with a lower cost and faster alternative to driving, particularly in conjunction with “Managed Lanes”.

#### Obstacles

- Implementing these strategies would require a significant increase in transit funding over present levels and would likely be politically difficult to achieve, in terms of both funding and public acceptance.
- Sufficient development intensity does not currently exist in many places on the Eastern Shore to make most transit services highly effective.
- Attitudes and perceptions towards public transit have generally not been favorable on the Eastern Shore, although this has begun to change as the price of oil has become unstable.
- There is a concern among some that improving cross-Bay public transit options may actually encourage sprawl development.
- Some existing commuter bus trips between Kent Island and points on the western shore are being cut because of the State’s budget crisis during the economic downturn.

#### Analysis

Major outreach efforts will be needed to change public perception, create adequate funding streams, and enact policy changes to foster development patterns that support transit services. A recent survey by ESLC showed that a majority of respondents favor improved transit options on the Eastern Shore, and this is an encouraging start. The results of the survey, Eastern Shore Land Conservancy 2008 Land Use Planning Poll, can be found at <http://www.eslc.org/pages/poll.php>.

A major commitment from the State of Maryland would be needed to pursue development of an inter-regional transit service between the Eastern and western shore, as well as significantly increased transit funding for locally operated systems.

A comprehensive transit plan and strategy for the Eastern Shore should be developed that focuses on innovative solutions. This should include an analysis of what long term effects innovative transit options in conjunction with other measures such as Managed Lanes and transit supportive development could have on overall travel behavior and congestion on the Bay Bridge.

MTA currently operates two commuter express bus service from Kent Island to Annapolis and downtown Washington DC. Higher gas prices and implementation of Managed Lanes on the Bay Bridge could bring about dramatic increases in demand for transit service to reach jobs on western shore. The need for more efficient public transit also highlights the need for better development patterns and policies that support those concepts.

- **Focusing on safety improvements for the existing Bay Bridge and highway infrastructure.** Particularly after the truck accident in the summer of 2008, a great deal of public concern has been focused on the safety of the Bay Bridge. Eastern Shore leaders currently are working to ensure additional safety improvements to reduce incidents and delays. While a full exploration of safety improvements is beyond the breadth of this research report, the importance of these safety issues must be acknowledged as a key component of any transportation plan for the region.

#### Benefits

- It would reduce the risk of collisions resulting in fewer injuries, and more lives and property saved.
- It would reduce vehicle delay and lost productivity.

#### Obstacles

- Additional funding for safety improvements would need to be allocated.

#### Analysis

The majority of accidents at the Bay Bridge occur as a result of rear end collisions at the approach to the toll booth plaza. Increasing driver awareness through signage and pavement markings, improving geometrics, Intelligent Transportation Systems (ITS) provisions, and implementing open-road tolls could potentially reduce rear end collisions.

- **Establishing a Chesapeake Bay ferry network in markets and destinations where it makes sense from an economic and market standpoint.** Such ferry service could be a tool for enhancing economic vitality and place-making in waterfront towns.

#### Benefits

- Potential economic development, tourism, and revitalization for smaller towns along the Bay.
- Potential for creating new trip patterns and economic activity without increasing VMT.

#### Obstacles

- A market for modern ferry service on the Chesapeake Bay is largely unproven and untested.
- There is skepticism among decision-makers towards the feasibility or competitiveness of ferries.
- Other than Baltimore and Annapolis, there are currently few settlements along the Bay with sufficient densities to justify “center to center” ferry service.

- Ferry service would likely not be a profitable venture, but rather a public service. This would require on-going public funding to make it viable.

### Analysis

A major shift in thinking would be required in order to see ferry service of any type come to fruition. Ferry service cannot compete with driving between many Eastern Shore and western shore points via the Bay Bridge in terms of cost and time. However, ferry service has the potential to be competitive by serving alternative markets and travel patterns, particularly when passenger-only ferries (no cars) are used and where compact, walkable destinations are located at either end of the trip. Transit services would also need to be coordinated with this type of ferry service to make it more functional as an alternative to the automobile. Further study using innovative approaches is needed to determine the true potential a Chesapeake Bay ferry system might have as a tool for economic development, revitalization, and tourism. Previous ferry studies (other than the 2007 ad-hoc ferry committee study) were narrowly focused on cost-benefit formulas only.

- **Replacing one or both of the existing Bay Bridge spans.** At some point, it may become necessary to replace one or both of the existing spans, particularly the original eastbound span which opened in 1952.

### Benefits

- A new multi-modal bridge span would help facilitate alternatives to single-occupancy vehicles and reduce peak period delays for those choosing other modes of travel.
- A new bridge span would be designed with state of the art safety features, and ostensibly eliminate the need for two way operation on either span under most circumstances.

### Obstacles

- Replacing an existing bridge span could place an enormous strain on state financial resources and potentially divert funds away from other needed infrastructure projects.

### Analysis

A new bridge span that replaces either existing span should include accommodation of Managed Lanes and a public transit guideway and/or rail line for passenger and freight service. Dedicated truck-only lanes could also be considered. In addition, any new bridge span to be constructed should be located to support transit use and existing travel patterns. This would preclude locations that would induce new “bedroom” development and new long distance commuting patterns. The size and scale of this type of multi-modal bridge would be need to be carefully considered.

- **Exploring the potential for shifting truck freight to rail and waterborne.** Trucks account for approximately 15% of all vehicles on the Bay Bridge, which translates into more than 8,000 trucks on an average weekday. Shifting an additional portion of freight to other viable (e.g, rail, waterborne) modes could have benefits for safety, congestion, and the

environment. Further work is needed to understand the trip origins and destinations of truck traffic to find the best suite of freight solutions.

#### Benefits

- Reducing truck traffic on the Bay Bridge could have a positive effect on safety and congestion in the vicinity of the bridge.
- Shifting freight movement from trucks to other modes could have positive environmental impacts including air, noise, and water quality within the Chesapeake Bay Watershed.

#### Obstacles

- Moving freight by trucks has become the dominant method of goods distribution for many business sectors over the last several decades. Many distribution centers and manufacturing facilities that move goods have a well established trucking-based model that often includes being located along major highways and away from existing rail lines or waterways.

#### Analysis

Shifting freight to rail and waterborne transportation could have significant benefits to the region. For example, every fully loaded barge that utilizes the Port of Salisbury, Maryland takes 150 trucks off the Bay Bridge. However this is a complex issue that would likely require large scale regional coordination of public and private sector entities to establish new priorities, policies, and mechanisms that promote and facilitate such a shift. New infrastructure investments would also likely be needed to accommodate

#### Funding

- **Dedicating a significant portion of revenues from Managed Lanes towards alternative travel modes and safety improvements.**

#### Benefits

- Depending on other needs, revenues from Managed Lanes could represent a promising part of the solution towards finding new ways of funding transportation improvements.

#### Obstacles

- It is typically challenging to get political buy-in to dedicate user fees paid by motorists towards infrastructure improvements that are not associated with highway expansion.

#### Analysis

A major outreach and educational initiative would likely be needed in order to build consensus among state leaders and the general public to gain acceptance of using a significant portion of revenues for alternative travel mode initiatives.

## Programs

- **Implementing Managed Lanes.** “Managed Lanes” is a system of charging motorists variable tolls based on time of day or vehicle type in order to reduce traffic congestion. Managed Lane strategies regulate demand, making it possible to manage congestion without increasing roadway capacity, or supply. The primary methods for managing lanes in this method consist of the following:
  - *Congestion Pricing.* The system works by providing motorists an option of paying a higher toll during peak congestion periods in exchange for traveling in “express lanes” that are calibrated to remain congestion-free. Peak-period toll charges are set to a level that achieves free-flow speeds. In order to use the express lanes, motorists must be registered for the program and have a transponder in their vehicle. Single-occupant vehicles can opt to use general purpose lanes and pay a standard toll, which will likely be congested during peak periods, or pay a premium toll to use the express lane, thereby avoiding the congestion and delay. This strategy is effective in reducing travel demand during peak periods, thus reducing congestion.
  - *High Occupancy Toll (HOT) Lanes.* Registered carpools and vanpools with transponders are permitted to use the express lane and pay either a deeply discounted toll or no toll at all, regardless of time of day. This strategy provides an incentive to switch from single occupancy vehicles to multi-occupancy vehicles that could include carpools, vanpools, and transit, which will also help reduce congestion during peak periods. Further study is needed to understand enforcement issues related to HOT Lanes.

