



TRANSPORTATION FINANCE PANEL **FINAL REPORT**

Presented to
Governor Dannel P. Malloy
State of Connecticut

January 15, 2016

“...if something's worth having, it's worth paying for.”
U.S. Senator Bob Corker (R-TN), discussing the issue of
transportation.¹

¹ <http://www.tennessean.com/story/news/politics/2014/06/18/corker-proposes-gas-tax-hike-pay-roads-fixes/10761033/>

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Membership of the Transportation Finance Panel²

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William Bonvillian: Director, Massachusetts Institute of Technology's Washington, D.C. Office; Former Deputy Assistant Secretary, U.S. Department of Transportation

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Emil Frankel: Consultant on transportation policy; Former Commissioner, Connecticut Department of Transportation; Former Assistant Secretary for Transportation Policy, U.S. Department of Transportation

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For information on the content of the report, or to contact any of the Panel members with questions or comments, please contact Garrett Eucalitto at the Office of Policy and Management at 860-418-6200.

² Members of the Transportation Finance Panel are representing themselves and not the institutions which they are associated with.

Acknowledgements

Members of the Transportation Finance Panel want to recognize and salute the determination and leadership of Governor Malloy in creating a long-term plan to preserve and modernize Connecticut's transportation infrastructure and empaneling this committee to explore financing options. We are pleased to have undertaken this responsibility and are confident that our recommendations will help to ensure that Connecticut has a "best in class" transportation system that drives economic and employment growth for decades to come.

We extend our sincere gratitude and appreciation to an outstanding team of OPM staff that supported our Panel's work diligently and effectively. Without the leadership of Garrett Eucalitto, OPM Undersecretary for Transportation Policy and Planning, and his team – C. Zack Hyde and Brian Tassinari, we would not have been able to produce the comprehensive set of recommendations that comprise this report.

We also want to thank Governor Malloy's Deputy Chief of Staff, Liz Donohue, OPM Secretary Ben Barnes and DOT Commissioner Jim Redeker for their support during our deliberations and express our appreciation for the assistance of the following staff from OPM, DOT, DRS and DMV: John Jaramillo, Robert Card, Wally Lugli, Tom Maziarz, David Elder, Peter Calcaterra, Eric Weinstein and Allyson Bruce.

Finally, we sincerely appreciate all the presenters and other experts who provided information and advice during our meetings and thereafter. Their contributions to our understanding of the range of opportunities and challenges in the field of transportation financing were invaluable.

Foreword: A Letter from the Transportation Finance Panel

To: Governor Dannel P. Malloy

Date: January 15, 2016

From: Cameron Staples – Chair

William Bonvillian

Joan Carty

Emil Frankel

Oz Griebel

Bert Hunter

Stanley Mickus

Beth Osborne

Paul Timpanelli

We are pleased to submit this executive summary that accompanies the attached report of our analysis and recommendations for how to finance the \$100 billion, 30-year, *Let's Go CT!* plan (the "Plan"). We join many others in Connecticut who applaud your strong advocacy to fund and implement a safe and reliable transportation system, which is fundamental to Connecticut's long-term economic competitiveness. Indeed, such a system is critical to the state's ability to retain and expand 21st century employment opportunities for Connecticut residents and to attract the requisite private sector investment in equipment, real estate, research, and technology. We also recognize that the failure to ensure such a system seriously jeopardizes that economic future and quality of life.

Last March, you appointed this bipartisan panel (the "Panel") to offer recommendations for a sustainable structure to fund transportation. We built our recommendations on more than nine months of discussion and meetings that included presentations by the Connecticut Department of Transportation (CTDOT), the Office of Policy and Management (OPM), members of the General Assembly, and subject matter experts as well as comments from the public.

As you will see from the report, the Panel did not simply seek revenues totaling \$100 billion over thirty years. We recognized that number would not be static, but will increase over time due to inflation; instead, we aimed to resolve the annual deficits that were projected in the Special Transportation Fund (the "STF"). The Panel also concluded that aiming to resolve the revenue problem for the entire period through FY 2045 was challenging because of the difficulty in assuming what the state's specific needs will look like that far into the future, in an ever-changing world. Connecticut's needs, as well as the projects and technologies themselves, are likely to change over the years. We have provided a report that delivers, what we believe to be, the most prudent and cost effective way to fund the state's transportation infrastructure for the mid-term, the first 15 years of the Plan. All projections are based on current systems and structures in Connecticut; however, if the state continues to modernize CTDOT and implements many of the reforms highlighted in this report, the funding recommendations will continue for the long-term.

We thank you for the opportunity to serve the State, and we look forward to working with you and other Federal, State, and local leaders to ensure an efficient and reliable transportation system for Connecticut.

Executive Summary

The State's Vision and the Transportation Strategies to Support It

At present, Connecticut's transportation system impedes economic growth, rather than promoting it. The state's infrastructure is overly congested, continuously deteriorating, and incapable of supporting current demand. These conditions have an incredible impact on the state's economy, and the cost of doing nothing pales in comparison to the cost of *Let's Go CT!* In a 2013 survey by *Area Development Magazine*, corporate executives ranked highway accessibility as the number two site selection factor for deciding where to locate a business.³ *Let's Go CT!* will serve as a catalyst for the overall economy by addressing highway congestion, rail and bus system inadequacies, and deteriorating bridges. Furthermore, each project will mean new, long-term construction jobs in Connecticut, which will be a boon for the state's construction industry.

The state envisions being one of the country's most dynamic and attractive areas, characterized by a robust economy, strong linkages to regional and global economies, a pristine set of shoreline and rural areas, stimulating urban centers, valued educational and health care institutions, and employment opportunities that enable all of its residents to pursue their dreams. The *Let's Go CT!* plan (hereafter "the Plan") supports this vision by including or referencing key economic principles, such as:

- Employing modern land use planning tools and techniques, in conjunction with transportation planning, to achieve a smarter approach to the state's economic growth and quality of life;
- Mitigating congestion on our highways, especially in the east-west Coastal and Central Corridors, by providing more and attractive rail and transit options and by improving the safety and traffic flows of those highways;
- Having Transit-Oriented Development throughout the state serve as magnets for business and housing complexes, thereby providing Connecticut residents with more options to link their employment, residences, and leisure activities;
- Using the state's fiscal, and other incentive programs, to link an enhanced transportation system with economic development initiatives, leveraging urban-based infrastructure and preserving targeted open space in a manner that will benefit the entire state for generations to come.

To assist in achieving that vision, the Plan's overarching objective is to repair and improve all major components of the state's multi-modal and integrated transportation system during the next 30 years. The Plan reflects a growing reality: the state must both bring the system into good repair and address critical congestion corridors, which are affecting the state's economy and attractiveness to businesses. Such action will enhance Connecticut's ability to sustain and accelerate economic growth appropriate to each of its regions and to preserve the premier quality of life enjoyed in those regions by residents and visitors, alike.

If the state gets on a pathway to address these challenges, we have an opportunity to bring our infrastructure system to a state of good repair so our citizens can continue to travel over sound and safe roads and bridges, have a speedier and more efficient rail system, have an interconnected bus system, and sharply cut congestion so it ceases being an anchor on the state's economy. We have an opportunity to turn a serious negative in the daily lives of citizens and the economy into a net positive.

³ <http://www.areadevelopment.com/Corporate-Consultants-Survey-Results/Q1-2014/28th-Corporate-Executive-RE-survey-results-6574981.shtml?Page=2>

We emphasize that no one action, or type of actions, will provide the transportation system desired by the state's residents, private sector, and its visitors. Accordingly, the Plan clearly acknowledges that a significant improvement of our transportation capacity and options requires a series of integrated and complementary actions and, as importantly, perseverance. In other words, the proposed actions and tactics must complement one another, so as to achieve the strategic objectives on a cost effective basis, and must be regularly reviewed for adjustments, so as to provide useful and visible benefits to the public over the next 30 years.

Included in this report are:

- An explanation of the history of transportation funding in Connecticut, so the state can avoid mistakes of the past;
- Examples of statewide and regional needs contained in the Plan, including a description of the largest projects and programs, and the economic benefits of pursuing them;
- Policy recommendations that, if adopted, could drive down costs, increase efficiencies, and ensure the investments made are sustained in a state of good repair;
- Revenue options that would allow the state to carry out projects through the first 15 years of *Let's Go CT!* under current conditions, and if policy reforms are adopted, the revenues will take the state further; and,
- An analysis of current financing methods and financial tools, in addition to traditional bonding, available to the state.

Policy Recommendations

To transform Connecticut's transportation landscape in a timely and effective manner, it is important that key policies are revised to achieve efficiencies and reduce potential costs where possible. As a living framework the *Let's Go CT!* investment program, and the individual projects within it, will be best achieved through thoughtful and creative preparation and a view to what is possible in these ever-changing times. Examples of recommendations in the report include, but are not limited to:

- Enactment of a Constitutional Amendment – We strongly support a Constitutional Amendment to protect funds in the Special Transportation Fund. A well-crafted amendment will be necessary to secure the broad political and public support required to implement a large-scale transportation plan like *Let's Go CT!*
- Alternative Delivery Methods – To increase the number and size of projects it will execute, CTDOT must be given the tools necessary to be flexible and innovative in project delivery methods, and not limited to standard methods such as Design-Bid-Build. Design Build and other methods must be used when time and cost savings would be achieved.
- Local Governments and Regional Entities – Local governments must be given the tools to help fund and deliver transportation projects, taking some of the cost and administrative burden off of CTDOT and the state government. This could include regional option sales taxes, and it should include a consolidated Metropolitan Planning Organization structure in the state that has the skills and capacity to plan for, and execute, major transportation projects.
- Planning for the Future – The state should begin to enhance the planning functions in state government to account for a growing number of large scale transportation projects. Additionally, it should look to establish a volunteer-based test program for Vehicle Miles Travelled charges, which the federal government is providing funding to develop and test. As cars become more efficient, and electric and autonomous vehicles become more prevalent, the

transportation system we know today will change significantly, and the state must be ready to adapt to such innovations and technological advancements.

- Engaging the Private Sector – The state should look to partner with the private sector, wherever possible. Connecticut must consider the interests and suggestions of industries and businesses throughout the state as well as the impact of specific projects on such businesses. This partnership would help promote support for *Let's Go CT!* and keep key stakeholders engaged throughout implementation.

Funding Recommendations

We recognize the significant fiscal issues that have challenged government leaders at the federal, state, and local levels, since 2008. We also recognize that these revenue and expense challenges will continue through several more budget cycles and are exacerbated by the collective need to address a wide range of domestic and international issues.

A key assumption in the Panel's funding recommendations is the likelihood that federal funding for transportation infrastructure will stay essentially flat beyond the year 2020. At the same time, maintaining a state of good repair, and other demands, continually increases CTDOT's annual operating costs, while the amounts generated by the state's current funding sources puts the STF in an annual operational deficit by FY2020 and would deplete the STF fund balance by FY2022.

We share the belief that, if Connecticut is serious about a safe and reliable transportation system, its institutions, residents, and visitors must bear a greater share of the capital and operating costs. Such a responsibility requires that different approaches and avenues need to be explored and exploited. These include the manner in which CTDOT can, and does, award the design and construction of major projects, the appropriate use of Public-Private Partnerships to attract private sector risk capital, and the contribution to capital costs by public land that is materially enhanced by improved or expanded transportation infrastructure.

Many of the aforementioned ideas will take several years to bear fiscal fruit. In the interim, we must address the looming deficit in the STF and provide sufficient resources to fund several key preservation and repair projects – among them the I-84 viaducts in Hartford and Waterbury – and several projects that expand our linkage with neighboring states to ensure that Connecticut does not become an “economic cul-de-sac,” due to lack of investment. With those two objectives firmly in mind, we make several recommendations with respect to revenue, including but not limited to:

- Motor Vehicle Receipts, Licenses, Permits and Fees – Many of these have not been raised since the early 1990s. The state should do an analysis as to what the rates should be, reset to current norms, and then increase these routinely to account for inflation. This will help to offset the operational costs of the agency.
- Gasoline Tax – Flat for nearly 15 years, the state should increase the current gasoline tax by 2 cents a year for 7 years, which would bring the Gas Tax back to 39 cents (the level it was at prior to the roll-backs that occurred in the late 1990s and early 2000s). The tax could also be further increased in order to gain additional revenue to support the STF. While the gas tax is easy to implement, as cars become more efficient, the value of a penny will continue to decline over time.
- Sales Tax – The 2015 legislative session instituted an important new revenue source for transportation by ultimately transferring 0.5% of the 6.35% sales tax to the STF. The Panel

recommends increasing the current sales tax by 0.5%, from 6.35% to 6.85%, and transferring this increment to the STF in order to provide a full 1% of sales tax revenue for transportation. Alternatively, the state could retain the incremental increase in the General Fund and move all motor vehicle-related sales taxes to the STF.

- Congestion Mitigation Tolling – The state should authorize the process to implement congestion mitigation all-electronic tolling systems on the major corridors to help cover the costs of several large projects and mitigate congestion at various times of day. Measures are available to reduce the financial impact on frequent commuters, local residents, and those crossing a very short distance into the state. We would note that CTDOT estimates that approximately 30% of such tolls will be paid by non-Connecticut residents and 24% by freight traffic. Connecticut is the only one of the 15 states on the Atlantic coast that does not have tolling, and is the only densely-populated state in the continental U.S. that does not have tolling.
- Value Capture and Rights of Way – With significant land held in trust for transportation purposes, there is significant potential to raise revenue from the Rights of Way; in addition, the state should seek to capture the increase in value of land near the transportation improvements, especially new rail and bus-rapid transit stations.
- Sponsorships and Advertising – CTDOT should look to sponsorships recently authorized by federal law changes, and better utilization of advertising contracts, to increase revenues to offset agency expenses.

The financial analysis of our proposal shows that the projects, as currently laid out in the Plan over the next 15 years, would be able to be implemented and would leave the STF in a surplus position by FY 2030. Annual STF deficits are projected at that time as a result of growing expenditures related to debt service and increased agency operations, but, as previously mentioned, the financial analysis has been executed based on current structures and practices. As policy reforms are adopted as we recommend, project costs and agency expenditure growth rates will decrease, resulting in sustainable funding for our state's transportation infrastructure needs beyond this initial period.

Congestion Mitigation

The state, as noted, is facing an ever-increasing drain on its economy because of the costs and uncertainties the heavy congestion on its key corridors imposes on businesses. Connecticut citizens currently lose a work-week a year because of congestion and this number rises sharply for the more congested corridors. The average driver in lower Fairfield County spends 49 hours a year stuck in traffic, while drivers in the capital region spend 45 hours each year sitting in traffic. New firms may be less likely to invest in the state given these growing problems. However, data indicates that a combination of congestion mitigation tolling, rail and transit efficiency improvements, and capacity improvements in bottleneck areas, would result in a very significant reduction in congestion.