## Benefits

- It has the potential to reduce cross-Bay travel demand and traffic congestion during peak periods.
- It has the potential to reduce greenhouse gas emissions, and improve air and water quality.
- It provides an incentive to not commute across the Bay by single occupancy vehicle, and conversely provides a significant incentive to shift to transit and ridesharing.
- It has the potential to curb the growth of cross-Bay commuting overall and reduce sprawl pressure on the Eastern Shore.

## Obstacles

- Any perceived increase in tolls, even when Managed Lanes creates options for reduction in toll rates, may be met with strong resistance from current Bay Bridge users and the traveling public at large.
- It may be seen as an equity issue and make it politically difficult to achieve.

- It may be opposed by some Eastern Shore business interests as restricting the growth of their markets.

### Analysis

A Managed Lane strategy that includes a combination of HOT lanes and congestion pricing could be a highly effective tool for managing congestion at and near the Bay Bridge by “flattening out” the demand peaks over the course of the day. The State of Maryland is already pursuing Managed Lane strategies and is set to implement managed lanes (in tandem with additional capacity) on sections of interstate highways in the Baltimore and Washington regions. Tolls would be adjusted to correlate with congestion levels. The current \$2.50 toll would be higher during peak periods, and would decrease in periods of lighter congestion (potentially being less than \$2.50 during non-congested times). A significant public education program well in advance of proposing to implement Managed Lanes would be essential in helping Bay Bridge users understand the benefits and reduce potential opposition. To address equity concerns, low-income commuters could be provided discounts and/or be provided transit vouchers. New EZ-Pass discounts would be discontinued, and existing discounts would gradually be phased out over time. More research is needed to understand the political feasibility of such a strategy.

In addition to Managed Lanes on the Bay Bridge itself, it could also be implemented on US 50/301 on the western shore, and could include demand-responsive tolls that are charged on a per mile basis. This would further disincentivize long distance single-occupancy vehicle commuting, and include commuters who originate in Anne Arundel County and work in the Washington, DC region.

**Instituting “pay-as-you-drive” (PAYD) auto insurance.** PAYD auto insurance bases insurance premiums on the number of miles driven annually. This provides a strong incentive to drive fewer miles, especially by seeking alternatives to commuting by single occupancy vehicle. GMAC Insurance Group, which offers PAYD insurance policies in 34 states, says its customers have reduced the premiums they pay by 13% to 54%.

### Benefits

- Lower car insurance premiums to consumers.
- It has the potential to reduce cross-Bay travel demand and traffic congestion.
- It has the potential to increase demand for transit and ridesharing services.
- It provides an incentive to not commute across the Bay by single occupancy vehicle.

### Obstacles

- It is uncertain whether auto insurance companies will embrace this concept.

### Analysis

A pilot PAYD program has recently been started in Maryland by ONE major insurance company, Progressive. If it proves successful, it could see wider adoption throughout



Maryland. The system provides a significant cost savings to consumers, which may lead to strong demand for wider adoption.

- **Providing incentives for employers to offer telecommuting, flexible work schedules, and 9/80 work weeks and other strategies that reduce commuting or shift it to off-peak periods.** Telecommuting and similar strategies that reduce the need for employees to travel to work sites during peak travel periods, have been gaining popularity. First introduced in the 1980's, these TDM strategies have gained acceptance, particularly with the advent and ubiquity of e-mail, broadband internet, and other advanced telecommunications technologies that allow many types of jobs to be performed outside the office. In addition, telecommuting has become more accepted socially after years of pilot programs showing that remote workers can be as or more productive working from home than in an office. 9/80 work weeks have also gained in popularity nationally and are widely seen as beneficial to employees because they commute less, reduce wear and tear on vehicles, and enjoy more leisure time.

#### Benefits

- It can reduce peak period vehicle travel and traffic congestion.

#### Obstacles

- It would involve a significant level of cooperation among jurisdictions to create this type of program.

#### Analysis

Cooperation at federal, state, local levels in Maryland and the District of Columbia would be required to institute programs that provide these types of incentives to employers in the region. A successful regional "telework" program has been in place since the early 2000's that includes 19 centers in suburban locations throughout the greater Washington DC region. It is a partnership between the Metropolitan Washington Council of Governments (MWCOC) Commuter Connection Program and the General Services Administration (GSA). Several of these centers in Southern and Western Maryland, as well as Virginia and West Virginia are significant distances from Washington DC itself, and establishing one or more similar telework centers on the Eastern Shore could be comparable in distance.

There have been great strides in the last few years in establishing broadband telecommunications infrastructure in rural parts of Maryland, including the Eastern Shore, This significantly increases the feasibility of telecommuting and working remotely in general. Over the past few years, the Maryland Broadband Cooperative has achieved the following:

- Successfully completed both the Chesapeake Bay Bridge and the Harry Nice Bridge crossings
- Completed 10 mile fiber backbone attaching to 70 miles of network owned by W.L. Gore for resource sharing in the Elkton area
- Constructed network segment from Wallops Island to Salisbury to support MDBC members in providing services to NASA facility
- Connected 3 universities to MDBC backbone to support distance learning and mindshare

- University of Maryland, Eastern Shore; Salisbury State University; Chesapeake College
- Linked 12 separate Public Safety sites to MDBC backbone for SHA & MSP
- MDBC will shortly complete the Salisbury to Chesapeake Bay Bridge network connection
- 56 routes miles of optical network completed – 8,064 fiber miles (number of fibers times number of route miles)
- 203 route miles under construction – 29,232 fiber miles
- 941 additional route miles planned

Efforts at the State level have pushed for telecommuting centers, including HB 1537 sponsored by Delegate Walkup in 2009. However, thus far no great progress has been made on implementing cross-Bay teleworking centers.

- **Expanding the “Guaranteed Ride Home” Program.** This system allows transit commuters who need to get home from work unexpectedly to do so during midday periods when transit service may not be available or convenient. Transit agencies typically contract with a taxi service to provide on-demand service to transit patrons during off peak periods. This service is currently available to residents of the 5-county upper Eastern Shore who utilize the commuter bus to the Washington, DC region by bus, but not those who work in the Annapolis area or Baltimore region. (<http://www.mwcog.org/commuter2/commuter/grh/index.html>),). Expanding the program to those areas could provide an additional incentive to use transit.

#### Benefits

- It makes transit a more attractive option to commuters who might otherwise choose not to use it if the service was not available.
- It is relatively inexpensive to implement.

#### Obstacles

- While relatively inexpensive to implement, an increase in operating funds is still required for the sponsoring transit agency.
- It would take considerable resources to educate Eastern Shore residents about the availability and benefits of this program, both in terms of the existing and potential expanded service.

#### Analysis

Such programs have proven successful and are expanding across the country, including in the Washington, DC metro area.

## 3.2. Sustainable Transportation and Land Use Policies

In conjunction with the potential cross-Bay demand management strategies outlines in Part I, an equally important set of strategies will involve a shift towards more sustainable forms of transportation and land use patterns on the Eastern Shore itself. Land use decisions are the biggest driver of transportation policy. Continuing the land use policies that perpetuate a lack of choice other than driving will also perpetuate transportation policies and expenditures that follow this pattern. Breaking out of this cycle will involve significant reform of current transportation and land use policies as well as greater cooperation among county governments and between counties and the State of Maryland. In general, this would be a policy shift towards building the capacity and attractiveness of alternative travel modes. This would include greater emphasis on improved transit services and facilities, improved pedestrian and bicycle infrastructure, and by fostering compact development patterns in and around existing towns and villages to support walkability and transit use.

### Infrastructure

- **Developing a high quality “intra-regional” transit network on the Eastern Shore.** Public transit service on the Eastern Shore has been evolving steadily over the past decade. Local transit providers including MUST, Queen Anne County’s County Ride, Shore Transit, and Delmarva Community Transit have all been working to improve their services with very limited funding. Delmarva Community Transit was recently honored as the #1 Rural Transit Provider in the nation. As mentioned in Section 2.2, transit service on the Eastern Shore has primarily served disadvantaged populations. While this is an important function that must continue to be developed, the resources available to transit providers should be expanded in order to create new services that will provide attractive travel options for all segments of Eastern Shore’s population.

### Benefits

- Can enhance quality of life and reduce dependence on automobiles for many Eastern Shore residents.
- Can improve housing affordability by reducing the need for multiple car households.
- Would improve air quality and greenhouse gas emissions.

### Obstacles

- A considerable shift in funding priorities and attitudes towards transit will be required to make this a reality.