Financing Recommendations

Although revenues are key to the immediate health of the STF, it is not enough to ensure the long term viability of the fund. The current financing program, which has been a successful part of the fund's current growth, cannot be the only financing tool in the state's pocket. In order to be successful, the state needs to look at alternative forms of financing, including but not limited to: Green Bonds, TIFIA and RRIF, and Public-Private Partnerships. These additional measures will ensure the long term success of not just the *Let's Go CT!* program but also future transportation endeavors. To fully avail itself of all financing options and apply them to the best projects, while recognizing that these tools are loans that

must be repaid and not a revenue source for the STF, Connecticut agencies must develop or have regular access to strong expertise in planning and deployment of alternative financing.

Conclusion

We are confident in the importance of funding and implementing the Plan and that the voters of the state, if properly informed, will support investing in our transportation infrastructure if protected by a well-drafted Constitutional Amendment. There is no doubt such an investment will accelerate our state's economic growth and provide useful and visible benefits to the public over the next 30 years. Nonetheless, we are fully cognizant of the controversy that accompanies any proposed increases in taxes or fees. Accordingly, a well-conceived and executed public education plan will be necessary to secure both the approval of the proposed Constitutional Amendment and, ultimately, the funding recommendations herein.

The Governor and the General Assembly solved the short-term financial problems with the STF, we have proposed solutions for the 15-year mid-term, and these solutions will extend into the 30-year long-term future. As previously acknowledged, *Let's Go CT* is a living plan, and thus, as we recognize that as technological advances are made, and location preferences by private sector entities and residents evolve over the next 15 years, this infrastructure investment program will as well. Accordingly, an appropriate successor to this Panel must be appointed early in the next decade, in order to evaluate the changing circumstances and the impact such changes have had on the Plan and on the current, recommended, and prospective funding sources.

Finally, when looking at the needs identified in the 30-year program and recognizing that nearly two-thirds of the costs are attributed to preservation of existing assets, it is clear the state must not fail in this endeavor. If Connecticut wants to be economically competitive in the near future, the cost of doing nothing is far too severe. On the contrary, the benefits of executing *Let's Go CT!* are immense. The major projects discussed in this report are illustrative of the economic impacts of the transportation improvements included in *Let's Go CT!* Collectively, these example projects represent an additional business sales output to the state of \$45.2 billion dollars and short-term construction job impacts of \$45.6 billion. The job numbers provided by CTDOT for just a few of the projects in *Let's Go CT!* are impressive, with nearly 15,000 permanent jobs created as a result of the projects, and more than double that number in construction jobs; the jobs created by the entire program would surely be even larger. The future economic health of the residents and businesses of Connecticut, however, depends on our collective willingness to invest in Connecticut's transportation infrastructure.

Section I. Introduction

After several periods of underinvestment, Connecticut's transportation infrastructure is in need of significant repair, improvements, and in some cases, reconstruction or replacement, in order to bring the system to a state of good repair and to mitigate congestion problems. This is true for all aspects of the state's transportation infrastructure: highway systems, rail and freight passage, and public bus systems.

Currently, 41% of all state and local roads are considered to be in poor condition, costing individual drivers an additional \$661 per year in vehicle operating costs such as accelerated vehicle depreciation, additional repair costs, increased fuel consumption, and tire degradation. Beyond where citizens can see, 35% of Connecticut's bridges are safe but functionally obsolete or structurally deficient, and four movable bridges on the nation's busiest commuter rail line are over 100-years old, frequently causing disruptions on the busy Northeast Corridor. Relatedly, 78% of Connecticut's rail bridges are rated below good condition, with 22% of commuter rail bridges in poor condition. In addition, the state's bus systems have been poorly coordinated across regional boundaries and are in desperate need of technological advancements. Connecticut's citizens and businesses are forced to depend upon uncoordinated transit options with limited through-routes between towns and cities, creating unacceptable consequences such as highly inconvenient movement between communities and mounting business operational costs.

Perhaps most important, a lack of investment has resulted in significant traffic congestion on the highways and delays and travel disruptions across the state's rail system, creating daily bottlenecks on Connecticut's most traveled corridors, leading to increased carbon emissions and costing the state's citizens and businesses a massive amount of wasted time, money, and aggravation. It is estimated that the average person in the state spends an extra 42 hours on the road each year due to current congestion. Particular areas across the state face considerably higher lost time. The problem has reached a dimension that is now affecting the wellbeing of the state's economy. In total, TRIP, a national transportation research group, estimates that deficient and severely congested roads and bridges are costing Connecticut's drivers \$5.1 billion annually: \$1.6 billion in additional vehicle operating costs, \$2.3 billion in congestion-related delays, and \$1.2 billion in insufficient safety features that lead to serious traffic accidents and further delays. These are the readily available costs, but there is a larger problem that may lie in less measurable costs. An unreliable system, and its increasingly uncertain travel times, will drive both business and economic investment from the state, ultimately threatening both employment and income in the future. These costs, then, affect, not only individual drivers, but also Connecticut's businesses and the overall economy. Rather than serving as a conduit to help facilitate commerce, the state's transportation infrastructure has become an unacceptable constraint on Connecticut's economic potential.

The Status Quo Versus the State's Need

If the state fails to rise to these challenges, we can expect a pattern of stagnation – deteriorating highways and bridges, ever greater congestion and lost work time, insufficient rail service that fails to address the growing congestion, disconnected bus systems, and constant emergency “band aid” fixes to try to keep a declining system operating. The effect on the state's economy will be to drive business and employment away from the state. This is the cost of doing nothing, and it far outweighs the costs associated with *Let's Go CT!*

If the state addresses these challenges, we have an opportunity to bring our infrastructure system to a state of good repair, giving our citizens safer roads to travel over, a speedier and more efficient rail system, an interconnected bus system, with through routes rather than scattered routes, and significantly reduced congestion, so it ceases being a drag on the state's economy. This would not only promote better transportation options and access for travelers, it would also promote economic growth by enticing out-of-state businesses, reducing costs on current businesses, and creating jobs. We have an opportunity to turn a negative in the daily lives of our citizens and our economy into a net positive.

Governor's Transportation Policies

In the face of these challenges, during his January 7, 2015, State of the State address to the Connecticut General Assembly, Governor Dannel P. Malloy stated that transportation would be a key initiative for his second term in office, aiming to transform Connecticut's ailing infrastructure into a best-in-class, integrated, multi-modal system that would fuel economic development and citizen mobility, rather than stifling them. During his speech, the Governor noted that "...transportation and economic growth are bound together. States that make long-term investments in their infrastructure can have vibrant economies for generations. States that don't, will struggle. It's that simple." In the weeks following that address, the Governor's staff and state agencies took the feedback they had received from thousands of people and businesses throughout the crafting of the previous planning exercise, known as *TransformCT*, and created the 30-year transportation vision that is now called: *Let's Go CT!*

Governor Malloy released *Let's Go CT!* at his biennial budget address on February 18, 2015. *Let's Go CT!* is composed of two sections: a 5-year ramp-up plan that eases the Connecticut Department of Transportation (hereafter, CTDOT) and its industry partners into a significantly larger capital program, which was put to the legislature in the form of a legislative proposal authorizing \$2.8 billion in Special Tax Obligation (hereafter, STO) bonds for specific projects over the 5-year period (FY 2016 – FY 2020); and a 30-year transportation vision with \$100 billion of projects that would result in a best-in-class transportation system. The Governor's address focused on three components necessary for his transportation initiative: passage of the 5-year ramp-up plan bond package; the establishment of a "lockbox" for transportation fund revenues; and determining the most prudent and cost-effective way to continue funding our transportation needs beyond the initial 5-year ramp-up.

Charge to the Panel

To assist in determining the most prudent and cost-effective way to continue funding the state's transportation system beyond the 5-year ramp-up, Governor Malloy announced that he would "...form a nonpartisan commission comprised of experts in transportation, finance, and economic development from throughout Connecticut. They will have a single, narrow goal: offering recommendations for a sustainable structure to fund transportation." This final part of the biennial budget address is what led to the creation of the Governor's Transportation Finance Panel (hereafter, the Panel).

Governor Malloy announced his appointments to the 9-member Panel on March 31, 2015, with former State Representative Cameron Staples serving as the Chair. The Panel was charged with offering recommendations for a sustainable way to fund transportation beyond the initial 5-year ramp-up and through the *Let's Go CT!* plan.

Approach of the Panel

To accomplish this, the Panel did not simply seek revenues totaling \$100 Billion over 30 years, recognizing that number will not be static, but rather increase over time due to inflation; instead we aimed to resolve the annual deficits that were projected in the Special Transportation Fund (hereafter, STF). The Panel also concluded that aiming to resolve the revenue problem for the entire period through FY 2045 would be incredibly challenging because of the difficulty in assuming what the state's specific needs will look like that far into the future in an ever-changing world. Connecticut's needs, as well as the projects and transportation technologies, themselves, are likely to change significantly over the years. Although surface transportation technologies have been relatively stable for the past century, featuring incremental – not breakthrough – improvements, that could be changing. Electric and hybrid vehicles appear to be starting to scale-up, vehicle miles travelled by the populace appear to be stabilizing, a younger population appears to be shifting to less car ownership and to alternative means of transportation (biking, for example), working at home appears to be growing through online capabilities, and land use patterns appear to be emphasizing centralization and less of a tendency for sprawl. By 2030, we will know far more about the dimensions and the meaning of these potential changes for transportation planning purposes.

Equally of note, as the Panel's work was underway, the State Legislature and the Governor took actions to provide additional funds to the STF as part of the 2015 budget agreement, solving for the short-term. This agreement served to delay deficits until 2020 and gave the Panel additional time to focus on the mid-term problems facing the STF, rather than the immediate deficit that would have been incurred in the next two to three years. (This action by the Legislature and the Governor will be described in greater detail later in the Report.) Thus, the Panel decided to propose solutions for a more mid-term deficit target, 15-years out – or the fiscal year 2030 – and to recommend a framework to provide sustainable revenue alternatives that will deliver stable and predictable revenue streams for the STF beyond the initial 15-year target, into the 30-year long-term future, along with policy reforms that will reduce operational and project delivery costs.

We believe that the revenue and financing proposals in the report will enable Connecticut to make major progress through 2030 in addressing its “must do” transportation rehabilitation projects and its congestion reduction requirements. In our view, these efforts are not optional – the economic wellbeing of the state is at stake. We also believe the policy and finance reforms recommended in this report can greatly reduce project costs; and thus, the costs of *Let's Go CT!* overall.

This report will explain the need to address Connecticut's ailing transportation infrastructure, while offering recommended options for policy and governance reform to help increase efficiencies and reduce costs, revenue options to help address the looming deficits in the STF over the next 15 years, and alternative ways to finance the state's transportation program. All revenue and operational cost projections are based on current systems and structures in Connecticut; however, if the state continues to modernize CTDOT and implements many of the reforms highlighted in this report, the funding recommendations will take Connecticut further than the stated 15 years.

Structure and Meetings

Since its creation, the Panel met nearly once a month, in an open and public forum, to discuss a variety of topics and hear from experts in transportation infrastructure financing, development, and construction. In furtherance of its charged responsibilities, the Panel reviewed such topics as: the Governor's 30-year transportation vision, *Let's Go CT!*; the current status and projections of the STF; economic effect of transportation problems; targeting potential efficiencies in planning, construction, and financing; Public Private Partnerships (hereafter, P3s); the viability of various highway tolling methodologies; user and registration fees; strategies for protecting transportation funding and revenue; the transportation financing successes and challenges of Connecticut's sister-states; potential policy changes; and financing improvement and enhancements.

The Panel conducted a series of public meetings in April, May, June, July, September, and November, along with a public hearing in June. A summary of each meeting, along with its agenda, can be found in Attachment A.

Section II. Principles behind the Panel Recommendations

The task ahead for Connecticut is enormous. *Let's Go CT!* is a massive undertaking, but it is necessary to address the state's myriad infrastructure issues and make Connecticut's transportation network a strategic asset, rather than a barrier to its full economic potential. To accomplish this historic investment, the Panel's recommendations are based on the following underlying principles:

1. The first principle guiding the Panel was to evaluate a menu of financing options that would allow the state to reverse its transportation system's deterioration, bring it to a state of good repair and reverse growing congestion problems.
2. Prior to asking the state's residents to pay more for better service and safer roads, significant changes must be made in the "Land of Steady Habits." The state cannot successfully implement *Let's Go CT!* by simply relying on taxes or bonding. It must take a holistic approach and examine every possible tool at its disposal. The Connecticut government must give CTDOT the tools to adapt to a changing world, and likewise, CTDOT must continue to enact reforms to be nimble and flexible in its approach to designing, building, and maintaining projects. CTDOT must do everything in its power to reduce costs, increase efficiencies, and prepare for a rapidly changing future transportation system. A continued reliance solely on bonding and a design-bid-build system will cripple the state, both financially and in its ability to quickly and successfully confront the many projects necessary to move Connecticut's infrastructure forward. The state should seek every possible efficiency to reduce operating and capital costs and reform governance to ensure the state is prepared to meet future challenges, including those posed by changes in the economy and demographics, and technological advancements.
3. The projects in the *Let's Go CT!* plan is a living plan, not a final project schedule. Over time, certain projects will commence as originally envisioned while other projects will proceed ahead of others, some will require modification, and some may not ultimately be necessary, due to changing commuting patterns, or the success of alternative transit investments, or because of project costs.
4. There is no one solution or "silver bullet" for solving the state's transportation funding deficiencies. The era of mega-projects being funded by large federal earmarks is over. Just as bonding alone cannot support this plan, neither can the federal government be relied upon as a long-term stable source of transportation funding. The state will need to be creative, as each large project will need many funding sources and financing tools.
5. The state should empower and work more closely with its partners, especially private businesses and local governments, to take stress off the state's operations and debt portfolio and help deliver projects with greater efficiency. Connecticut is unique in that it has little to no financial investment by local governments and regional entities in financing transportation infrastructure and minimal involvement by the private sector. The entire responsibility for upgrading Connecticut's infrastructure has rested with the state government (with federal support), and this is no longer sustainable.
6. Lastly, the Panel strongly believes that any new capacity added to the state's transportation facilities to reduce congestion, and all significant new infrastructure improvements, should be

required to generate revenue, where possible, to contribute to the cost of constructing and operating that additional capacity. The state cannot make large scale investments without the ability of those facilities to recoup some of that investment from all stakeholders and users of the systems, including interstate travelers and the freight industry contributing their appropriate shares.

Section III. The Need to Address Transportation Revenue and Financing

Challenges Facing the Nation.

Every state in the Union faces major challenges to improving their surface transportation systems because there has been a fundamental change in the transportation role of the federal government. In 1956 President Dwight Eisenhower seized the transportation initiative for the federal government by creating the nation's 46,000 mile interstate highway system, which still dominates the U.S. surface transportation system to this day. This initiative was arguably the largest infrastructure program in recorded history. And, undergirding this system is major federal support for primary and secondary highways, for bridges on the federal system, and for mass transit – a role that began developing in 1964. This federal support created nothing less than the infrastructure skeleton of the U.S. surface transportation system. The U.S. Constitution placed the federal government into the critical role of enabling and promoting “interstate commerce,” and the surface transportation system of highways and transit had, perhaps, the largest impact on how this theory was translated into actual practice. Since the 1950s, state and local governments have played merely a supporting role – the federal government has historically been the predominant participant in transportation infrastructure investment.

However, a major shift is now occurring in the federal government's historically dominant role in funding transportation infrastructure. Traditionally, the federal government has collected dedicated transportation revenues (primarily through an 18.4 cent per gallon gasoline tax, as well as a 24.4 cents per gallon tax on diesel fuel and related excise taxes); these are deposited in a federal highway trust fund (with a mass transit account) for surface transportation. This has long been the major financial source for this country's massive national infrastructure system. However, the federal gasoline tax has been frozen (along with related fuel and excise taxes) since 1993. Thus, for 22 years there has been no inflation adjustment to the level of these user fees – the core of federal transportation financial support – despite relentless capital investment and maintenance needs across the country. Between 2008 and 2015, Congress transferred an additional \$65 billion in general federal tax revenues to the highway trust fund – an amount widely acknowledged as being inadequate – to keep the system functioning. Continuing federal budget deficits make even modest supplements ever-harder to secure. This means the federal role in surface transportation has dramatically eroded, yet no substitute support source is currently in place. The advent of this federal erosion is now forcing a major new infrastructure role onto states like Connecticut.

This increasing infrastructure challenge has significant national economic consequences. An economic study by the American Society of Civil Engineers found that in 2010, deficiencies in U.S. surface transportation infrastructure cost businesses and households approximately \$130 billion, including \$97 billion in additional vehicle operating costs, \$32 billion in travel time delays, and \$1.2 billion in safety costs. If transportation system deterioration and deficiencies are not remedied by 2020, the study found that the cost rises 82% to \$210 billion, and by 2040, that cost rises 351% to \$529 billion, with cumulative costs to system users reaching \$2.9 trillion. In the next 15 years the cost to the economy is estimated to reach 400,000 jobs.⁴

This federal disinvestment in the national infrastructure came about as a result of a deeply politically divided Congress, unable to resolve the support challenge. The legislative crisis in recent years in

⁴ “Failure to Act,” American Society of Civil Engineers, http://www.asce.org/uploadedFiles/Issues_and_Advocacy/Our_Initiatives/Infrastructure/Content_Pieces/failure-to-act-transportation-report.pdf

Congress over surface transportation is illustrative of its inability to adequately confront these important issues. After a Congressional Budget Office report projected that the highway trust fund would become bankrupt in 2013 and its mass transit account bankrupt the following year, Congress finally passed a 2014 short-term, stopgap funding measure. Then, the highway trust fund again reached a perilously low balance, with the program authorization facing imminent expiration, making new legislation mandatory. To come up with a \$50 billion annual infrastructure budget – a minimal level given the extent of need – Congress had to search, despite major budget deficits, for other new general funding for some \$15 billion above current fuel user fees. An inflation adjustment to the gas tax has still proven politically impossible, despite the fact that petroleum fuel costs are currently at 10-year lows.

The long-delayed, multi-year (5 years), federal surface transportation reauthorization bill was finally passed on December 3, 2015. To be sure, to maintain roughly current underfunded levels of federal program authority and funding, Congress had to direct major transfers of general federal funds to the Highway Trust Fund (\$75 billion) over the 5 year period (FY's 2016-2020) of the new legislation; unfortunately, these transfers include what many budget analysts believe are a number of very questionable "pay-fors" (including: questionable Federal Reserve Bank fees, proposed sales from the nation's petroleum reserve at inflated levels, and optimistic provisions for privatized tax collection). However, this overdue and sharply contested federal action remains welcome; it enables an assumption for this Report that federal funds will remain quite important to, and a significant portion of, Connecticut's transportation capital program, and for the next five years these will increase at an approximate annual rate of 2% (still below expected infrastructure cost inflation in that period). However, we must also recognize that federal surface transportation funds for the state will be below required and sustainable levels for many years to come. Thus, Connecticut, like the other states, will have to assume much more of the investment burden, if the state's transportation infrastructure is to be maintained and improved in an appropriate manner.

In other words, the recent federal legislation signals that the federal transportation role will remain severely constrained because it reflects over two decades of inflation erosion; the legislation will assure continued federal support, but at an inadequate level given national infrastructure needs. In addition, the future revenue projections from fuel taxes are unstable because federal fuel economy standards require significant gains in auto and truck fuel economy in the coming years. Furthermore, total vehicle miles travelled are stabilizing nationwide, although congestion in major metropolitan areas, and in densely populated states, is increasing. States are now facing a new reality: future federal transportation legislation, in light of the continuing Congressional grid-lock, will not tackle the nation's considerable infrastructure challenges. The states will have to take on new leading infrastructure roles, which is exactly what Connecticut's Governor has proposed to do with *Let's Go CT!*

History of Funding Transportation in Connecticut

Transportation funding in Connecticut has tended to occur in pendulum-like swings: significant support for transportation in the middle of the last century, followed by a slight decline, then another positive pendulum swing with an increase in infrastructure support in the '80s and '90s, followed by a decline in recent decades.

In January 1983, the Bipartisan Commission on State Tax Revenue and Related Fiscal Policy recommended diverting a portion of gasoline tax revenue, which was 14 cents per gallon at the time, to transportation projects. One month later, Governor O'Neill's proposed budget recommended the

creation of a Transportation Fund beginning in FY 1984. Two days after the June 28, 1983 collapse of a section of the Mianus River Bridge on Interstate 95 in Greenwich, the General Assembly passed Public Act 83-30 of the June Special Session, establishing the Special Transportation Fund in FY 1984. The following year, with the bridge collapse still drawing national attention to the issue of transportation infrastructure, the General Assembly passed Public Act 84-254, which provided for a 10 year schedule of tax and fee increases, and transfers of existing revenues, to fund the STF. Table 1 shows the original tax and fee increase schedule, while Table 2 shows when revenues were added to the STF.

TABLE 1
SPECIAL TRANSPORTATION FUND
Original Tax and Fee Increase Schedule

State Fiscal Year	Motor Fuels Tax	Motor Vehicle Receipts	License, Permits & Fees
1985	1¢	25.0%	
1986	1¢		50.0%
1987	1¢	24.0%	
1988	2¢		
1989	1¢	12.9%	
1990			50.0%
1991	2¢		
1992	1¢		25.0%
1993		14.3%	
1994			25.0%

Note: The Motor Fuels Tax Rate was 14 cents per gallon in FY 1984.
Source: Official Statement
State of Connecticut, 9/28/1984.

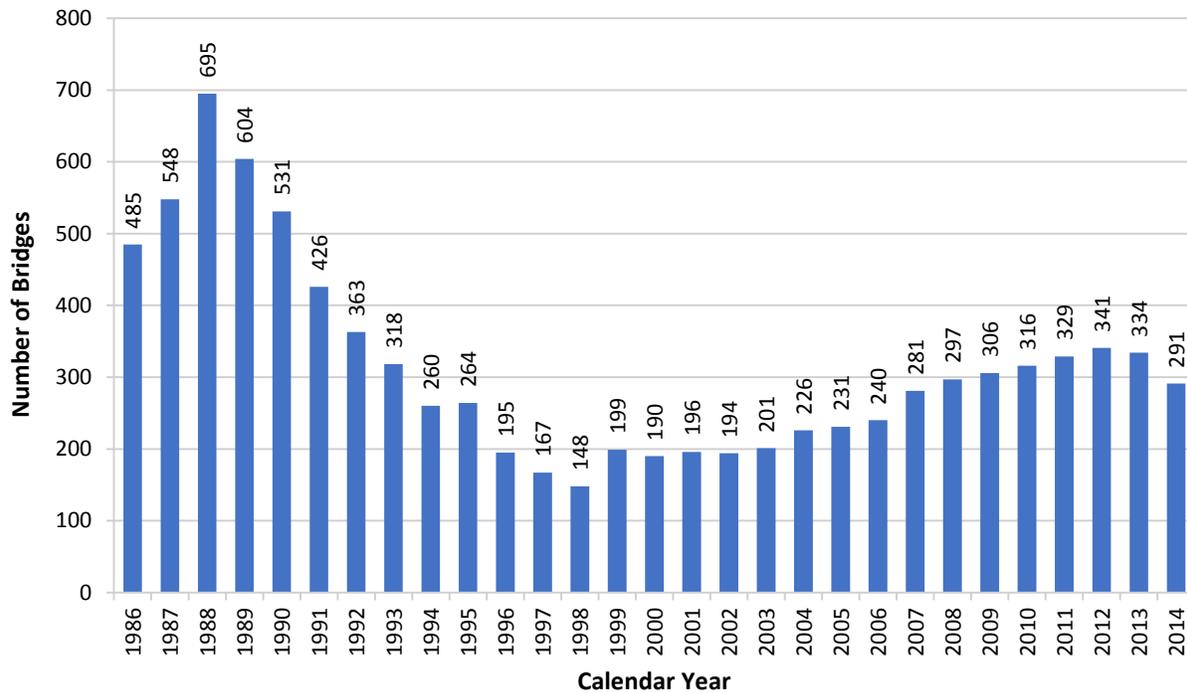
TABLE 2
Revenues Added to the Special Transportation Fund

Date	Revenue Source	Previously Deposited To:
FY 1985	Motor Fuels Tax	General Fund
FY 1985	Motor Vehicle Receipts	General Fund
FY 1985	License, Permits, Fees (Transp. Related)	General Fund
FY 1999	Oil Companies	General Fund & Other
FY 2000	Sales Tax – DMV	General Fund
FY 2010	General Fund Transfer	General Fund
FY 2016	Sales Tax – 0.5%	General Fund

Note: In FY 1984, 1 cent of the Motor Fuels Tax was transferred to the Special Transportation Fund.

Accompanying the creation of the STF, and the increase in taxes and fees to fund transportation, was a major initiative launched by Governor O’Neill to repair or replace a significant number of bridges across the state. Graph 1, which illustrates the number of CTDOT-maintained bridges in poor condition, demonstrates the precipitous improvement in bridge conditions across the state following this investment in the mid-1980s.

GRAPH 1
Number of Bridges in Poor Condition
 Maintained by the Connecticut Department of Transportation



The General Assembly continued to invest in transportation following the initial 10-year tax and fee increase, raising the motor fuels tax by an additional 14 cents between 1991 and 1997, bringing the motor fuels tax up to 39 cents per gallon. Governor Rowland and the General Assembly then enacted a series of decreases in the motor fuels tax over a three-year period, bringing the rate back down to 25 cents per gallon, where it has remained since 2000. This cut the state’s ability to finance its infrastructure needs and signaled a major negative swing in the transportation pendulum, compounded by accompanying stagnation in federal transportation support. These were not offset by another development during the Rowland Administration, where a portion of the Petroleum Products Gross Receipts Tax (or, “Oil Companies Tax”) was moved into the STF for the first time. Table 3 demonstrates the Motor Fuel Taxes Tax Rate history in Connecticut.

TABLE 3

Motor Fuels Tax Changes
(In Cents per Gallon)

Effective Date	Increase/ (Decrease)	Total	Fiscal Year	Effective Date	Increase/ (Decrease)	Total	Fiscal Year
July 1, 1984	1	15	1985	July 1, 1994	1	31	1995
July 1, 1985	1	16	1986	Jan. 1, 1995	1	32	1995
July 1, 1986	1	17	1987	July 1, 1995	1	33	1996
July 1, 1987	2	19	1988	Oct. 1, 1995	1	34	1996
July 1, 1988	1	20	1989	Jan. 1, 1996	1	35	1996
July 1, 1989	-	20	1990	Apr. 1, 1996	1	36	1996
July 1, 1990	2	22	1991	July 1, 1996	1	37	1997
July 1, 1991	1	23	1992	Oct. 1, 1996	1	38	1997
Sept. 1, 1991	2	25	1992	Jan. 1, 1997	1	39	1997
Jan. 1, 1992	1	26	1992	July 1, 1997	(3)	36	1998
Jan. 1, 1993	2	28	1993	July 1, 1998	(4)	32	1999
July 1, 1993	1	29	1994	July 1, 2000	(7)	25	2001
Jan. 1, 1994	1	30	1994				

Throughout the over 30-year history of the STF, increasing operational and capital needs of the transportation system have either required that revenue streams be moved from the General Fund into the STF, or, similar to the federal Highway Trust Fund, that General Fund transfers be used to keep the STF from operating in a deficit. Attachment B is a compilation of the major revenue sources included in the STF, a description, and a 10-year history of collections and growth rates.

The Growing Infrastructure Problem

Connecticut may have an aging transportation infrastructure system in part because of a history of being at the forefront of multi-modal transportation investments. From construction of the Farmington Canal in the 1800s, to benefitting from the launches of the New York and New Haven Railroad and New Haven and Hartford Railroad, to the creation of one of the nation's first highway departments, in 1895, at the urging of Connecticut cyclists as part of the "Good Roads" movement, to the building of the Merritt Parkway in the late 1930s, and the interstate highway system construction in the 1950s and 1960s, Connecticut has continuously invested in, and relied heavily upon, transportation and connections to its neighboring states. Unfortunately, each significant investment has also been followed by periods of complacency and inadequate investment.

Postponed investment in transportation infrastructure has placed Connecticut's economy and quality of life at risk. While the state has wisely invested in purchasing new rail cars to replace antiquated ones on

the main New Haven rail line⁵, and has dramatically enhanced the rail yard in New Haven, it has struggled to keep up with improvements required for the railroad's infrastructure, leading to periods of rail disruptions. An analysis by the state's Department of Economic and Community Development determined that Connecticut's gross state product declined by \$62 million during a recent 12-day disruption of commuter rail service into New York City. Increased congestion also contributes to poor air quality and has an impact on the state's efforts to combat climate change, with 40% of carbon emissions in Connecticut originating from the transportation sector.