### Analysis

Implementing a network of high quality intra-regional transit services linking towns and villages in the hinterland to each other and to the larger metropolitan areas could have a significant impact on improving quality of life, reducing traffic congestion, and aiding housing affordability. This would consist of a hierarchy of transit services and attractive transit facilities developed incrementally over time utilizing the best practices from the U.S. and

abroad. These efforts would also need to be coordinated with significant shifts in land use policy towards compact development, as well as major education, lobbying, and marketing campaigns throughout the region. This would need to be coupled with strong rural preservation policies and sound town planning policies. Looking to successful models of rural transit in Europe, particularly in The Netherlands and Switzerland, could be useful in helping gain buy-in and acceptance.

- **Developing pedestrian and bicycle infrastructure around transit stops, town centers, and job centers in conjunction with expansion of transit services.** This includes sidewalks, crosswalks, bikeways and bike lanes, “bike stations”, and other amenities. Local employers can also provide amenities to bike commuters (showers, lockers, all-day secure parking, etc).

#### Benefits

- It creates incentives to live within walking and bike distance to work, school, shopping, and/or transit services.
- It can help reduce local traffic congestion, greenhouse gas emissions, and improve air and water quality.

#### Obstacles

- This would require a significant commitment by Eastern Shore counties and the State of Maryland to shift a larger share of transportation infrastructure investments towards non-motorized modes.

#### Analysis

The relatively flat topography and mild climate of the Eastern Shore is well suited to walking and bicycling as a viable transportation option. The State of Maryland and several Eastern Shore municipalities have made significant strides in developing bicycle and jogging trails as recreational amenities. MUST has installed bike racks on all of their buses. In addition to these advances, greater emphasis should be placed on developing additional pedestrian and bicycle facilities that directly link housing with shopping, workplaces, and civic institutions. Expenditures on bicycle and pedestrian facilities have constituted a very small part of overall transportation budgets and even a modest shift towards more balanced investments could yield significant improvements in bike/ped infrastructure.

- **Creating “Complete Streets” that balance pedestrian, bicyclist, and transit mobility with that of through-traffic and local traffic circulation.** Transportation policies over the last fifty years have strongly favored automobiles over other modes. This has manifested itself in street designs that accommodate vehicle traffic first and foremost but often discourage walking or biking. The concept of Complete Streets reverses this trend by providing tools for making streets more pedestrian and bike friendly. These tools include

provisions for on-street bicycle lanes, off-street “bikeways”, pedestrian crosswalks, traffic calming, and streetscape enhancements that include such elements as landscaping, shade trees, street furniture, and wide sidewalks.

### Benefits

- Adoption of complete streets policies and designs could significantly increase pedestrian and bicycle activity on the Eastern Shore, leading to reduced congestion, better air and water quality, and improved public health.
- It could help aid in traffic calming efforts and improve community character and “livability” (quality of life).

### Obstacles

- Transportation agencies are often opposed to changes in street designs that can potentially reduce peak hour traffic levels of service (LOS) in exchange for increased pedestrian orientation.

### Analysis

While many downtown streets of Eastern Shore towns and villages have kept their walkable character, many smaller villages do not have basic facilities such as sidewalks. In addition, many newer roadways outside of historic downtown areas have been built to suburban design standards that make walking or biking difficult or even dangerous. This often leads to a “moat” effect, isolating the historic downtown from the surrounding development and discouraging travel by any means other than driving. Best practices in context sensitive design solutions and “complete streets” could be adopted by local and state transportation agencies on the Eastern Shore. Advocates of complete streets would need to work with local and state transportation officials to achieve roadway designs and policies that achieve more balanced outcomes. In addition, opportunities should be explored to transform sections of U.S. 50 that run through and adjacent to towns into more pedestrian and bicycle friendly environments. This could include urban design, landscape, and streetscape enhancements that improve safety while creating gateways and a greater sense of place.

### Regional Cooperation

- **Establishing regional planning efforts among Eastern Shore counties to guide new policies that foster compact land use, walkable communities, and creation of a high-quality transit network.** Such efforts could include development of a regional plan based on a common vision for sustainable transportation and land use in the region. It could further entail revisions to Eastern Shore comprehensive plans to ensure consistency with such a vision. It could also include establishment of a regional Transportation Management Association (TMA). A TMA could be useful in coordinating all demand management programs (universal transit passes, guaranteed ride home, etc.) on the Eastern Shore. This model has been used effectively in other locations including in Delaware, where TMA Delaware administers an array of coordinated transportation services including vanpooling, pre-tax commuter benefits, and rideshare matching, to name a few. See <http://www.tmadelaware.org/>

## Benefits

- Better regional cooperation could lead to more efficient land use patterns and transportation that conserve energy and open space.
- It could help reduce VMT, greenhouse gases, and improve air and water quality.
- It could help create greater efficiencies in the delivery of municipal services and help avoid tax increases.
- It could help provide for greater housing affordability in the region.
- A TMA could become an effective regional advocacy organization and clearinghouse for alternative transportation on the Eastern Shore.

## Obstacles

- It may be difficult to gain buy-in among Eastern Shore jurisdictions to embrace regional cooperation on transportation and land use planning.
- A new funding stream would need to be identified for the operation of the TMA.
- It is unclear what entity or organizations on the Eastern Shore would organize and foster development of a TMA.

## Analysis

A regional planning entity and/or mechanism would be created to develop a coordinated regional transportation and land use vision and framework. Employ the new statewide travel model through partnerships with the University of Maryland National Center for Smart Growth. Use regional scenario modeling as a tool to inform local and regional decision making. Establish performance measures based on sustainability indicators and link the results to local comprehensive plans. This can inform transportation and land use planning, as well as housing, economic development, and fiscal policy. The recently formed regional economic development associations for the upper and lower shore could be integrated into this mechanism.

The TMA would serve as “one-stop” shopping (buy transit passes, etc) and information clearinghouse. It could also conduct marketing of multimodal transportation options, and provide the following coordinated services:

- Visitors Services: organizing shuttles for visitors and tourists.
- Airport Shuttle: Shuttle services to the airport, Amtrak, or Greyhound stops.
- Guaranteed Ride Home: ride home in case of emergency to members who use alternative transportation.
- Lunchtime Express: Shuttle service from 11:00am to 2:00pm on weekdays. Two or more people may reserve a roundtrip to a sponsoring restaurant.

- Medical Shuttle: Rides to medical appointments. Medical providers pay an annual or monthly fee for the service. Passenger fare depends on distance traveled.
  - Special Events Shuttle: Groups and organizations can call and reserve a shuttle for guests to special events. TMA members receive a discount.
  - Senior Shuttle: Door to door transportation for seniors age 55 and older during various days of the week to different areas in the county.
  - Safe Ride Home: Service to transport the late night crowd home safely on Thursdays through Saturdays, 9:00 p.m. to 2:30 a.m.
  - Kid Shuttle: Operates all day, everyday and transports children to events anywhere in region. Recreation Department and Child Care Facilities often use these services.
  - Vanpool services: With the help of Regional Rideshare Program, the TMA helps organize vanpools for commuters.
- **Building support for sustainable transportation and land use policies and practices at all levels throughout the region.** Implementing many of the ideas in this menu of potential transportation and land use solutions may involve significant change from status quo policies and practices that have not served the region well. Engaging the public in meaningful dialogue can often diffuse or eliminate opposition to proposed change. In fact, an informed public can actually help influence and accelerate the pace of change once they fully understand the trade-offs and benefits. With this support, the Eastern Shore could become a national model for implementing these kinds of progressive policies and practices.

#### Benefits

- Greater acceptance and understanding of the benefits of these policies could lead to increased funding support, policy shifts, and implementation.

#### Obstacles

- Establishing buy-in and support for these principles on the Eastern Shore has been difficult.
- Obtaining funding for advocacy and capacity building efforts may be challenging.

#### Analysis

Greater efforts are clearly needed to educate residents, business leaders, and decision makers about the benefits of sustainable transportation and land use policies and how they can be applied to preserve quality of life and the environment on the Eastern Shore. A “bottom-up” grassroots coalition of organizations, entities, and individuals could be established to take on this role and to form alliances to promote common goals. The Maryland Department of Planning, which already supports many of these principles, could expand its efforts in a supporting role from a “top-down”, but advisory perspective. This could be an effective tool in changing attitudes and achieving greater success. Activities

would include producing educational materials, speakers series, fundraising, research, workshops and forums with residents and officials, lobbying, rallies, and special events highlighting particular issues.

### Funding

- **Developing funding criteria for transportation projects that lead to sustainability.** Transportation spending has traditionally been mostly about expanding roadway capacity to accommodate increasing traffic volumes. This approach has led to greater dependence on automobile and sprawl development. New criteria for evaluating potential transportation projects based on a broader set of indicators such as public health, climate change, equity/socioeconomic, life-cycle costs, etc, are needed.

### Benefits

- New funding criteria based on sustainability indicators can achieve a more balanced and equitable system of funding transportation projects.
- It can achieve better integration between transportation and land use.
- It can help reduce greenhouse gas emissions and improve air and water quality.

### Obstacles

- It may be difficult for officials and policymakers to embrace the paradigm shift needed to move towards this kind of policy framework.

### Analysis

Local governments could adopt these criteria in developing comprehensive plans and capital improvement programs. The State of Maryland could streamline approvals and provide funding priority to projects that meet the new criteria and provide other incentives to communities that address transportation and land use in tandem. This could entail conditioning some portion of regional transportation funding to communities that have developed land use plans and zoning codes that further sustainable transportation and land use policies such as: increased density around transit, requiring mixed uses, pedestrian-friendly urban design standards, and an emphasis on community involvement.

Clearly, a significant commitment on the part of state and local leaders would be needed to effect such a sea change. Outreach efforts to achieve buy-in and support of the public would also be needed.

- **Developing an “auto trips generated” transportation impact fee.** This policy would require new development to pay an impact fee per “new auto trip generated”, thereby creating an incentive for developers to reduce auto trips associated with their projects through demand management programs.

### Benefits



- It would provide a new revenue source for transit and other innovative travel demand management initiatives.
- It provides an incentive for focusing new development in walkable and transit oriented locations, and a disincentive for building automobile-dependent development in rural areas.

#### Obstacles

- Likely to face strong resistance from policy makers and development interests.

#### Analysis

The revenues raised from this impact fee would be dedicated to fund initiatives that promote alternative transportation modes. These can be used to fund clean air bus replacement, additional transit service, commuter buses, carpools/vanpools, discounted fares, and pike/bed/transit facilities.

A significant outreach effort to convince policymakers to embrace this concept would likely be required.

#### Programs

- **Developing programs to reduce school-related travel.** School-related travel is one of the largest contributors to AM peak congestion and one of the main reasons that parents cite for not commuting by transit. Where school districts are not providing transportation, potential strategies to reduce school-related travel include “Safe Routes to School” Programs and Childcare Transportation Shuttles.

#### Benefits

- It can reduce school-related vehicle travel and traffic congestion.
- It can increase physical activity for school aged children.
- It is relatively inexpensive to implement.

#### Obstacles

- While it is relatively inexpensive to implement, there are still costs associated with creating Safe Routes to School programs.

#### Analysis

MDOT recently developed a Safe Routes to School Guidebook and has undertaken several pilot projects in Maryland. The State of Maryland could provide outreach and educational efforts to local school districts to help establish these kind of programs.

- **Implementing a regional car-sharing program.** Car-sharing is a membership system in which members can reserve and use cars on an hourly basis at low cost. Cars are located at one or more central facilities, typically in walkable town centers and at major transit stops. This concept started in Europe and has been growing in parts of the U.S. in recent years.

#### Benefits

- It provides opportunities for owning fewer cars per household, which can significantly increase household savings/purchasing power.
- It provides an incentive to live within walking or biking distance of a car-sharing facility.
- It can increase the attractiveness of “in-town” neighborhoods where car-sharing is available.

#### Obstacles

- A partial subsidy to operate a car-sharing program would likely be needed in small town or rural locations such as the Eastern Shore.
- Market acceptance of this concept is untested on the Eastern Shore.

#### Analysis

In rural areas, densities are generally too low for car-sharing programs to succeed without subsidy. Often times jurisdictions can convert part or all of their vehicle fleets to car-sharing (employees get priority access to vehicles during the workday, cars are available to the public at all other times). Rural car-sharing has proven to be successful in Europe, but has not yet been attempted in the U.S. Hence, the Eastern Shore could become a pilot market for rural car-sharing in this country.

- **Provide incentives to employers and major development projects to provide universal transit passes** (or “Eco-Passes”). These are low-cost or free transit passes that employees or residents automatically receive, provided by employer, developer, and/or transit agency (which benefits through increased ridership and a guaranteed/steady revenue stream).

#### Benefits

- It provides a significant incentive to use transit.
- It can reduce vehicle travel and traffic congestion.

#### Obstacles

- It would involve a significant commitment on the part of state and/or local government to create this type of program.

#### Analysis

This type of program can be implemented through incentives such as tax credits provided to employers or developers or through government subsidy to fund the program through the transit agencies. These passes can be marketed as a “carbon-offset” measure, hence the “Eco-Pass” label.

### Land Use

- **Requiring/incentivizing new development to be within Growth Areas and designed to be mixed-use, pedestrian-friendly, and concentrated in and around walkable town centers where new transit services and facilities will be implemented.** The Eastern Shore 2010 Agreement, set a goal of at least 50%, and later revised to 80%, of new growth to occur within designated growth areas. Most of the Upper Shore Counties have made significant strides towards this goal in recent years. To further strengthen this, policies and design standards that foster pedestrian, bicycle, and transit friendly development within designated growth areas could be put in place or strengthened in most places.

### Benefits

- This could help increase the viability and effectiveness of cross-Bay and intra-regional transit services.
- It has significant potential to make the older, historic parts of Eastern Shore towns that are served by enhanced transit services and pedestrian/bicycle infrastructure more attractive, and could lead to greater reinvestment within their cores.

### Obstacles

- Resistance to increased development intensities and greater choice in dwelling types from current residents, and even local officials, frequently occurs, even when comprehensive plan goals support walkability and compact development within designated growth areas. Residents frequently object to dwelling types other than single family detached homes, and even when that condition is met, frequently oppose smaller lots.
- It is difficult to coordinate development activity with implementation of new transit services.

### Analysis

A significant commitment to changes in local land use policies and zoning ordinances would be necessary to make this a reality. Innovative zoning ordinances such as form-based codes, which establish rules for developing properties in a more pedestrian friendly manner, could be used to achieve desired effects while preserving community character. The U.S. Green Building Council's LEED-ND (Neighborhood Development) rating system is another innovative tool that could be implemented by municipalities. LEED-ND provides a checklist of sustainable community design principals, which if met by a developer, could become an incentive in streamlining development approvals. A commitment to sustained outreach and education from local governments, regional advocates, and state representatives would be needed to gain acceptance of these concepts by the public.

- **Implementing a Regional Transfer of Development Rights (TDR) program.** Several TDR programs exist at the County level, but expanding this concept to transcend county boundaries could potentially be more efficient and increase the chances for success throughout the region. This would allow rural Counties to “give” some of their development capacity to already urbanized areas in exchange for some revenue. This would also allow the region to better accommodate and balance projected development demand, remove some of the incentive for “cash register zoning” (a term that refers to zoning of rural areas for commercial development - often inappropriately - with the expressed intent of expanding the local tax base) while preserving critical agricultural, open space, and habitat lands. A variant of this would be regional tax-base sharing.

#### Benefits

- It provides greater opportunities for preserving open space and guiding development to where it is most appropriate within a region than a single jurisdiction TDR program.

#### Obstacles

- Setting up and administering a TDR program can be difficult and complex due to the many variables in the marketplace.
- It would be challenging to get multiple jurisdictions to buy-in to a regional TDR program.

#### Analysis

A significant effort and commitment would be needed on the part of local and state government to establish and coordinate this type of program.

- **Providing “Transportation-Efficient Mortgages (TEM).”** TEM’s encourage homebuyers to locate close to transit by offering them more favorable financing in “transit efficient” neighborhoods because transportation costs are often lower than living in automobile-dependent locations where transit and walk options often don’t exist.

#### Benefits

- It provides an incentive to reduce automobile usage.
- It can help reduce vehicle travel and traffic congestion.

#### Obstacles

- It may be difficult to get lenders to adopt this policy.

#### Analysis

A significant outreach effort to convince lending institutions to adopt this program would be required.

## Standards

- **Developing “complete streets” typologies and standards that respond to adjacent land use and operational function to accommodate all modes.** This would provide the regulatory and design standards for implementing “Complete streets” as described under the Infrastructure item of this section.

### Benefits

- It provides greater opportunities for walking, biking, and transit use, and reduced dependence on driving.

### Obstacles

- Transportation agencies are often opposed to changes in street designs that can potentially reduce peak hour traffic levels of service (LOS) in exchange for increased pedestrian orientation.

### Analysis

Local jurisdictions can tailor these typologies and adopt them to supplement or replace conventional auto-oriented street classifications (collector, arterial, etc.).