Between 2011 and 2014, the Governor and the General Assembly increased annual capital expenditures for transportation by over 60 percent. While this is a good start, it is still not nearly enough to bring the system into, and maintain it in, a state of good repair, or to address the state's serious congestion. The Governor recognized both that increased spending on transportation is necessary for the state's future and that existing revenues supporting the STF would not allow for any such increased investment. In fact, looking at a 15-year forecast of the STF prepared by the Office of Policy and Management (OPM) and shown in Table 4, the state would not have been able to sustain existing operations and capital expenditures, let alone increased investments. Because of the importance of a safe and efficient transportation system to our state's wellbeing, Governor Malloy directed CTDOT to prepare *Let's Go CT!* to provide a blueprint of the investments necessary to plan for the future needs of the state – not just fix existing problems – in order to be competitive in a national and global economy. This Panel has been tasked with offering options on how to make the plan fiscally possible to execute.

⁵ The main New Haven rail line is owned by the state of Connecticut, but commuter trains to New York City are operated on this line by Metro-North Commuter Railroad Company, a division of New York State's Metropolitan Transportation Authority (MTA), under a service agreement between MTA and CTDOT.

TABLE 4
SPECIAL TRANSPORTATION FUND
Baseline Forecast
(In millions)

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Revenues¹															
1. Revenue - No Policy Change	\$ 1,501.6	\$ 1,516.9	\$ 1,519.9	\$ 1,522.4	\$ 1,525.0	\$ 1,524.5	\$ 1,523.6	\$ 1,522.7	\$ 1,521.8	\$ 1,520.8	\$ 1,519.6	\$ 1,518.5	\$ 1,517.4	\$ 1,516.2	\$ 1,515.0
Expenditures¹															
2. Base Debt Service ²	\$ 495.9	\$ 536.8	\$ 578.9	\$ 614.4	\$ 653.0	\$ 683.6	\$ 701.2	\$ 727.1	\$ 763.7	\$ 791.6	\$ 808.8	\$ 850.8	\$ 878.7	\$ 900.2	\$ 915.0
3. Additional Debt Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Total Debt Service	\$ 495.9	\$ 536.8	\$ 578.9	\$ 614.4	\$ 653.0	\$ 683.6	\$ 701.2	\$ 727.1	\$ 763.7	\$ 791.6	\$ 808.8	\$ 850.8	\$ 878.7	\$ 900.2	\$ 915.0
5. Agency Expenditures	\$ 936.2	\$ 941.5	\$ 965.6	\$ 1,012.5	\$ 1,053.1	\$ 1,080.7	\$ 1,112.5	\$ 1,145.4	\$ 1,179.5	\$ 1,214.6	\$ 1,250.7	\$ 1,287.9	\$ 1,326.1	\$ 1,365.5	\$ 1,406.0
6. Additional Expenditures	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7. Total Expenditures	\$ 936.2	\$ 941.5	\$ 965.6	\$ 1,012.5	\$ 1,053.1	\$ 1,080.7	\$ 1,112.5	\$ 1,145.4	\$ 1,179.5	\$ 1,214.6	\$ 1,250.7	\$ 1,287.9	\$ 1,326.1	\$ 1,365.5	\$ 1,406.0
8. Grand Total Expenditures	\$ 1,432.1	\$ 1,478.3	\$ 1,544.6	\$ 1,626.9	\$ 1,706.0	\$ 1,764.3	\$ 1,813.7	\$ 1,872.6	\$ 1,943.2	\$ 2,006.2	\$ 2,059.5	\$ 2,138.7	\$ 2,204.8	\$ 2,265.7	\$ 2,321.0
Balances															
9. Surplus/(Deficit)	\$ 69.5	\$ 38.6	\$ (24.6)	\$ (104.5)	\$ (181.0)	\$ (239.8)	\$ (290.1)	\$ (349.9)	\$ (421.4)	\$ (485.4)	\$ (539.8)	\$ (620.2)	\$ (687.4)	\$ (749.5)	\$ (806.0)
10. Cumulative	\$ 235.8	\$ 274.5	\$ 249.8	\$ 145.3	\$ (35.7)	\$ (275.5)	\$ (565.6)	\$ (915.4)	\$ (1,336.8)	\$ (1,822.2)	\$ (2,362.0)	\$ (2,982.2)	\$ (3,669.6)	\$ (4,419.1)	\$ (5,225.0)

Note:

Baseline forecast is based on estimates prior to the conclusion 2015 legislative session and the "Let's Go CTTI" transportation infrastructure plan.

¹ Based on estimates created by the Office of Policy and Management as of April 20, 2015.

² Assumes an annual \$600 million in state borrowing.

Let's Go CT!

Let's Go CT! is the 30-year transportation plan put out by the Governor in February 2015 that aims to address the significant transportation problems facing Connecticut. It is also what ultimately spurred the creation of this Panel, and is the source of much of the data and costs used by the Panel to prepare the recommendations in this document. *Let's Go CT!* has its roots in an earlier planning exercise at CTDOT known as *TransformCT*, a major statewide initiative to inform the recommendations and strategies contained in the update of the state's Long-Range Transportation Plan.

Historically, CTDOT has produced plans that are policy focused and have not been financially driven or constrained. Recommendations from the previous Transportation Strategy Board, the economic recession of the last decade, and the accelerated need for major reinvestment in transportation infrastructure necessitated a new approach to Connecticut's long range transportation plan. With this in mind, CTDOT launched *TransformCT*. This strategic planning effort utilized best practices for strategic planning prepared by the USDOT, input from the National Cooperative Highway Research Program, and engaged with experts in financial planning, asset management, and economic modeling.

Alternating periods of investment followed by underinvestment in Connecticut's transportation infrastructure, along with a failure to focus on asset management, led to the need for critical repairs to Connecticut's transportation system. As a result, Connecticut is now faced with decisions on how, where, and at what levels to invest in its aging infrastructure. In order to make these decisions, CTDOT held more than 120 public meetings and workshops, and utilized radio, internet, and multi-language media outlets to collect ideas. In total, more than fourteen thousand people, businesses, and advocates provided input that shaped statewide and area strategies. The result of this outreach built a fully multi-modal vision that emphasizes connectivity among modes for the entire state, a stronger partnership among CTDOT and other state agencies, neighboring states, and Connecticut's towns and cities.

The morphing of *TransformCT* into *Let's Go CT!* occurred shortly after the Governor's reelection, a point in the planning process when the known annual investment required to keep Connecticut's highway, bus, rail, and other transportation infrastructure in a state of good repair, were available to compare with one another.

Vision.

Connecticut lies in the heart of one of the most economically vital regions of the nation. The state has a highly educated and motivated workforce and it offers a broad range of jobs and lifestyle choices that are attractive to people from all over the United States. The state's goal is to build a strong economy with world class cities and sustainable, livable communities that are supported by a safe, efficient, and multi-modal transportation system that easily connects residents to one another and to the national and global economies.

Connecticut must bring its deteriorating system to a state of good repair and address key congestion mitigation needs. A sound system would meet high safety standards and reduce congestion by offering a choice of transportation modes that are fully integrated with much better connections among towns, cities, major transportation corridors, regions, and neighboring states.

This will require mutually beneficial corridor investments with mutually supportive land use and energy policies. The goals for economic growth, safety, and efficiency cannot be achieved by any one mode. CTDOT found that during the outreach and visioning process, no single mode was identified as a priority, but instead, there existed a common theme across all modes that conditions should be safe and reliable,

in a state of good repair, and allow for efficient travel along the corridor. In order to achieve this comprehensive future vision, the current system must function in a more efficient manner to serve existing demand, and all modes must be expanded, enhanced, and integrated to allow for future economic growth.

I-95 serves as a good example of the need for multi-modal solutions. According to CTDOT, in meetings with business leaders, residents, and community leaders in the I-95 corridor, no single modal investment shone above the rest. Instead, it was apparent that multiple investments along the corridor are needed to support many different users and that overall congestion mitigation requires multi-modal solutions. For example, the retail, goods, and service industries need consistent and reliable highways; the financial and business communities need frequent and reliable rail service to-and-from New York City along the New Haven Line (NHL) and its branch lines; potential bicycle and pedestrian traffic require safer and improved transit, bike, and pedestrian facilities in the urban and community centers along the corridor; and all residents regardless of age or income need dependable, better integrated, and more convenient transit services that work more seamlessly across town lines and different operators.

Strategies.

CTDOT used common themes to separate areas of the state into regional strategies, as well as smaller geographic areas sharing common attributes. These modal improvements work together as mutually beneficial, corridor-wide solutions. Increased frequency and reliability on the main and branch lines of Connecticut's rail system, with improved bicycle and pedestrian facilities in the urban and community centers, will attract otherwise highway-dependent users, thereby freeing capacity on the highways. Together, these corridor-wide improvements work together to achieve multiple objectives, on multiple modes, that benefit multiple users.

Let's Go CT! requires maintaining and upgrading the state's highway and bridges to a safe and reliable condition. It also includes providing highway congestion relief, capacity expansion to certain corridors (I-95, I-84) to reduce congestion, rebuilding key aging interchanges, eliminating major freight and traffic bottlenecks (Charter Oak Bridge off of I-91), replacing major structures that have significantly exceeded their useful design life (I-84 Viaducts, NHL Bridges), and implementing asset management systems to optimize investments and to maintain a state of good repair. For the state's railroads, the strategy includes expanding high frequency services to-and-from the New York metro area, increasing levels of intermediate rail traffic between Connecticut towns and cities, expanding station access and parking, modernizing equipment, and fully utilizing state-of-the-art fare and real-time information technology. Taking these steps will provide significant congestion relief. The rail strategy also includes increased services throughout the state on the Shoreline East and the new Hartford Line. For the state's bus service strategy, *Let's Go CT!* calls for expanding bus service, extending CTfastrak east of the Connecticut River, implementing coastal express services, and integrating state-of-the-art fare and real-time service information.

However, *Let's Go CT!* was not just limited to the systems owned and operated by the state; the full transportation system requires attention because local systems feed into, and serve, the state-wide infrastructure and also need significant investment. *Let's Go CT!* proposes substantial reinvestment into these local systems, including state programs to fund local road and bridge projects, establishing a municipal traffic signal program, and creating a new program for bicycle and pedestrian infrastructure that will make towns and cities safer and provide additional connections and options for travel. The new bicycle and pedestrian programs will be supported through a new "complete streets" policy and will take a context sensitive design approach into consideration.

The *Let's Go CT!* plan is significantly different from previous plans prepared by CTDOT, not least of which is the scale of the vision's scope and the significant cost. The \$100 billion plan incorporates 30 years of necessary improvements to keep the state's transportation systems in a state of good repair, enhances existing services that will mitigate congestion, increases support for local transportation projects to bring and maintain that part of the system into good repair, and if fully implemented, it would give Connecticut residents a best-in-class transportation infrastructure system. What is not captured in the \$100 billion price tag is the cost of operating the systems and keeping CTDOT functioning beyond its current capacity, the debt service payments, and estimates on construction inflation. Table 6 reflects the surpluses and deficits the state of Connecticut would see in the STF if it had undertaken *Let's Go CT* program absent the 2015 legislative action explained below. This table utilizes the Baseline Forecast in Table 4, but it adds in the operational and capital costs required to carry out the projects, as detailed over 25 years by CTDOT. This table demonstrates the size of a given surplus or deficit in the STF each year, and what revenue amounts would be required for offering solutions.

Assumptions

All tables for the *Let's Go CT!* transportation plan are based on a set of assumptions and it is important to understand what these assumptions mean and how they impact the forecast. Please note that these assumptions are used in all tables that reflect spending increases due to the *Let's Go CT!* plan.

Revenues

Over the next five fiscal years, fiscal years 2016 through 2020, revenues are based on the November 10, 2015 consensus forecast. These forecasted numbers take into account current market conditions and make assumptions for both economic and behavioral changes within each revenue source. Revenues outside of the next five years have been forecasted based on their historical average. These do not account for any assumed changes in economic condition (i.e. future economic downturns) or significant behavioral changes. The major revenue assumptions can be seen in Table 5.

Expenditures

Expenditure assumptions are broken down into two parts: Operating costs, which include all agency related expenses and fringes, and debt service. The costs of airport projects have been removed, as those would be the responsibility of the Connecticut Airport Authority.

Operating costs are based on current levels of expenditure growth and then are forecasted based on the corresponding inflation rate which can be seen in Table 5. Similar to revenues, there are no assumptions made for technological or economic impacts on these factors.

Debt service, similar to operating costs, uses the most recent history as a starting point. Fiscal year 2016 assumes an increase in interest rates from 3.8% in fiscal year 2016 to 5.5% by fiscal year 2020. Federal funding apportioned to Connecticut has been used to offset the amount of borrowing in each fiscal year. The amount was determined based on the most recently passed transportation bill, the "Fixing American's Surface Transportation" Act (FAST). For fiscal years 2016 through 2020 the amount will ramp up from approximately \$670 million to \$734 million. After fiscal year 2020 it has been assumed that the level will remain flat at \$734 million as there is currently no indication of further increases in federal subsidies to the states.

TABLE 5

Forecast Assumptions
Fiscal Years 2021 - 2030¹

Revenues

Motor Fuels Tax - Fuel Consumption	-0.5%
Oil Companies Tax	4.0%
Motor Vehicle Receipts	0.3%
Licenses, Permits and Fees	0.4%
All Other Revenues	Historical Averages

Expenditures

Personal Services ²	4.5%
Medical Inflation ³	4.1%
All Other Inflation (CPI)	2.5%

Debt Service

Interest Rate	5.5%
Construction Inflation	3.0%
Federal Capital Grants	\$734 million

¹ For years prior to fiscal year 2021 please see November 10, 2015 Consensus Revenue Forecast.