- **Requiring that parking for new development be unbundled from the sales/lease costs of the habitable area.** Requiring that off-street parking at new residential development be optional, gives consumers the option of lower their housing costs. This provides an incentive to buy or rent a home that is located near transit or is walkable to other destinations.

### Benefits

- It provides opportunities for reduced housing costs.
- It provides an incentive to live near transit and/or within walking distance of work or school.

### Obstacles

- It may face resistance from regulatory agencies that have routinely required off-street parking for new residential development.

### Analysis

A significant outreach effort would be needed in order to educate regulatory agencies who are resistant to adopting this policy.

- **Adopting innovative parking standards that enable compact, mixed-use walkable, transit-supportive land use.** These policies include:

- Require/incentivize elimination of parking minimums.
- Require/incentivize parking maximums.
- Require/incentivize shared parking.
- Require/incentivize space-efficient parking (tandem, stacking, etc).

#### Benefits

- It provides incentives for greater walkability, biking, transit use, and reduced automobile dependence and usage.
- It provides for more efficient land use and enables compact development patterns.

#### Obstacles

- It may face resistance from planning departments and planning commissions that are accustomed to administering conventional suburban parking standards.

#### Analysis

A significant outreach effort to convince planning agencies to embrace this policy would likely be required.

## **Appendices**

- A. Best Practices and case studies in rural transit service design
- B. Resources for further reading

## A. Best practices and case studies in service design principles for systems serving rural / low ridership regions (or systems with limited resources)

### BEST PRACTICES

- **Simple Is Better than Complicated:** A simple route structure and simple schedules will attract more riders than a complex system. First and foremost, for people to use transit, they must be able to understand it, and simpler services are easier for riders to understand. Simpler systems also help ensure that they get where they want to go when they want to without experiencing frustration and problems. In total, transit systems with simpler route structures can more quickly attract new riders, and are also better able to attract casual riders. In contrast, as stated in TCRP's "Traveler Response to Transportation System Changes" report, those with more complex route structures "put off riders with only a moderate inclination to try transit."
- **A Few Good Choices are Better than Many Mediocre Choices:** Many rural transit operators often attempt to operate a large number of routes that provide very limited service on each route. These make service complex, detract from stronger routes, and do not provide compelling choices for most riders (as evidenced by low ridership). Best practice is to provide fewer overlapping routes and provide better service on fewer routes.
- **Routes Should Serve Well Defined Markets:** The reconfiguration of service around more clearly defined markets (commuter, school-based, special events, etc.) can help to make service easy to understand, provide a basis for developing premium bus services, and eliminate service duplication.
- **There Should be a Hierarchy of Routes to Service Different Markets:** Develop different types of services to provide services that meet the different needs of different markets:
  - **Rapid Service Routes:** Provide at least one "premium" service route in each corridor that provides fast and frequent service to major employment centers, downtowns, or other regional node with high travel demand. These routes would be light/heavy rail, commuter busway, and/or BRT routes.
  - **Frequent Service Routes:** Provide high frequency limited stop line-haul service in high ridership corridors where Rapid Service not provided (for example, between major outlying activity centers and transit hubs).
  - **Local Service Network:** Use local line-haul, feeder, and circulator routes, flex-routes, and the inclines to provide service to areas not directly served by Rapid Service and Frequent Service routes, and to feed Rapid Service and Frequent Service routes.
  - **Commuter Services:** Operate commuter services in areas with high commuter volumes that are not served by Rapid Service or Frequent Service routes.



- **Major Transit Routes Should Operate Along Arterials:** Potential transit users have at least a basic knowledge of an area's arterial road system and use that knowledge as points of reference. The operation of bus service along arterials therefore makes transit service easier to figure out and to use.
- **Transit Service Should be Focused Around Landmarks:** Most potential transit users have a basic knowledge of major landmarks (and are often traveling to them). When transit service is focused around landmarks, they can also become transit hubs. Travelers traveling in unfamiliar area can more easily find their way to a landmark to make a transfer than to a lesser known area.
- **Routes Should be Symmetrical:** Routes should operate along the same alignment in both directions to make it easy for riders to know how to get back to where they came from.
- **Routes Should Operate Along a Direct Path:** The fewer directional changes a route makes, the easier it is to understand. Conversely, circuitous alignments are disorienting and difficult to remember. Routes should not deviate from the most direct alignment unless there is a compelling reason.
- **Service Levels Should be Set Based on Service Standards:** Service standards can help to ensure that the appropriate amount of service is provide on each route. For example, service standards should be set to determine minimum levels of service in terms of the number of trips, service frequencies, and/or passenger loadings.
- **Service and Schedules Should be Based on Repeating Patterns.** People can easily remember repeating patterns but have difficulty remembering irregular sequences. For this reason, routes that operate along consistent alignments and at regular headways are more attractive than those that don't.
- **Services Should be Well Coordinated:** Where different routes connect or operate along the same alignment, schedules should be coordinated to the greatest extent possible to provide short connection times and to operate service at even intervals. This will make service more convenient, and reduce overcrowding in high ridership corridors.
- **Routes Should Not be Too Long:** Many routes have been extended outward into areas where transit demand and ridership is very low. This reduces productivity, and in many cases, means that each bus can only make a single peak direction trip per peak period, and per driver length. Route lengths should be shortened to focus service in areas where there is significant demand and to improve scheduling productivity.
- **Service Design Should Consider Scheduling Implications:** As described above, service design can significantly impact schedule efficiency. Many existing routes are designed in such a way that large amounts on non-revenue hours (e.g. "dead-heading") and miles are required, and that produce large amount of operator non-platform time. Service should be redesigned to reduce non-revenue service costs.

### **Best / most common service types for rural regions**

- Fixed-route. Where demand warrants, fixed-route service may exist. These services should be designed and operated according to the principles listed above.
- “Deviated fixed route” services are hybrid systems that combine fixed-route service but also allow for the vehicle to go “off route” to provide demand-responsive pick-up and drop-off within a defined/reasonable area off the route alignment. This can often be
- Demand-responsive services include a variety of options such as dial-a-ride paratransit (required under federal ADA law for any person with disabilities that prevent them from utilizing other services) to private-sector taxis.
- General public (i.e. not special market) dial-a-ride service.
- Commuter / Express service that generally has a limited number of stops in the “catchment” service area and travels along dedicated transit lane or HOV (High Occupancy Vehicle) lane to major regional destination and/or intermodal transit node. In rural regions where most people will drive to the bus, the stops are generally in an existing parking lot with some minimal amenities (signage, lighting, shelters for inclement weather) to allow it to function as a park-and-ride.
- Community circulators that connect to and “feed” regional express services.
- Ride Share and Vanpool programs, oftentimes with volunteer drivers (recruited from community, civic, or church groups) as labor costs constitute the highest proportion of operating costs for these programs.
- Human service transportation, including services for low-income, seniors, and the disabled populations. This service typically is focused on connecting either to employment sites or medical services. One cost-effective way to increase transit coverage in rural regions is to make sure that these services are coordinated, ranging from joint marketing and route maps to allowing “co-mingling” of service populations (e.g. a senior shuttle can serve low-income welfare to work passengers, and vice versa), although this may require securing additional funding if current funding source prohibits co-mingling.
- Visitors/tourist shuttles, such as airport “flyer” service or circulators that stop at regional museums, parks, historical sites, etc.

## CASE STUDIES

### CASE STUDY 1: SAN LUIS OBISPO COUNTY'S "RIDE ON TRANSPORTATION"

In most rural communities, there is a high demand for a variety of transportation services that cannot generally be met by the limited resources of rural governments and transit agencies. The following example highlights an umbrella organization that provides a large spectrum of transportation services to people throughout the central California County of San Luis Obispo. This organization – Ride-On Transportation – emphasizes affordable transportation alternatives through partnerships and collaboration among transportation planners and those organizations most in need of transportation services.

Ride-On Transportation is a private, non-profit, community-based cooperative organization that provides transportation services in San Luis Obispo County and acts as the local Consolidated Transportation Service Agency (CTSA) and Transportation Management Association (TMA) for San Luis Obispo. The organization started in 1993 as (just) the CTSA when a need to consolidate services was realized. A number of senior and disabled persons' services were operating and duplicating trips. The CTSA formed to coordinate trips and make services more efficient. Ride On currently offers many programs including:

- Visitors Services: organizing shuttles for visitors and tourists.
- Airport Shuttle: Shuttle services to the airport, Amtrak, or Greyhound stops.
- Guaranteed Ride Home: ride home in case of emergency to members who use alternative transportation.
- Lunchtime Express: Shuttle service in San Luis Obispo from 11:00am to 2:00pm on weekdays. Two or more people may reserve a roundtrip to a sponsoring restaurant.
- Medical Shuttle: Rides to medical appointments within the county. Medical providers pay an annual or monthly fee for the service. Passenger fare depends on distance traveled.
- Special Events Shuttle: Groups and organizations can call and reserve a shuttle for guests to special events. TMA members receive a discount.
- Senior Shuttle: Door to door transportation for seniors age 55 and older during various days of the week to different areas in the county. Fare is \$4.
- Safe Ride Home: Service to transport the late night crowd home safely on Thursdays through Saturdays, 9:00 p.m. to 2:30 a.m. Fare is \$2.
- Kid Shuttle: Operates all day, everyday and transports children to events anywhere in San Luis Obispo. Recreation Department and Child Care Facilities often use these services.

- Vanpool services: With the help of the San Luis Obispo Regional Rideshare Program, the TMA helps organize vanpools for commuters.

## **CASE STUDY 2: ALLEGHENY COUNTY (PA) ROUTE D MIDDLE ROAD FLYER**

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The Route D Middle Road Flyer serves a very rural/exurban region in the northeast corner of Allegheny County's (PA) and connects to downtown Pittsburgh that was analyzed by Nelson\Nygaard. It is presented below as a case study for the Eastern Shore region, where transit service was described as having limited frequency (1 or 2 trips a day) whose primary market is transporting low-income workers who live in rural areas to far-flung service sector jobs throughout the region. This case study focuses on routing, operating costs, and other issues that may be relevant to the design of existing or new transit services in the Eastern Shore region. The case study makes recommendations for improvements to this line that are potentially applicable to other rural transit in the Eastern Shore region.

The Middle Road Flyer, Route D, provides very limited express service between Rural Ridge, Russelton and Culmerville and downtown Pittsburgh. The route serves West Deer, Bairdford, Indiana, Shaler Township and Etna north of the Allegheny River, operating via East Liberty and the East Busway enroute to Downtown. The route provides five AM inbound runs and six PM outbound runs.

### **Similar Routes**

Route D is similar to no other routes on its outer alignment. Between Etna and downtown Pittsburgh Route D overlaps portions of other routes including the following:

- Routes AV Allegheny Flyer, AVN Allegheny Flyer and 3M Tarentum-Natrona Express via the Highland Park Bridge and Washington Boulevard (inbound) and via the East Busway.
- Routes 500 Highland Park-Bellevue and 93A Aspinwall-Cheswick via Highland Avenue and One Wild Place from East Liberty, over the Highland Park Bridge.

### **Alignment/Service Patterns**

Route D has a very long alignment, operating from Rural Ridge. The route is best described as two separate routes operated as a single route with different variants (each variant operates nearly eight miles on a different alignment).

From the outer end of the route, the bus operates along Little Deer Creek Road from Crawford Run Road in Rural Ridge, following Saxonburg Boulevard to Bairdford Road. At that intersection, variant D-I, which operates along three of five inbound trips, follows Bairdford Road and Orchard Road, through Bairdford, jogging west to Middle Road at State Route 910. The bus continues along Middle road through Indiana toward Shaler Township. The other variant, D-IA, does not turn on Saxonburg Boulevard to Bairdford Road, but remains on Saxonburg Boulevard through Indiana, serving the Dorseyville Volunteer Fire Department Park and Ride. The variant continues as far as Harts Run Road, where buses turn right and follow it to Middle Road. From there, the two variants serve the same alignment for the remainder of the inbound

trip, traveling Middle Road (serving the Middle Road Volunteer Fire Department Park and Ride), down the hill to Saxonburg Boulevard and taking State Route 8 in Etna to State Route 28 to the Highland Park Bridge. Buses follow Washington Boulevard to the East Busway for travel to downtown Pittsburgh. Outbound, from the East Busway, buses follow Penn Circle East to Highland Avenue, Bunkerhill Street and One Wild Place returning to the Highland Park Bridge via Butler Street. Two outbound variants, each making three runs, serve the two major alignments of the inbound variants, with variant D-O operating along Middle Road to Bairdford Road and D-OA serving the alignment along Harts Run and Saxonburg Boulevard.

### **Schedule**

Route D operates only on weekdays and provides only five trips inbound and six trips outbound (see Table 1). In the early AM and AM peak, the first bus departs at 5:13 am and arrives Downtown at 6:45 am (a 92-minute trip). The last inbound bus arrives downtown at 8:40 am.

In the PM peak, buses depart from Downtown beginning at 3:39 pm, with the last departure at 6:05 pm, going out of service at 7:29 pm in Rural Ridge.

**Table 1: Route D Schedule Statistics**

	Span of Service	One-Way Trips		Headways (minutes)
		Inbound	Outbound	
Weekdays				
Early AM	5:13 AM – 5:59 AM	2	0	36
AM Peak	6:00 AM – 8:59 AM	3	0	24-31
PM Peak	3:39 PM – 5:59 PM	0	5	28-30
Evening	6:00 PM – 7:29 PM	0	1	30
All Day		5	6	

### **Ridership**

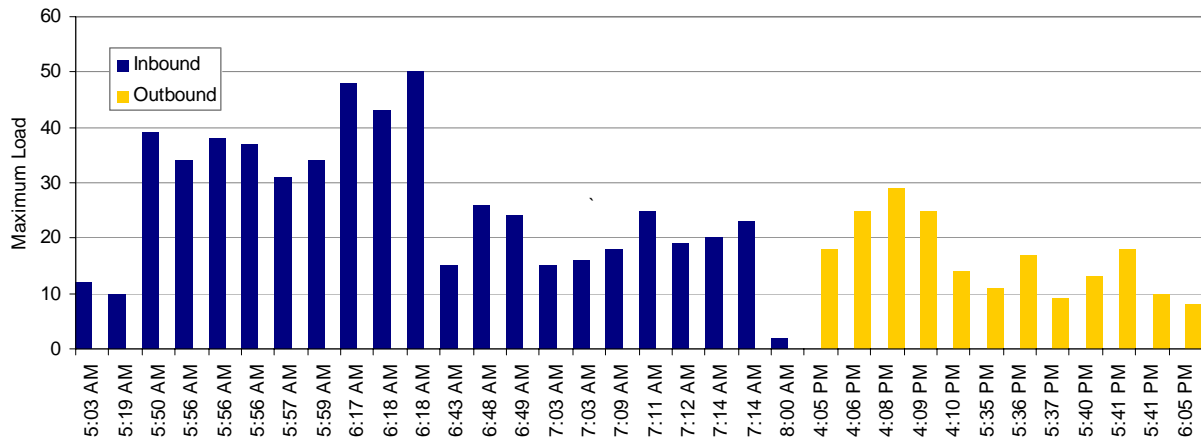
Ridership currently averages 221 passengers per weekday, significantly higher than the average of 128 in 2006. Most of this increase in ridership can be attributed to the addition of runs in June 2007 when Routes 1B, 1C and DB, which operated along portions of the Route D alignment, were eliminated.

**Table 2: Route D Ridership by Time Period and Per Trip**

	Weekday Ridership	Ridership/ Trip
Inbound		
Early AM	48	30
AM Peak	117	30
All Day	166	30
Outbound		
PM Peak	87	18
Evening	9	9
All Day	166	17
Both Directions	261	25

With no other routes offering service to the same locations that are served by Route D, ridership is perfectly balanced between inbound and outbound trips. Route D’s five inbound trips carry an average of 30 passengers per trip, which is remarkably strong for what is easily the Port Authority’s most rural route (see Table 2). With an additional outbound trip, the 166 riders are distributed among more runs, and the average ridership per trip is lower, at 17. The last trip of the day, which serves as a “safety valve” for passengers who are unable to ride the earlier PM outbound trips, carries only nine passengers, making that trip alone one of the most costly services per passenger provided by the Port Authority.