² Includes wage and benefit growth

³ Medical related fringes

TABLE 6
SPECIAL TRANSPORTATION FUND
Original Let's Go CT! 15 Year Forecast
(in millions)

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Revenues¹															
1. Revenue - No Policy Change	\$ 1,501.6	\$ 1,516.9	\$ 1,519.9	\$ 1,522.4	\$ 1,525.0	\$ 1,524.5	\$ 1,523.6	\$ 1,522.7	\$ 1,521.8	\$ 1,520.8	\$ 1,519.6	\$ 1,518.5	\$ 1,517.4	\$ 1,516.2	\$ 1,515.0
Expenditures¹															
2. Base Debt Service ²	\$ 495.9	\$ 536.8	\$ 578.9	\$ 614.4	\$ 653.0	\$ 683.6	\$ 701.2	\$ 727.1	\$ 763.7	\$ 791.6	\$ 808.8	\$ 850.8	\$ 878.7	\$ 900.2	\$ 915.0
3. Additional Debt Service ³	5.3	23.0	53.2	89.9	127.1	181.4	260.5	368.3	513.6	706.1	932.1	1,220.3	1,536.1	1,846.8	2,181.2
4. Total Debt Service	\$ 501.2	\$ 559.8	\$ 632.2	\$ 704.3	\$ 780.1	\$ 865.1	\$ 961.7	\$ 1,095.4	\$ 1,277.3	\$ 1,497.7	\$ 1,740.8	\$ 2,071.1	\$ 2,414.8	\$ 2,747.0	\$ 3,096.2
5. Agency Expenditures	\$ 936.2	\$ 941.5	\$ 965.6	\$ 1,012.5	\$ 1,053.1	\$ 1,080.7	\$ 1,112.5	\$ 1,145.4	\$ 1,179.5	\$ 1,214.6	\$ 1,250.7	\$ 1,287.9	\$ 1,326.1	\$ 1,365.5	\$ 1,406.0
6. Additional Expenditures ⁴	-	-	24.7	27.3	43.4	65.3	74.1	83.3	93.1	165.5	179.9	195.2	211.7	229.2	255.5
7. Total Expenditures	\$ 936.2	\$ 941.5	\$ 990.3	\$ 1,039.9	\$ 1,096.4	\$ 1,146.0	\$ 1,186.6	\$ 1,228.7	\$ 1,272.5	\$ 1,380.1	\$ 1,430.6	\$ 1,483.1	\$ 1,537.8	\$ 1,594.7	\$ 1,661.4
8. Grand Total Expenditures	\$ 1,437.4	\$ 1,501.3	\$ 1,622.5	\$ 1,744.1	\$ 1,876.5	\$ 2,011.1	\$ 2,148.3	\$ 2,324.1	\$ 2,549.8	\$ 2,877.8	\$ 3,171.4	\$ 3,554.2	\$ 3,952.6	\$ 4,341.7	\$ 4,757.6
Balances															
9. Surplus/(Deficit)	\$ 64.2	\$ 15.7	\$ (102.6)	\$ (221.7)	\$ (351.5)	\$ (486.5)	\$ (624.7)	\$ (801.4)	\$ (1,028.0)	\$ (1,357.0)	\$ (1,651.8)	\$ (2,035.7)	\$ (2,435.2)	\$ (2,825.4)	\$ (3,242.6)
10. Cumulative	\$ 230.5	\$ 246.1	\$ 143.6	\$ (78.1)	\$ (429.6)	\$ (916.2)	\$ (1,540.9)	\$ (2,342.3)	\$ (3,370.3)	\$ (4,727.3)	\$ (6,379.1)	\$ (8,414.9)	\$ (10,850.0)	\$ (13,675.5)	\$ (16,918.1)

Note:

Let's Go CT! 15 Year Forecast is based on estimates prior to the conclusion 2015 legislative session and includes capital and operating costs associated with the "Let's Go CT!" transportation infrastructure plan.

¹ Based on estimates provided by the Office of Policy and Management as of April 20, 2015.

² Assumes an annual \$600 million in state borrowing.

³ Additional debt service cost to fund capital projects in the "Let's Go CT!" transportation infrastructure program, estimated as of April 20, 2015.

⁴ Operating cost increases associated with the "Let's Go CT!" transportation infrastructure program, as estimated as of April 20, 2015.

2015 Legislative Actions

During the 2015 legislative session, Governor Malloy put forward two major transportation initiatives. The first was both a bill and a resolution establishing a statutory and constitutional “lockbox,” respectively HB 6857 and HJR 63. The second was a piece of legislation, HB 6840, that served to provide bond authorization for the \$2.8 billion 5-year ramp-up portion of *Let’s Go CT!* Neither proposal passed either the Senate or the House by the end of the regular legislative session.

The FY 2016/2017 biennial budget contained several changes to the STF, as part of a compromise reached by the Governor with the Senate President and the Speaker of the House. As part of this compromise, a portion of the Sales and Use Tax would be transferred to the STF, phased-in over three years, and resulting in 0.5% of the current 6.35% Sales and Use Tax being deposited into the STF by FY 2018. In addition, another 0.5% would be used to enact major property tax reforms, including phasing-in a statewide cap on local motor vehicle property tax mill rates. The budget also ended all future General Fund transfers to the STF and ceased the tradition of statutorily specified transfers of the Oil Companies Tax from the General Fund to the STF, instead dedicating 100% of all future revenues collected under the Oil Companies Tax to the STF. Additionally, the budget implementer passed during the 2015 Special Session included a statutory “lockbox” for the STF as well as the \$2.8 billion bond authorization for the 5-year ramp-up plan.

As a result of these changes a slight drop in revenue in the STF was projected for FY 2016. This would precede a larger revenue increase in FY 2017 and a growing revenue stream in FY 2018 and beyond, when the full 0.5% Sales and Use Tax takes effect. Table 7 demonstrates the STF projections resulting from the changes made by the legislature prior to July 2015, including estimated debt service and operational costs, should the state move forward with the proposed projects under *Let’s Go CT!* As a result of the actions of the legislature, the STF was projected to benefit from an additional \$773 million in revenue over the next five years, would not incur a deficit until 2020, and would maintain a cumulative surplus balance until 2022. However, it must be noted that a further bolstering of the fund’s finances would be required to help meet the infrastructure requirements outlined in this report that the fund must support.

TABLE 7
SPECIAL TRANSPORTATION FUND
2015 Legislative Session Changes
(in Millions)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1. Revenue - Before Policy Changes ¹	\$ 1,500.5	\$ 1,516.7	\$ 1,519.3	\$ 1,521.8	\$ 1,524.3	\$ 1,523.9	\$ 1,522.9	\$ 1,522.1	\$ 1,521.1	\$ 1,520.1	\$ 1,519.0	\$ 1,517.8	\$ 1,516.8	\$ 1,515.5	\$ 1,514.3
Policy Changes:															
2. Sales Tax Transfer to the STF ²	\$ 158.6	\$ 260.6	\$ 356.5	\$ 369.0	\$ 381.9	\$ 395.3	\$ 409.1	\$ 423.4	\$ 438.2	\$ 453.6	\$ 469.4	\$ 485.9	\$ 502.9	\$ 520.5	\$ 538.7
3. Eliminate General Fund Subsidy ³	(152.8)	(162.8)	(162.8)	(162.8)	(162.8)	(162.8)	(162.8)	(162.8)	(162.8)	(162.8)	(162.8)	(162.8)	(162.8)	(162.8)	(162.8)
4. Transfer all Oil Companies ⁴	(38.2)	(17.6)	7.1	41.0	58.1	79.9	102.7	126.7	151.9	178.4	206.2	235.4	266.0	298.1	331.9
5. Total Revenue Changes	\$ (32.4)	\$ 80.2	\$ 200.8	\$ 247.2	\$ 277.2	\$ 312.3	\$ 349.0	\$ 387.3	\$ 427.4	\$ 469.2	\$ 512.8	\$ 558.4	\$ 606.1	\$ 655.8	\$ 707.8
6. Total Revenue	\$ 1,468.1	\$ 1,596.9	\$ 1,720.1	\$ 1,769.0	\$ 1,801.5	\$ 1,836.2	\$ 1,872.0	\$ 1,909.4	\$ 1,948.5	\$ 1,989.3	\$ 2,031.8	\$ 2,076.3	\$ 2,122.8	\$ 2,171.4	\$ 2,222.1
7. Total Expenditure ⁵	\$ 1,416.1	\$ 1,496.1	\$ 1,622.5	\$ 1,744.1	\$ 1,876.5	\$ 2,011.1	\$ 2,148.3	\$ 2,324.1	\$ 2,549.8	\$ 2,877.8	\$ 3,171.4	\$ 3,554.2	\$ 3,952.6	\$ 4,341.7	\$ 4,757.6
8. Surplus/(Deficit)	\$ 52.0	\$ 100.8	\$ 97.6	\$ 24.8	\$ (75.0)	\$ (174.9)	\$ (276.3)	\$ (414.7)	\$ (601.3)	\$ (888.5)	\$ (1,139.6)	\$ (1,478.0)	\$ (1,829.8)	\$ (2,170.3)	\$ (2,535.5)
9. Cumulative Balance	\$ 235.0	\$ 335.8	\$ 433.4	\$ 458.3	\$ 383.3	\$ 208.5	\$ (67.9)	\$ (482.6)	\$ (1,083.9)	\$ (1,972.5)	\$ (3,112.1)	\$ (4,590.1)	\$ (6,419.8)	\$ (8,590.2)	\$ (11,125.7)

Note:

¹ Assumes April 30, 2015 consensus revenue for Fiscal Years 2016 through 2020. Office of Policy and Management estimates thereafter.

² Per Public Act 15-5 of the June Special Session section 132.

³ Per Public Act 15-244 section 92.

⁴ Per Public Act 15-244 section 91.

⁵ Per Public Act 15-244 as modified by Public Act 15-5 of the June Special Session. Includes estimates for the "Let's Go CT!" transportation infrastructure program estimated as of June 30, 2015.

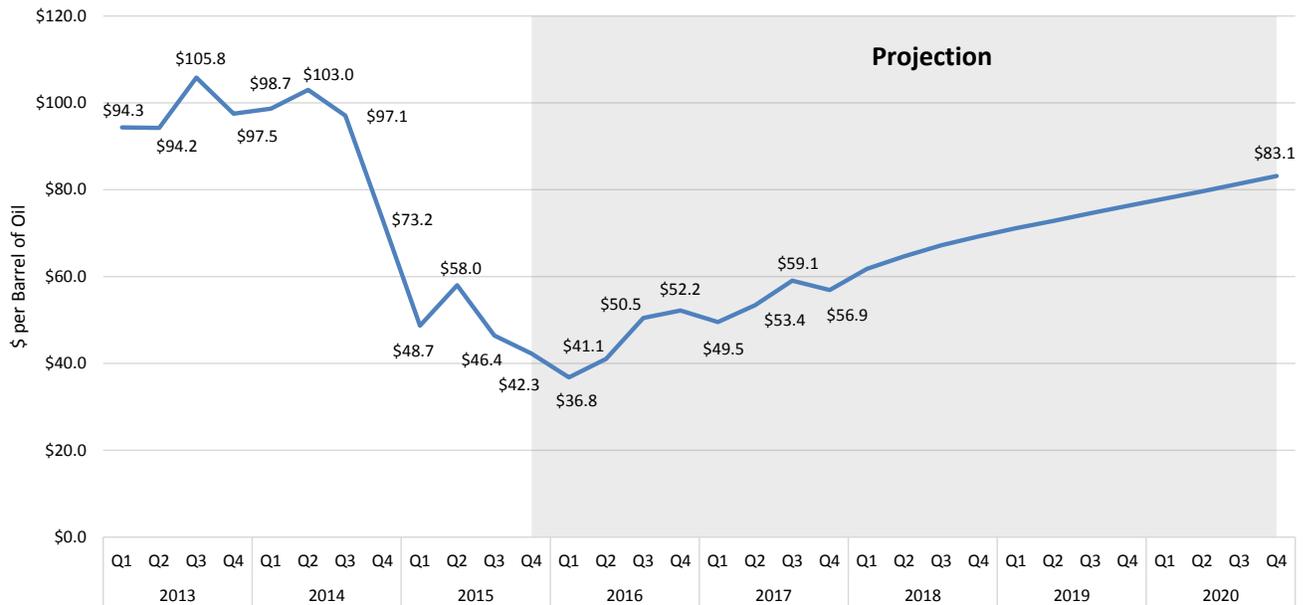
Low Oil Prices and the Special Transportation Fund

Since calendar year 2014, the oil market has experienced a significant market adjustment, with prices declining over 50 percent over the course of a single year. The major cause for this downturn can be simply explained by an imbalance between supply and demand. For the past decade the United States has experienced a significant rise in oil production, due in large part to technological innovations in the area of shale oil fracking. This reduced the demand for foreign oil in the lucrative American market and drove foreign oil producers to look elsewhere for lower priced markets. To maintain its market share and exert pressure on the burgeoning U.S. shale-oil industry, Saudi Arabia abandoned its traditional role as the global oil market's swing producer of the Organization of the Petroleum Exporting Countries (OPEC), sustaining production levels and thereby negatively impacting oil prices. In addition, several OPEC and non-OPEC countries have continued to pump oil, even as prices continue to decline, as their economies rely heavily on the export of such energy resources. All of this, in combination with a reduction in demand in Europe and the signs of slowing economic growth in China and emerging markets, have led to a historic oversupply in the oil market, which in turn, are driving prices down.

Declining oil prices are a major benefit to consumers, but comes at a cost to the STF. The oil companies tax is applied to the gross earnings from the first sale of petroleum products by distributors in Connecticut at a rate determined by Connecticut statute. This results in a direct relationship between the price of oil and the amount of tax dollars the state receives (as the price of oil declines, oil companies tax revenue declines, and vice versa). When the 2015 legislative session came to a close it was believed that the oil companies tax forecast had accurately taken into account the size and scope of this downturn. The second quarter of calendar year 2015, the period in which the legislative forecast was made, showed signs that the oil market was reversing course with a dramatic up-tick in price (as can be seen in Graph 2, which shows prices since 2013 and a projection of possible prices through 2020, below). However, as the calendar year progressed prices once again started to recede, as OPEC refused to adjust course, forcing oil companies projections further downward.

On the other hand, low oil prices provide a modest increase in fuel consumption, which does have a positive impact on the STF. After nearly a decade of decline, gasoline consumption rose in fiscal year 2015. This generated additional revenue, albeit not enough to offset the loss in oil companies tax, above targeted revenues. So long as the current pattern continues, while declining oil prices may lead to further consumption increases, oil tax revenues are likely to remain under pressure for an extended period of time.

Graph 2
Average Price of West Texas Intermediate Crude
(Dollars per Barrel)



Data provided by IHS as of December 12th 2015

December Special Session

In December 2015, the General Assembly passed, and the Governor signed, a Deficit Mitigation Package to resolve a projected General Fund budget deficit in FY 2016. As part of this package, the sales tax transfer from the General Fund was delayed by two months. As a result, the STF is faced with an approximately \$35 million reduction, which along with the drop in oil prices, may lead to a deficit in the STF in FY 2016; the administration has indicated it will institute budget cuts to mitigate the potential STF deficit for FY 2016. These actions do not impact the later years of the STF. But, this development, unfortunately, signals the continuing challenge of obtaining adequate transportation infrastructure funding in the state.

Current Forecast

Table 8 provides the final forecast, which all of the Panel’s revenue recommendations are based upon. This table has been adjusted to reflect the debt service and operating cost of the *Let’s Go CT!* plan, but does not include any suggested revenues or the impact of any policy changes. The only modifications made to this table include: expenditure and debt service changes based on the October 2015 Special Tax Obligation (STO) bond sale, revenue changes associated with November 10, 2015 consensus revenue forecast, and changes made in the December Special Session of the Connecticut General Assembly.

TABLE 8
SPECIAL TRANSPORTATION FUND
"Let's Go CT!" Balance Forecast
(in Millions)

	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>FY 2029</u>	<u>FY 2030</u>
1. Revenues¹	\$ 1,388.2	\$ 1,547.9	\$ 1,683.8	\$ 1,735.6	\$ 1,774.9	\$ 1,802.8	\$ 1,832.0	\$ 1,862.4	\$ 1,894.0	\$ 1,926.6	\$ 1,960.4	\$ 1,995.6	\$ 2,032.2	\$ 2,070.1	\$ 2,109.5
2. Expenditures²	\$ 1,388.2	\$ 1,496.1	\$ 1,562.7	\$ 1,693.5	\$ 1,827.1	\$ 1,964.7	\$ 2,093.0	\$ 2,279.4	\$ 2,525.4	\$ 2,889.1	\$ 3,230.9	\$ 3,649.6	\$ 4,107.5	\$ 4,600.7	\$ 5,065.3
3. Surplus Deficit	\$ -	\$ 51.8	\$ 121.1	\$ 42.1	\$ (52.2)	\$ (161.9)	\$ (260.9)	\$ (417.0)	\$ (631.5)	\$ (962.4)	\$ (1,270.5)	\$ (1,654.0)	\$ (2,075.2)	\$ (2,530.6)	\$ (2,955.8)
4. Cumulative Balance	\$ 180.0	\$ 231.8	\$ 352.9	\$ 395.0	\$ 342.8	\$ 180.9	\$ (80.1)	\$ (497.1)	\$ (1,128.6)	\$ (2,091.0)	\$ (3,361.5)	\$ (5,015.5)	\$ (7,090.7)	\$ (9,621.3)	\$ (12,577.1)

Note:

¹ Assumes consensus revenue as of November 10, 2015 as modified by Public Act 15-1 of the December Special Session for Fiscal Year 2016 through Fiscal Year 2020. Fiscal Year 2021 through Fiscal Year 2030 forecast based on assumptions from Section III of this report.

² Fiscal Year 2016 based on the Office of Policy and Management's December 18, 2015 Letter to the Comptroller. Fiscal Year 2017 per Public Act 15-244 as modified by Public Act 15-5 of the June Special Session. Fiscal Year 2018 through Fiscal Year 2030 expenditure forecast based on assumptions from Section III of this report and from estimates of the "Let's Go CT!" transportation infrastructure program as of December 1, 2015.

Section IV. Examples of Statewide and Regional Needs

This section of the report examines some of the major preservation projects or programs that must be completed, some of the mega-projects that are essential to the state's economy, and a program that is low cost but will have dramatic returns on investment for the state. The items below are organized and presented either within a major corridor (such as the New York to Hartford corridor, the New York to New Haven corridor, and the eastern Connecticut corridor) or as a statewide program considered essential to the transportation system. Each project and program is explained below in terms of its need, cost, and benefits to the state.

Statewide Program & Preservation Needs

Program Overview

The bulk of *Let's Go CT!* is comprised of urgent and essential state of good repair and congestion relief projects. Nearly two-thirds of the \$100 billion program (\$66 billion), across all modes, consists of statewide preservation investments. These investments aim to keep the transportation systems that exist today operating smoothly, safely, and without disruption to the state's economy or to the quality of life of its citizens. The total program includes over \$33 billion in bridge repairs and improvements, over \$15 billion in highway preservation and safety costs, \$15 billion for rail preservation (repair and replacement), nearly \$1.5 billion for a full bus fleet replacement, and approximately \$1 billion for the Local Transportation Capital Improvement Program. As demonstrated by the details of the *Let's Go CT!* program, its priorities are to bring all transportation modes into a state of good repair and to maintain these facilities and assets in this condition, for the next 30 years.

Description of Need

In order for the economy to continue to grow, Connecticut must ensure that its systems are in good repair, that they are safe and reliable. Periods of underinvestment in the transportation system have resulted in a trend of accelerated deterioration that, left unchecked, threatens the economic vitality of the state. *Let's GO CT!* calls for an immediate increase in funding to preserve, and continuously maintain, the system in order to allow for economic expansion. The size and scope of Connecticut's system is massive and the preservation program contained in *Let's Go CT!* is consistent with the size and scope of the system.

While preserving the existing system is costly and requires adequate and reliable allocations of resources and funding for continued maintenance, it is the most cost-effective method for providing a functional transportation network and sustaining economically vibrant communities.

TABLE 9

Statewide Preservation

Mode	Let's Go CT! Proposed Investment	Preservation & Safety	Percentage Preservation & Safety	Description of Preservation Activities
Highway	\$ 30,297,000,000	\$15,610,000,000	52%	Maintain Pavement in State of Good Repair, initiate Safety Improvements on Highway Network, maintain Intelligent Transportation Systems (ITS), new municipal traffic signal program to meet current National Standards, additional funding for local transportation capital improvements (LOTICIP).
Bridge	\$ 34,780,000,000	\$32,190,000,000	93%	Funding needed to reach and maintain less than 10% structurally deficient bridges statewide (by deck area) within 20 years. This cost includes: <ul style="list-style-type: none"> ▪ All public bridges within the state, both state and locally maintained bridges over 20 feet in length. ▪ An increase to the state funded local bridge program
Bus	\$ 2,800,000,000	\$2,075,000,000	74%	Existing Fleet Midlife overhaul, Replace Fleet at end of useful life with Clean Diesel-Electric Hybrid and other Green technology, Maintain existing maintenance facilities.
Rail	\$ 21,820,200,000	\$14,550,200,000	67%	Rail-Highway Grade Crossing Program, Fleet Replacement, Maintenance Facility and Yard Improvement, Communications and Signal Replacement, Catenary and Power system Upgrades, Rail Bridge State of Good Repair, Rail Track Program, Station and Parking Maintenance.
Bike-Ped	\$ 780,000,000	\$30,000,000	4%	Maintain statewide regional trail system.
Freight	\$ 1,250,000,000	\$750,000,000	60%	Establish annual funding program to maintain state-of-good repair across state-wide rail freight network, including rights-of-way, bridges and special projects.
Maritime	\$ 711,000,000	\$231,000,000	32%	New London Thames River Dredging, Port of New London/State Pier Repairs, Port of Bridgeport Dredging, Rocky Hill-Glastonbury Ferry Maintenance Dredging, Harbor Maintenance.
Airport	\$ 1,465,000,000	\$265,000,000	18%	General Aviation Airports-Capital improvements to State-owned General Aviation airports. Fund Municipal Airport Program improvements at Tweed-New Haven, Bridgeport Sikorsky, Meriden, Robertson and Danbury airports.
Design	\$ 5,000,000,000	n/a	n/a	
Total	\$ 98,903,200,000	\$65,701,200,000	66%	

New York State to Hartford Corridor

Corridor Overview: The New York to Hartford corridor is defined largely by I-84, which cuts west-east across the entire northern section of the state, including this NY-Danbury-Waterbury-Hartford section. The corridor includes a mix of densely populated urban and suburban communities along I-84 and rural townships in the north. It also links Connecticut to the national infrastructure system and the individual Danbury, Waterbury, and Hartford economic regions, making it incredibly important to the state's economy. The replacements noted below are mandatory for these critical, aging facilities. A reduction in traffic congestion on I-84, by fixing major bottlenecks and restoring bridges and other infrastructure, is essential to growth along this corridor.

Total investment in the corridor, based on the assumed selected options noted below, is estimated at \$14 billion, and almost \$12.5 billion (or 87 percent) of this total funding is for preservation and safety. The corridor also includes three major projects:

- Replacement of the I-84 Viaduct in Hartford – between \$3 billion and \$12 billion (depending on replacement option selected)
- Replacement of the I-84/Rte. 8 Interchange (Mixmaster) in Waterbury – between \$3 billion and \$8 billion (depending on replacement option selected)
- Widening of I-84 from New York to Waterbury – \$1.5 billion

In summary, the two major replacement projects for “end of its life” infrastructure on this corridor are “must do”; they are also on the “top 100” list of most congested U.S. sites. Along with the capacity expansion, these projects will provide major congestion relief along this corridor. Each of these projects is described in more detail below.

Replace I-84 Viaduct in Hartford (*must do project*)

Description of Need

The I-84 Hartford Viaduct consists of a critical series of elevated structures, along a 2-mile section of I-84 through downtown Hartford, which needs to be replaced. Built 50 years ago in the 1960s, these elevated structures are reaching or are at the end of their expected life span and are subject to significant wear and tear. The Viaduct is essential to the state's transportation system and economy, carrying more than 170,000 vehicles per day, of which approximately 8 percent are heavy trucks. Located on a major freight corridor, the Hartford Viaduct is also a major freight bottleneck, identified by the American Transportation Research Institute (ATRI) as one of the nation's top 20 most congested areas.

Replacement of these elevated structures offers an opportunity to develop a better design of I-84 that will reduce congestion and integrate it more closely into the regional multi-modal and interstate transportation system. Replacement of these structures will also help to reduce the high accident rate on this stretch of I-84 and remediate adverse community impacts caused by the outdated design.

Cost estimates for the Viaduct replacement are preliminary and depend on the final alternative construction plan selected. The costs of alternatives under consideration range from about \$3 billion for a “repair in place” option to as high as \$12 billion for a “tunnel” option. A total cost of \$5.3 billion represents the high end of the cost estimate range for the “lowered highway” alternative, which is used for this analysis. While no decision has been made with regard to the selection of a preferred alternative, the “lowered highway” alternative was used by CTDOT to perform its economic analysis for this report. This alternative will require relocation of the adjacent railroad in order to lower the freeway to at-grade or below-grade level; thus, eliminating a significant portion of the elevated Viaduct. This alternative can reduce the interstate’s impacts on the neighborhood and create land for open space or future development and is the least expensive build alternative to the “repair in place” option.

Economic Analysis

The economic analyses conducted for the I-84 Hartford Viaduct show that replacing the Viaduct would yield economic benefits far exceeding the \$5.3 billion cost. In. In a worst case scenario, both the Benefit Cost Analysis and Economic Impact Assessment clearly demonstrate that the benefits of replacing the I-84 Hartford Viaduct with a new facility far outweigh the cost.

Benefit Cost Analysis (BCA): compares the cost of replacing the aging structure to the benefits to be gained by all users of a new I-84 facility in Hartford, such as reduced travel times, improved travel reliability, fewer accidents and reduced vehicle operating costs, etc. The BCA results for this project show that users will realize a benefit-to-cost (or “B/C”) ratio of 2.68 (or a return of \$2.68 for every \$1 spent to replace the I-84 Hartford Viaduct).

Economic Impact Assessment (EIA): shows that replacing the Viaduct rather than letting it deteriorate to an unsafe condition will yield \$10.2 billion in additional business sales and output over the life of the project. The short-term construction impacts will yield another \$7.3 billion in business sales during the period of construction.

Job Impact: CTDOT’s assessment of the “lowered highway” alternative shows that between 2,500 and 3,500 permanent jobs would be created as a result of the investment, and between 3,000 and 7,000 temporary construction jobs would be created during the project’s construction.

In addition to the BCA and EIA, CTDOT commissioned a study of the potential dollar value of development on land parcels that may become available or be created by the Viaduct project in Hartford. The study found this project could result in up to 35 acres of new developable land, with a potential land value of \$45 million. The state could recoup project costs through sales of this land. The study also found that these 35 acres could support about \$840 million in potential economic development in 2016 dollars. Additional value capture could be achieved if the state and Hartford reach agreement on a revenue share of incremental property taxes resulting from the potential benefit from development of such land, as a result of investment of taxpayer dollars by all of the citizens of the state. Alternatively, a revenue share arrangement with property developers could be part of a sale of the land. Regardless, the “potential land value” should be seen as the least economic benefit that the state could

derive from this and other projects that free-up parcels of property for development. (See “Value Capture and Rights-of-Way Utilization” in Section VI.)

Replace I-84/Route 8 Interchange (Mixmaster) in Waterbury (*must do project*)

Description of Need

The Waterbury Mixmaster – an extensive series of elevated structures that span the Naugatuck River, Route 8, and significant parts of Waterbury’s street system – connects the east-west traffic of I-84 with the north-south traffic of Connecticut Route 8. This section of I-84 accommodates over 130,000 vehicles daily. The Mixmaster, which is Connecticut’s only double-decked highway and was built in the 1960’s, is nearing the end of its useful design life and is in need of full reconstruction or replacement. The Mixmaster project is, first and foremost, an infrastructure preservation project essential to keeping this aging and deteriorating structure safe and functioning.

Like the Hartford Viaduct, the I-84 / Route 8 Interchange is also identified as one of the nation’s top 100 most congested areas. Traffic on the I-84/Route 8 interchange has tripled since its construction in the 1960’s. This increase in traffic volume has led to increased congestion on both the highway and local intersections and has placed undue burden on the existing structure, resulting in considerable wear and tear. An assessment of existing and future traffic conditions indicates that traffic operations will deteriorate significantly over the next several years.

Cost estimates for the Mixmaster replacement are preliminary and are an updated version of the one that resulted from a 2010 planning study. The updated cost of alternatives identifies a range from approximately \$3 billion for a partial replacement to \$8 billion for a full replacement option. For the purposes of *Let’s Go CT!*, one of the full replacement options was chosen, with an estimated cost of approximately \$7.1 billion. This option would relocate Route 8 to the east side of the river and closer to downtown as well as separate the eastbound and westbound roadways into two parallel facilities. While the total height of the highway would be lower than the current level, a substantial amount of the new roadway would still be elevated. This option was chosen as the preferred full replacement option because it would cause less traffic disruption during construction and is slightly less expensive than the other full replacement option identified in the 2010 planning study.

At an estimated total project cost of \$7.1 billion, replacement of the Mixmaster is the most costly single-phased project in *Let’s Go CT!* However, this alternative will need to be re-evaluated due to recent changes in Waterbury’s economic development plans that conflict with the previously analyzed route, and as a result, the cost is likely to change.

Economic Analysis

Both the Benefit Cost Analysis and Economic Impact Assessment, in a worst case scenario, clearly demonstrate that the benefits of replacing the I-84 / Route 8 Interchange far exceed the \$7.1 billion cost of constructing the new facility.

Benefit Cost Analysis (BCA): results for this project show that users will realize a B/C ratio of 1.75 (or a return of \$1.75 for every \$1 spent to replace the I-84 / Route 8 Interchange in Waterbury) and would result in reduced travel times, improved travel reliability, fewer accidents, and reduced vehicle operating costs.