**Figure 1: Route D Maximum Loads by Time of Day: All Sampled Trips**

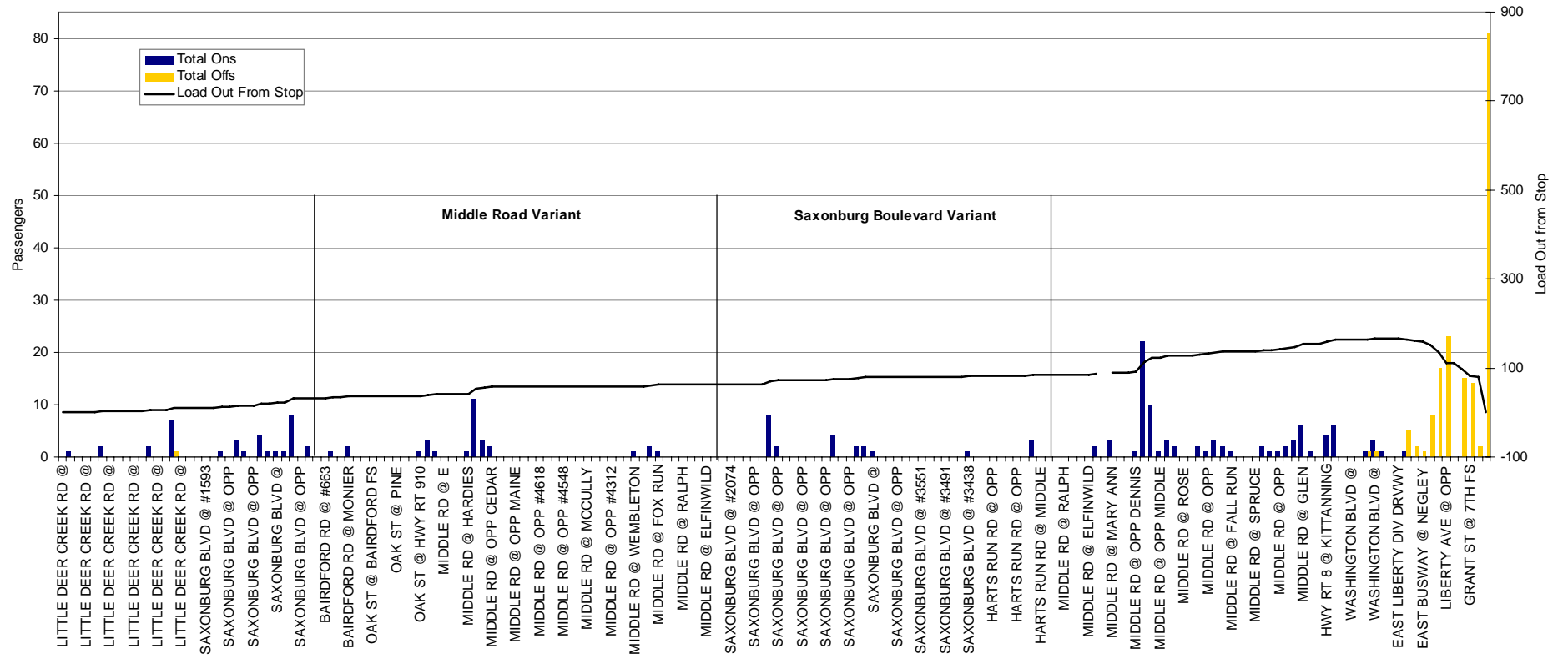


Maximum loads by time of day reflect the total passenger loads shown in Table 2. However, Figure 1 shows that on two inbound sampled trips, maximum passenger loads exceed 30 and on the third inbound run, maximum loads are consistently above 40 passengers. The later AM peak runs have smaller maximum loads, averaging about 18 passengers. After 5:00 pm, maximum loads average only about 13 riders.

With the exception of one passenger alighting along Washington Boulevard, all inbound passengers ride to at least the East Busway (see Figure 2). By segment, boardings and alightings are as follows:

- Twenty percent of passengers (34 riders) board along the first segment of the route, before the two variants split at Bairdford Road and Saxonburg Boulevard. Twelve of those passengers board along Little Deer Creek Road, the outermost segment of the route.
- The segment including Bairdford Road, Oak Street and Middle Road northeast of Harts Run Road (the “Middle Road variant”) accounts for 17% of all passenger boardings. This is the alignment served on three of five inbound trips.
- Fourteen percent of all Route D passengers board southwest of Bairdford Road along Saxonburg Boulevard and Harts Run Road (the “Saxonburg Boulevard variant”).
- The largest proportion of riders, 42%, board along the combined variants serving Middle Road to Kittanning Street before the bus heads east on Route 28.
- The remaining seven percent of passengers board along Washington Boulevard before the bus reaches the East Busway. Only 16 passengers alight along the East Busway before the bus reaches downtown Pittsburgh. The remaining passengers alight at Penn Station (17 passengers), Liberty Avenue (23 passengers), and along Oliver and Grant Streets (30 passengers).

Figure 2: Route D Ridership by Stop: All Day Inbound





## Productivity

Route D's productivity performance is among the worst of any route in the Port Authority system and is at the very bottom in terms of operating cost per passenger and passengers per unit of service for express/flyer routes(see Table 2).

**Table 2: Route D Weekday Productivity**

	<b>Route D</b>	<b>Express/ Flyer Average</b>
Operating Cost/Passenger	\$12.86	\$5.07
Passengers/Revenue Vehicle Hour	13.3	34.2
Passengers/Total Vehicle Hour	9.2	22.6
Passengers/Revenue Mile	0.6	1.7
Total Vehicle Hours/Rev Vehicle Hours	1.43	1.51
Average Speed	20.4	20.2
Bus Stops/Mile	3.9	3.3
Directness	0.53	0.74
Number of Variations	4	4.7

**Operating Cost/Passenger:** Route D is the most costly express/flyer route to operate per passenger. The cost to carry each passenger is \$12.86, which is 154% higher than the category average. Low average daily ridership over a very long alignment is the key contributing factor to this route's low performance for this measure.

### **Ridership per Unit of Service:**

Route D carries 13 passengers per revenue hour, which is 61% below the express/flyer route category average, and 9.2 passengers per total hour, which is 60% below average. Route D carries fewer passengers per revenue vehicle hour or total vehicle hour than any other express/flyer route operated by the Port Authority. Passengers per revenue mile, at 0.6, is 65% lower than the average express/flyer route.

**Ratio of Total Vehicle Hours to Revenue Vehicle Hours:** The ratio of total vehicle hours to revenue vehicle hours is 1.43, which is better than average for express/flyer routes.

**Average Speed:** Route D operates at the average speed for an express/flyer route, 20 mph.

**Bus Stops/Mile:** Route D has an average of 3.9 bus stops per mile, or one stop per every 1,350 feet. Very few stops are used. Of the 177 bus stops served on inbound trips, only 37%, 66 stops, have passengers boarding or alighting.

**Number of Variations:** The route has four variations: two inbound and two outbound.

## Service Design

Route D provides commuter service between Allegheny County's northeast corner and downtown Pittsburgh in a rural or exurban area. The route is circuitous (about half as direct as the most direct distance between end points), provides limited service, has very long travel times, and is among the poorest performing routes operated by the Port Authority. Even with the discontinuation of weakly performing adjacent services, the route struggles to attract enough riders to most of its AM and PM runs. The two park and rides are underused in an area that might best be served by providing direct connections between park and ride lots and downtown. The demographics and land uses in the area suggest that any route that operates via this alignment would be challenged to meet ridership and productivity standards.

## Service Improvement Opportunities

The following opportunities can be considered:

**Reduce Number of Trips/Match Service Level to Demand:** At a minimum, the six outbound runs should be reduced to five to match AM service levels because ridership is the same AM and PM. However, five runs in each direction may still be too many for this route. Cutting back on service frequency to improve ridership on remaining runs should be considered.

**Operate as a Feeder Route:** The route could provide service to Etna allowing for timed (or "pulsed") connections to Route 1A or 1D for continuing service to downtown Pittsburgh.

**Operate Via the 40<sup>th</sup> Street Bridge or East Ohio Street/Route 28 to the North Side:** Travel via the Highland Park Bridge lengthens the route and makes the service more indirect than it would be if the bus were to cross the Allegheny River at the 40<sup>th</sup> Street Bridge or operate via East Ohio Street.

**Shorten Route:** A shorter route should be considered. Service can be provided between downtown Pittsburgh and the Middle Road Volunteer Fire Department Park and Ride.

**Consider Different Routings/Service Options for Indiana, West Deer, Russelton, and Rural Ridge:** Perhaps in combination with shortening the route, other options could be considered. The shortest distance between Indiana and downtown Pittsburgh is via I-76 or Indianola Road (for local service). From Rural Ridge, Little Deer Creek Road and Russelton Road provide a much more direct routing, providing service to State Route 28 or into Acmetonia. Feeder bus services from these communities could be provided to express buses operating north of the Allegheny River, providing faster, more direct service to downtown Pittsburgh.