Economic Impact Assessment (EIA): results for this project show that replacing the I-84 / Route 8 Interchange will yield \$8.8 billion in business sales and output over a 25-30 year period after construction is complete. The short-term construction impacts will yield another \$10.4 billion in business sales during the period of construction.

Job Impact: CTDOT's assessment of the Mixmaster project shows that between 2,000 and 3,000 permanent jobs would be created as a result of the investment, and between 5,000 and 11,000 temporary construction jobs would be created during the project's construction.

Widen I-84 from New York to Waterbury (congestion relief)

Description of Need

The section of I-84 between New York and Waterbury connects the commercial centers of Danbury and Waterbury with Hartford, Boston, and other parts of New England. This portion of the I-84 West corridor carries a significant amount of freight bound for central Connecticut and New England, and it is an important commuter route in its own right. Recreational travel from New York City and Western Connecticut uses I-84 en route to destinations such as Massachusetts and Northern New England.

Today, this section of the I-84 West corridor carries between 70,000 and 130,000 vehicles per day, depending on location, nearly 13 percent of which are trucks. Travelers along this stretch of I-84 experience 2.6 million hours of delay annually. While the congestion levels are substantially less than those experienced on I-95 West, I-84 is a centrally-located east-west connection that commercial travel relies on for access and mobility and is disproportionately impacted when travel is unreliable. Unlike other major highways in Connecticut, there are no parallel routes or rail lines to be used as potential alternatives for travelers hoping to avoid I-84 congestion.

The preliminary cost estimate for widening I-84 between New York and Waterbury (a distance of 37 miles) is approximately \$1.5 billion. This includes building an additional travel lane, in each direction from the New York state line to Waterbury. The Project will increase highway capacity, improve safety, and provide much needed congestion relief for commuters, businesses, and freight transportation.

Economic Analysis

The economic analysis conducted for the I-84 widening west of Waterbury showed that the project would yield economic benefits to the state far exceeding the \$1.5 billion cost. Without the widening, travel along the I-84 corridor will become less reliable, more congested, and with a high proportion of trucks, more operationally challenging. Both the Benefit Cost Analysis and Economic Impact Assessment for this enhancement scenario demonstrate the value of, and need for, the improvement.

Benefit Cost Analysis (BCA): compared the cost of widening the highway to the benefits to be gained by all users of an enhanced facility, such as reduced travel times, improved travel reliability, fewer accidents and reduced vehicle operating costs, and show that users will realize a B/C ratio of 3.3 (or a return of \$3.30 for every \$1 spent to widen the highway).

Economic Impact Assessment (EIA): results for this project show that widening the highway will yield over \$4.4 billion in business sales and output over a 25-30 year period after construction.

The short-term construction impacts will yield another \$2.2 billion in business sales during the period of construction.

Job Impact: CTDOT's assessment of the I-84 Widening project shows that approximately 1,300 permanent jobs would be created as a result of the investment, and between 1,100 and 4,200 temporary construction jobs would be created during the project's construction.

New York City to New Haven Corridor

Corridor Overview: The corridor between New York City and New Haven is Connecticut's most important conduit for economic activity. The corridor serves as the main artery linking Connecticut to the other tristate economies of New York and New Jersey and the main connection to three of Connecticut's largest cities including Stamford, Bridgeport and New Haven. In addition to being the most critical corridor for the state's economy, it is also the state's most congested corridor, thereby restricting the entire state's economic growth. Reducing traffic congestion on I-95, by fixing major bottlenecks and restoring bridges and other infrastructure, while also increasing capacity and upgrading the rail infrastructure on the New Haven Line (NHL), the nation's busiest commuter railroad, is essential to economic growth. Total highway and bridge investments needed in this corridor are estimated at \$10.9 billion, including the I-95 widening project described below. Total rail investments needed in this corridor are estimated at \$18.6 billion over that same period, including the New Haven Line capacity improvement initiative described below. Over \$13.5 billion (or 46 percent) of this investment will go towards preservation and safety.

This is the most congested corridor in Connecticut and near the top of the most congested corridors in the nation. It is a major center of the state's economic activity, but also the one most threatened by congestion. Congestion relief is now critical here. This includes major efficiency improvements on the rail system on this corridor, which will also significantly alleviate highway congestion, and parallel congestion management approaches and capacity increases on I-95. Data indicates these steps will have a quite significant effect on the current, massive over-congestion.

Initiatives in this corridor include:

- Widening of I-95 from New York to New Haven – between \$9 billion and \$30 billion
- Replacement of Rail Bridges (Movable and Fixed) – \$5 billion
- New Haven Line Capacity Improvements – \$2 billion
- Rail Maintenance Facility and Yard Improvements – \$1.5 billion
- Lifecycle Replacement of Electric Rail Fleet – \$1.25 billion
- Rail Communications and Signal Upgrades – \$1 billion
- Rail Catenary Replacement and Power Upgrades – \$700 million

Widen I-95 from New York to New Haven (*congestion relief*)

Description of Need

In recent years CTDOT has invested in replacing or rehabilitating aging bridges and re-aligning portions of I-95 to current design standards, but the interstate facility still lacks the necessary capacity to accommodate the daily travel between New York and Connecticut. Traffic along the I-95 corridor

between New York and New Haven varies widely, but an average section accommodates over 135,000 vehicles daily, including over 18,000 trucks on portions of the corridor. Most motorists traveling along this corridor experience frequent and prolonged delays, especially during the weekday peak hours of travel. Annually, these drivers experience over 5.3 million hours of delay. Motorists along this corridor also experience un-reliable trip times, making it very difficult for businesses to plan meetings and for freight shippers to schedule deliveries in a cost-effective manner.

The Governor's proposal for I-95 West is to add a lane of travel in each direction and continue rehabilitating pavement and bridges between New York and New Haven, a distance of approximately 50 miles, through some of the most expensive real estate areas within the state. The multi-phased project will increase vehicular capacity, operational safety, speed, and reliability of travel. The project will leverage the substantial demand for long-distance travel in the corridor and enhance the attractiveness of the corridor's cities and towns as highly desirable places to live, work, and raise a family.

Cost estimates for widening I-95 between New York and New Haven ranges from approximately \$9 billion, to complete an additional travel lane in each direction (total of 2 additional general purpose lanes), to as high as \$30 billion for adding two managed express toll lanes in each direction (total of 4 new lanes). Both alternatives include rehabilitation of existing pavement and bridges on this stretch of the Interstate. The latter alternative also includes costs for related infrastructure necessary to build toll lanes physically separated from the existing free travel lanes, install entrances and exits for the toll lanes, and install overhead tolling gantries. This alternative would retain the "existing general purpose lanes" free from tolls.

Although the express toll lane alternative would achieve significant congestion reduction, it would dramatically increase the cost of widening the Interstate, increase environmental and Rights of Way concerns, and generate only a portion of the anticipated revenues that would be collected by tolling all lanes. As a result, the latter alternative of adding two managed express toll lanes in each direction to I-95 does not appear to be cost effective. The alternative used for this analysis is widening I-95 by adding only one additional travel lane in each direction (\$9 billion). If combined with congestion pricing this preferred alternative would also result in dramatic reductions in congestion, providing much needed travel relief for commuters, businesses, and freight transportation.

Economic Analysis

The economic analysis conducted for the I-95 widening between New York and New Haven show that the project would yield economic benefits to the state far exceeding the \$9 billion cost. Without the investment, travel along the I-95 corridor will become less reliable, more congested, and with a high proportion of trucks, more operationally challenging. Both the Benefit Cost Analysis and Economic Impact Assessment for this enhancement scenario demonstrate the value of such improvement.

The **Benefit Cost Analysis (BCA)**: compares the cost of widening the highway to the benefits gained by all users of an enhanced facility such as reduced travel times, improved travel reliability, fewer accidents, and reduced vehicle operating costs. The BCA results for this project show that users will realize a B/C ratio of 1.7 (or a return of \$1.70 for every \$1 spent to widen the highway).

Economic Impact Assessment (EIA): results for this project show that widening the highway will yield over \$11.4 billion in business sales and output over a 25-30 year period after construction. The short-term construction impacts will yield another \$13.9 billion in business sales during the

period of construction.

Job Impact: CTDOT's assessment of the I-95 West Widening project shows that approximately 3,300 permanent jobs would be created as a result of the investment, and between 6,700 and 26,000 temporary construction jobs would be created during the project's construction.

New Haven Rail Line Capacity Improvements *(enhancement and congestion relief)*

Description of Need

The New Haven Line (NHL) is one of the busiest commuter rail lines in the nation. It carries over 39 million passengers annually and ridership is steadily increasing. The NHL serves a critical economic function by linking Connecticut businesses to the nation's economic capital in New York City. Additionally, it serves an increasingly important role in supporting economic development in Connecticut by linking Stamford, Norwalk, Bridgeport, and New Haven with smaller communities within the 50-mile corridor.

CTDOT has invested heavily to upgrade power, vehicles, and communications equipment in recent years, but the service falls far short of its potential to carry tens of thousands of additional commuters daily. Often only two of the New Haven Line's four tracks are serviceable at any one time due to the frequent repairs to tracks, signals, power, and station areas. As previously stated, some of the Line's bridges are well over 100 years old, requiring frequent repairs and forcing trains to travel more slowly than they could safely travel otherwise. Improving the New Haven Line is critical to the success of this highly congested corridor and the many urban areas it serves. Better service would contribute significantly, both to attract and retain businesses and to provide the kind of transportation choices that are vital to attracting a younger, and more technology-oriented workforce in today's highly competitive global economy.

The *Let's Go CT!* program outlines all the necessary infrastructure repair and reconstruction projects to restore full track capacity. As part of this program, CTDOT proposes investing \$2 billion to reconfigure and upgrade the system to improve the frequency and speed of service and restore the NHL to full, four-track capacity. The investment would re-align Connecticut's existing tracks, improve stations between New Haven and New York, provide significant frequency and speed enhancements, and include additional communications and signal enhancements. This project would result in a two-track local service, and two-track express service, on the mainline, with center island platforms at key locations between New Haven and New York. Approximately 15 minutes per trip would be saved as a result of implementing the "subway-like" or 2 track local and 2 track express service on the New Haven Line. In addition, improved rail service would attract some drivers out of their cars and into trains. As a result, diversion of drivers to rail could reduce highway delays by about 5 million hours annually.

Economic Analysis:

The economic analysis conducted for the NHL capacity improvements show that making these improvements would yield economic benefits to the state that far exceed the \$2 billion cost. Without the investment, the New Haven Line will struggle to maintain ridership as reliability decreases and operations and maintenance costs increase. Both the Benefit Cost Analysis and the Economic Impact Assessment clearly demonstrate the value of restoring full four track service to businesses and travelers.

Benefit Cost Analysis (BCA): results for these improvements show that travelers will realize a B/C ratio of 2.51 (or a return of \$2.51 for every \$1 spent to improve frequency and provide faster service on the NHL). This is an excellent B/C ratio for a major passenger rail enhancement.

Economic Impact Assessment (EIA): results for this project show that these rail improvements will yield over \$6.2 billion in business sales and output over a 25-30 year period after construction. The short-term impacts will yield another \$9.1 billion in business sales during the period of construction.

Job Impact: CTDOT's assessment of the New Haven Line improvement project shows that between 2,000 and 3,100 permanent jobs would be created as a result of the investment, and between 4,000 and 6,000 temporary construction jobs would be created during the project's construction.

The enhancement scenarios tested for this analysis demonstrate the substantial opportunities for growth and the increase in competitiveness that is possible with the New Haven Line improvements. A high-functioning New Haven Line is essential for the continued growth of the corridor, and the entire state, as a place to live and to do business. This project is also a prime candidate for "value capture" and could apply for the federal Railroad Rehabilitation and Improvement Financing (RRIF) program. Value capture is described in further detail in Section VI, and RRIF is discussed in Section VII, of this report.

Eastern Connecticut Corridor

Corridor Overview: The Eastern Connecticut corridor, which traverses some of Connecticut's most historic small towns and attractive tourist destinations, is also Connecticut's gateway to coastal New England and the most direct connection to Rhode Island and parts of Massachusetts. Total investment needed in this corridor exceeds \$3.9 billion, including more than \$1.4 billion for rail improvements and over \$2.4 billion for highway and bridge improvements. Approximately \$610 million (or 15 percent) of this investment will be spent on preservation and safety. For the purposes of this report, the focus of this corridor's improvements are on the connection between New Haven and Rhode Island on I-95. Limited to two through lanes in each direction, this section of I-95 between New Haven and Rhode Island is prone to substantial delays on weekends and evenings, especially during the summer months and holidays. While local traffic is forecast to increase only slightly with the moderate pace of economic growth, through traffic in this corridor will continue to grow at a more substantial rate, causing increased delays, which are likely to cause economic harm over the long-term, if they remain unaddressed.

This corridor is facing an ever-growing wave of congestion, particularly from growing through traffic. Its infrastructure also requires improvement – including highway, rail and bus. Capacity and efficiency improvements for highway and rail systems would yield significant congestion mitigation.

Initiatives throughout this corridor include:

- Widening of I-95 from New Haven to Rhode Island – \$1.7 Billion
- Passenger Rail Improvements – \$800 million
- Construction of Route 11 Expressway – \$700 million
- Replacement of CT River Railroad Bridge (state’s share of cost with Amtrak) – \$220 million
- Extension of Shore Line East Service to Westerly, Rhode Island – \$200 million
- Freight Rail Improvements – \$200 million

Widening of I-95 from New Haven to Rhode Island

Description of Need

I-95 between New Haven and Rhode Island carries about 84,000 vehicles per day, nearly 11 percent of which are trucks. Travelers on this section of I-95 experience about 2.1 million hours of delay annually. While the congestion levels are substantially less than those experienced west of New Haven on I-95, they are concentrated more heavily on weekends and during the summer months, during the peak tourism and visitor periods of the year.

The plan for I-95 between New Haven and Rhode Island, a distance of over 60 miles, is to build an additional lane of travel in each direction and rehabilitate pavement and bridges. The proposed multi-phased \$1.7 billion enhancement to this corridor will improve the safety, speed, and reliability of travel. The proposed investment will increase economic activity within the state, especially tourism and recreation industries, by improving access to markets and businesses in the corridor.

Economic Analysis

The economic analysis conducted for the I-95 widening between New Haven and Rhode Island show the project would yield economic benefits to the state that far exceed the \$1.7 billion cost. It would also prevent the I-95 East corridor from becoming less reliable, less safe, and more time-consuming. Both the Benefit Cost Analysis and Economic Impact Assessment for this enhancement scenario demonstrate the value of, and need for, the improvement.