**Market Park and Rides:** It may be unclear to area residents that they can park at either the Dorseyville Volunteer Fire Department Park and Ride lot or at the Middle Road Volunteer Fire Department Park and Ride lot. New signage and community marketing efforts can raise awareness of these lots, which would be useful if the route were shortened. Furthermore, providing information about Park and Rides around Harmarville

to residents of the easternmost portion of the route may encourage them to drive to faster, more direct bus routes.

### **CASE STUDY 3: SALEM-KEIZER (OR) REGION TRANSPORTATION COORDINATION STRATEGIES**

The Oregon State Department of Transportation (ODOT) serves as the designated recipient for funds intended for non-urbanized portions of the state, and, in turn distributes them to local entities through a competitive grant process. ODOT is currently requiring that projects funded through the next funding cycle, effective July 1, 2007, be derived from a coordinated plan (similar to SAFETEA-LU requirements for receiving many types of federal funding).

Nelson\Nygaard developed a coordination plan for the Salem-Keizer region, which includes several mid-sized cities, small suburban towns, and rural areas in Polk and Marion Counties in Oregon. The recommended coordination strategies are presented below as a case study of the types of improvements that may be relevant in the Eastern Shore region to coordinate human service transportation.

- Coordinated Information and Marketing
  - A Coordinated Marketing Plan to identify the key regional transit markets; develop strategies to reach them; create and promote a uniform marketing message and develop a unifying theme for all transportation.
  - Development of a single map with all urban and rural services, illustrating connections to neighboring services; an information brochure; and a regional transportation information website including regional trip planning software.
  - Dissemination of all transit information by each transit providers and in each city, providing information brochures for connecting services on board vehicles and at transit information centers.
  - Implementation of a transportation information/assistance program tailored to individual needs as well as development of a travel escort/travel buddy program.
- Coordinated Education and Public Support Initiatives
  - Developing an outreach plan with employers including incentives for carpooling and transit use, vanpool subsidies, ride matching, and a website.
  - Implementing a strategy to educate policymakers about transit needs and plans to address them through a presentation of transit plans and development of a regional transit planning and coordination committee.
- Local Financial Support for Transit
  - Securing local funding support from jurisdictions for existing transit services that server multiple jurisdictions and developing a method for sharing transit system costs.
  - Leveraging local resources using private funds, a local payroll tax, donation of land, and bonds.
- Coordinated Service Enhancements

- Enabling local jurisdictions without transit to purchase services from an existing public-sector provider or contract with a private-sector provider.
- Use volunteers for specialized transportation, by organizing a pilot volunteer driver program that serves residents in a limited number of communities.

## **B. Resources for Further Reading**

- *Best Practices to Enhance the Transportation-Land Use Connection in the Rural United States*, NCHRP 582, Transportation Research Board - Hannah Twaddell and Dan Emerine (2007)

[http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_582.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_582.pdf)

Explores how to integrate land use and transportation in rural communities. The report also highlights programs and investment strategies designed to support community development and livability while providing adequate transportation capacity.

- *Rural Transportation Management: Improving Transportation Efficiency and Diversity in Rural Areas* - Victoria Transport Policy Institute

<http://www.vtpi.org/tm/tm87.htm>

A compendium of resources and transportation management strategies suitable for implementation in lower-density rural and suburban areas. These can help achieve a variety of objectives, including improved transportation options, increased transportation affordability, reduced congestion and parking problems associated with tourism and special events, and flexibility to help preserve special cultural and environmental features.

- *Estimating the Benefits and Costs of Public Transit Projects: A Guidebook for Practitioners*

<http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp78/guidebook/tcrp78.pdf>

Presents a systematic methodology for estimating costs, and argues that cost estimates are typically not done properly (which is what you were suspecting about the previous rail feasibility studies): “This document is a guidebook intended to help regional and local transit agencies evaluate the benefits and costs of new investments in transit. The theoretical framework for such evaluation is well developed in the professional literature, but moving from theory to measurement is time-consuming and difficult. Ideas that make sense in the abstract and in general become problematic when one tries to apply them to specific situations and in detail. The realities of the type, extent, and reliability of the data for making these measurements compound the problem. The result is that rigorous evaluations of transit projects are not done, not done well, not done efficiently, or not understood by the ultimate audience of policymakers and the public. This guidebook takes a step toward addressing these problems. It summarizes the theory of how benefits and costs should be measured, but then focuses on what it takes for a regional or local transit agency to actually do the measurement and make the calculations for a real project.” If you or the ESLC were interested, we could do a thorough “second opinion” analysis of the cost estimates that were done in the previous studies.

- *Analyzing the Costs of Operating Small Transit Vehicles: User's Guide STVe (Small Transit Vehicle economics)*

[http://www.trb.org/news/blurb\\_detail.asp?id=2557](http://www.trb.org/news/blurb_detail.asp?id=2557)

In a rural region (with low ridership and limited resources), small transit vehicles make a lot of sense. This “Small Transit Vehicle economics” (STVe) model is “designed for

transit planners and others making decisions about the purchase of small transit vehicles for different services and operating environments. The computerized STVe model [Excel spreadsheet] is based on the principles of engineering economics and allows the user to assess whether it makes economic sense to invest in a particular type of vehicle, based on user-defined inputs. The User's Guide describes how to run the model and interpret its results.”

- *Mass transit benefits would exceed costs after 15 years, analysis finds*  
<http://www.soundtransit.org/x8102.xml>

This analysis is particular to the Puget Sound region, but there are some good parallels for the Eastern Shore: Within about 15 years of completion, new mass transit expansion options currently undergoing public review would pay off with quantifiable public benefits that exceed the costs of building them. After 15 years, those public benefits — mainly from time and energy savings — would continue to accumulate for decades more, exceeding costs by a ratio of two to one.

- *North American Commuter Rail – White Paper*  
<http://onlinepubs.trb.org/Onlinepubs/millennium/00080.pdf>

A good overview of innovative service models and supporting systems and policies:

- Traditional suburbs were built around railroad stations, and the commuters walked to the train. With suburban growth into new areas, an increasing number of riders drive automobiles to the stations, creating a need for enhanced parking facilities. Other alternatives will have increasingly important roles to play in the home-to-station journey. Examples include the use of feeder buses, bicycles, light rail, and ferryboats. Environmental concerns and the high cost of constructing parking structures will compel use of these other modes.
- Commuter rail operators will encourage development of non-automobile access to stations by selling through discount tickets and carefully coordinating schedules with operators of the other modes. Examples of these services include Metro-North's Hudson Rail Link, New Jersey Transit's acceptance reciprocity for selected commuter rail tickets on its bus routes during off-peak hours and weekends, and the generic guaranteed ride-home program adopted by several transit and commuter rail operators.
- GO Transit's use of buses to cover off-peak schedules uses the most cost-effective mode for a given ridership volume. This “train bus” concept has contributed substantially to the viability of peak-hour train service by giving riders the option of many off-peak departures.
- Another innovative practice related to inter-modalism is in its early stages and requires more research. It involves linking local zoning to commuter rail transit facilities and investment. Creating walkable transit villages around suburban rail stations and requiring developers to provide station shuttles as a condition of

their high-density residential permits are examples of this type of innovation. Again, research will disclose that overseas precedents abound.

- *Bus Rapid Transit and Light Rail: Comparing Operating Costs with a Parametric Cost Model*

<http://pubsindex.trb.org/document/view/default.asp?lbid=778284>

This is a more recent resource similar to above using Dallas transit agency data: “For an agency with a similar cost structure to the Dallas agency, both BRT and LRT have lower operating costs on a per space kilometer basis during base periods than do regular buses. Both LRT and the lower BRT cost estimates are comparable for adding service during peak periods. With the higher cost estimate, peak BRT costs 24% more than LRT. For trunk line capacities below about 1,600 spaces per hour, the headway-versus-cost trade-off favors BRT. Above 2,000 spaces per hour, BRT headways become so short that traffic signal priority may not be effective and revenue speed may decrease. The marginal cost of adding off-peak BRT service is substantially less than the average cost of regular buses, and the cost of LRT is even less. Peak fleet size seems to be an important driver of costs. Research methods to verify this are suggested.”

- *Commuter Rail Overview (presentation)*

[http://www.jtaonthemove.com/Graphics/RTS/Commuter/Presentation/What%20is%20Commuter%20Rail.pps#298,1,Commuter Rail Overview](http://www.jtaonthemove.com/Graphics/RTS/Commuter/Presentation/What%20is%20Commuter%20Rail.pps#298,1,Commuter%20Rail%20Overview)

Good overview of the basic issues, capacity, and rolling stock types, but doesn't mention costs.