Benefit Cost Analysis (BCA): examines the benefits that would be gained by all users of an enhanced facility such as reduced travel times, improved travel reliability, fewer accidents and reduced vehicle operating costs. The BCA results for this project show that users will realize a B/C ratio of 3.42 (or a return of \$3.42 for every \$1 spent to widen the highway).

Economic Impact Assessment (EIA): results for this project show that widening the highway will yield over \$4.2 billion in business sales and output over a 25-30 year period after it is constructed. The short-term construction impacts will yield another \$2.7 billion in business sales during the period of construction.

Job Impact: CTDOT’s assessment of the I-95 East widening project shows that approximately 1,200 permanent jobs would be created as a result of the investment, and between 1,100 and 4,400 temporary construction jobs would be created during the project’s construction.

Community Connectivity Program

Program Overview

Last year, CTDOT adopted a “complete streets” policy⁶ and committed to making complete streets considerations a core component of all projects. Connecticut has also created a new “Community Connectivity Program” that is designed to provide funding for creating safer and more complete connectivity improvements in the state’s cities and town centers. With \$45 million budgeted for the first 5 years, CTDOT expects to spend \$10 million per year for the program for the remainder of *Let’s Go CT!* These efforts will increasingly act as relievers for overall transportation congestion.

Expected Benefits

There have been extensive economic analyses done nationally on the economic benefits of investments that create bicycle-friendly and walkable communities. While an independent analysis of the benefits to Connecticut was not carried out, a few potential benefits that have already been seen across the country are identified below as examples of what Connecticut could expect from the Community Connectivity Program:

- **Fewer Accidents:** Complete Streets and traffic calming strategies result in lower traffic speeds and reduced traffic risks which improves pedestrian safety and encourages people to walk and cycle. New York City’s redesign of 8th Avenue in Manhattan resulted in a 35% decrease in injuries to all street users.
- **Increased Commerce and Tourism and Improved Sales Tax Revenues:** Connected Communities result in land use densities and a diversity of uses that increase productivity and sales due to improved accessibility and network effects. Following the installation of bike lanes, 9th Avenue in New York City saw a 49% increase in retail sales, compared to 3% in the rest of Manhattan.
- **Reduced Traffic Congestion and Cost Savings:** Reduced reliance on auto travel & higher use of transit & non-motorized travel results in fewer trips on our highways during peak hours – reducing overall traffic congestion, while also saving money for residents that can be invested back into the economy.
- **Health:** Increased levels of physical activity that result from use of bike-ped infrastructure translate to a reduction in health care costs due to decreases in mortality and morbidity related to obesity and other health conditions.

⁶ Complete Streets involves designing and operating roads for all users, notably including pedestrians, cyclists, disabled citizens, and transit users. For more information, see www.ct.gov/dot/completestreets

Conclusion: Economic Impacts of the Select *Let's Go CT!* Projects and Programs

The major projects and programs discussed in this section are illustrative of the economic impacts of the transportation improvements included in *Let's Go CT!* These projects represent a subset of the overall projects included in the long-range, 30-year *Let's Go CT!* program. Collectively, these select example projects represent an additional business sales output to the state of \$45.2 billion dollars and short-term construction job impacts of \$45.6 billion. The job numbers provided by CTDOT for just a few of the projects in *Let's Go CT!* are impressive, with nearly 15,000 permanent jobs created as a result of the projects, and more than double that number in construction jobs; the jobs created by the entire program would surely be even larger. Furthermore, the related projects and increased market access economic benefits that these projects will enable are not wholly represented in those benefits. For example, improvements to the Waterbury, Danbury, and New Canaan Branch Line have not undergone an economic impact analysis, and it is reasonable to expect the benefits of those projects to have a multiplying effect on, and from, the New Haven Line economic benefits.

Section V. Recommendations: Policy Changes and Governance Reform

The successful execution of *Let's Go CT!* depends upon it being a dynamic plan. In the coming years, improvements to Connecticut's transportation infrastructure cannot be completed in a check the box manner. Capital projects must be delivered only after they are regularly analyzed and prioritized. Scarce public investment resources should target the most urgently-needed projects and those that offer the greatest economic benefits. CTDOT continues to transform itself into a 21st century transportation agency, and it is essential that it remain on that path.

As the public is asked to increase investment in transportation, the state will need to convince its citizens that the investments being made are the "wisest" ones and that capital projects are both scaled and implemented in a manner that assures, to the greatest extent possible, that public funds are invested in the most appropriate manner. The *Let's Go CT!* investment program, and the individual projects within it, must continue to be subject to an advanced and robust framework of transportation planning and capital programming.

"Lockbox" Enhancements

Section 432(b) of Public Act 15-5 – enacted by the Connecticut Legislature in the 2015 Special Session and signed into law by Governor Malloy on June 30, 2015 – established a statutory "lockbox" to protect funding set aside for transportation infrastructure improvements. This lockbox made the STF a perpetual fund and restricts the spending of all sources of revenue dedicated to the STF solely for transportation purposes.

In early October, 2015, the Office of State Treasurer concluded an \$839.8 million Special Tax Obligation (STO) transportation bond sale that attracted historic levels of demand from investors. According to feedback from ratings agencies and potential investors, the creation of Connecticut's new statutory lockbox was credited with contributing significantly to this unprecedented interest in purchasing these bonds.

Preventing future legislatures and governors from raiding the STF during times of fiscal constraint, to avoid politically difficult decisions, or to pay for other areas of interest gives both investors and Connecticut's citizens greater confidence in the state and the future of its transportation infrastructure. The statutory lockbox was an important first step in providing this necessary protection for funds the state must raise and spend to fix Connecticut's ailing infrastructure, but it was only a step.

In the December 2015 Special Session, the Connecticut General Assembly again addressed this issue at the urging of the Governor by taking action on an amendment to the State Constitution. The proposed amendment, HJR 304, successfully passed both chambers of the legislature, but without the required "super majority" in the House of Representatives. Since it did not pass by this required threshold (three-fourths of each chamber), the amendment will need to be passed a second time, by the next consecutive legislature, before going directly to the people of Connecticut for a referendum vote.

The Legislature should revisit this issue and strengthen the covenant between taxpayers and the transportation system by passing a constitutional amendment and allowing the citizens of Connecticut a referendum vote to decide, for themselves, whether to adopt a "constitutional lockbox." A constitutional amendment would free the STF from the whims of future legislatures and governors, ensuring these vital investments will continue to be made and protected. Without such an amendment

to the Connecticut Constitution, future legislatures may simply vote to abolish the statutory lockbox or weaken it through additional legislation. If the citizens of Connecticut want to protect the investments being made in their transportation infrastructure, they should have the right to vote for such a change in the state's Constitution.

Reforms to Ensure Efficient Delivery of Capital Projects

Another critical prerequisite to the successful implementation of the *Let's Go CT!* program is the use of improved efficiencies in the delivery of capital projects. Over the past several years, while CTDOT has increased the number of projects that are implemented, this pace of project delivery is not sufficient to meet the demands of this full capital investment program in a time of constrained resources. The challenge to the State is not only to identify the resources necessary to fund these critical transportation infrastructure improvements, but also to reduce their cost and to ensure that they are delivered on-time and below estimated costs, wherever and whenever possible.

Connecticut lags behind other parts of the nation in the availability and use of modern project delivery methods. Connecticut can realize substantial savings of time and money through accelerated land acquisition procedures and regulatory approvals, improved oversight of both design engineering and construction management processes (in order to reduce delays and costly change orders), and streamlined procurement rules and procedures.

The necessary reforms fall principally into three categories:

Flexibility in CTDOT. First, the full utilization of these project delivery reforms requires a CTDOT that is flexible and innovative. The transportation sector is entering a period of rapid technological change and of new business practices, and the agency that is responsible for implementing capital projects and for managing the State's transportation network must be responsive to these new trends and must be capable of promoting effective project delivery. Ultimately, it will be the responsibility of the Governor, the General Assembly, the various planning agencies, and the public to ensure that CTDOT is accountable for project delivery and operational reforms. CTDOT will need to add expertise to help enable it to implement the new financing efficiencies noted below.

Design Build. Second, state law should be amended, in order to allow greater use of alternative project delivery mechanisms, such as Design-Build. Design-Build is just one form of alternative project delivery, but there are others the state should authorize. With Design-Build, the design and construction services are contracted by a single entity known as the design-builder or design-build contractor. State law was amended in the last legislative session to allow design-build for a period of ten years, but this arbitrary restriction should be lifted. The use of Design-Build, of clear project prioritization, and of procurement streamlining procedures has typically achieved savings of 10 to 20 percent in the cost of those capital projects. Design-build often includes innovative elements that can speed project delivery and reduce costs. In Florida, research demonstrated that transportation projects delivered through design-build are completed 36 percent faster and 11 percent less expensively than the normal design-bid-build construction projects. Closer to Connecticut, a study by New York University estimated that \$1.6 billion

will be saved in construction costs through the use of design-build for the new Tappan Zee Bridge, initially expected to cost \$5.6 billion.⁷

Innovative Financing. Third, greater partnership with the private sector for innovative financing often not available to public agencies can also provide effective delivery of design, construction, and operation of transportation facilities. Public Private Partnerships (P3s), just one form of innovative financing, are contractual agreements formed between a public agency and a private sector partner that allow for greater private sector participation in the financing and delivery of transportation projects. There are many different P3 structures, and the degree to which the private sector assumes responsibility - including financial risk - differs from one application to another. P3s require dedication of revenue sources to fund particular projects, so they are not a substitute for revenues although they can lead to process efficiencies that lower total project costs. Private debt must be repaid, and returns must be earned on private equity, and revenue streams must be established in the public sector for these purposes.

In 2011 Connecticut enacted P3 legislation, but no projects have been developed under this law, since it imposed restrictions on both payments to private sector partners and state contributions to such projects. This legislation expired at the end of 2015, and new provisions should be enacted so P3s can be genuinely available for the capital projects contained in the *Let's Go CT!* transportation investment program. The investment of public funds, recommended by the *Let's Go CT!* proposal, can be stretched further, if they are used to leverage private investment capital through P3s. P3s are primarily project financing and delivery mechanisms. They allow innovations to be introduced in financing techniques (such as the use of availability payments from the public sector to repay private borrowing) and enable the use of experienced private sector managers and technical staff, in designing, constructing, and operating transportation facilities. Connecticut could benefit even more by combining P3s with federal programs that provide financing at highly favorable rates and with very flexible repayment schedules; these financing tools are discussed further in Section VII.

The greater use of P3s for the projects within the State's proposed transportation investment program offers the promise of faster delivery of projects and improved operational management after construction. However, extensive use of P3s requires that these ventures are well-designed and carefully overseen, in order to protect the public interest.

Empowering Local Governments

Connecticut is fairly unique in its lack of regional or county governance, as well as its lack of local financial support for state transportation projects and systems. With local governments in Connecticut almost solely dependent upon property taxes and state government aid, most major Connecticut transportation projects have been entirely funded by the state and federal governments, even though local governments often see direct benefits as a result of such investment. For instance, when a rail or bus rapid transit station is built, local governments will see property values rise as a result, thereby increasing property tax revenues; however, the local government did not contribute to the cost of building that station; taxpayers statewide did.

⁷ "Maximizing the Value of New York's Investment in Public Construction: The Role of Design Build Procurement, http://wagner.nyu.edu/rudincenter/wp-content/uploads/2015/06/15-051A_Designbuild_Final_LowRes.pdf

The state provides local governments with many sources of funding that can be used for local transportation capital projects: Local Capital Improvement Program (LOCIP), Local Transportation Capital Improvement Program (LOTICIP), Town Aid Road (TAR), Local Bridge Program, Small Town Economic Assistance Program (STEAP), among others. Faced with such significant infrastructure needs, as identified by CTDOT and Governor Malloy, the state should look to local governments, and regional councils of governments, to help provide some funding for the many projects that must be completed. The state should also look to allow local governments and regional councils of governments to execute some of those projects, thereby helping to ease some of the pressure on CTDOT.

One way to encourage local contributions to transportation projects is to allow regional councils of governments to institute local option sales and use taxes, or a local option hotel and rental car tax, which could only be used for transportation projects in the region. These local option taxes would provide regions with the ability to help fund many of the significant projects positively impacting their own regions, which already occurs in most of the country. By having an alternative revenue source, projects could be implemented much sooner than if they relied solely on state and federal funding. While all transportation investments benefit the state through derived economic development, those who benefit most directly from a transportation project should directly contribute some funding to that project. Greater involvement in the funding of projects should also result in greater involvement in the selection of projects, as described next when discussing Metropolitan Planning Organizations.

Metropolitan Planning Organizations

For decades Connecticut has had too many Metropolitan Planning Organizations (MPOs), most of them too small and too geographically constrained to undertake investment analyses or to implement truly comprehensive strategic capital programs. The result has been a deeply fragmented and weakened transportation planning and capital programming process that duplicates and wastes scarce operating resources at the state level (in terms of oversight of, and assistance to, MPOs by CTDOT) and at the local level.

MPOs are the principal recipients of federal and state transportation planning funds; they are charged, under federal law, to develop long-term transportation investment plans, as well as, shorter-term transportation programs, in cooperation with state departments of transportation. Connecticut, despite its small geographic area and 3.5 million people has had as many as 11 urban MPOs and 4 rural planning agencies – most, under-staffed and under-resourced and too small to effectively carry-out these functions. By way of comparison, the San Francisco Bay Area, with over 8 million people, has a single MPO. The state of New Jersey, which is 3 million square miles larger than Connecticut and populated by almost 9 million people, has three MPOs.

To their credit, Governor Malloy, CTDOT, and OPM, with the support of the General Assembly and many local governments, have begun the necessary process of consolidation of both regional planning organizations and MPOs in Connecticut. The goal of this reform and consolidation effort should be the establishment of no more than three strong MPOs. Reducing the number of MPOs will save substantial staff and time and planning resources at the CTDOT level, which are currently dedicated to working with these many understaffed local and regional agencies, and will allow federal and state planning funds to be focused on fewer and stronger agencies. This will provide them the advanced technical and staff resources to conduct effective planning and programming needed to achieve Connecticut strategic transportation goals. This would include the additional tasks bestowed upon MPOs in the 2012 federal

transportation law, the Moving Ahead for Progress in the 21st Century Act (hereafter, MAP-21), any new requirements included in the new Fixing America's Surface Transportation (FAST) Act just passed by Congress and signed by the President in December 2015, and would eliminate the wastefulness of duplicative technical resources and administrative staffing at the regional level, and the duplication of tasks between the state and the regions.

Most importantly, the existence of no more than three strong planning agencies will allow them to make better and more strategic capital investment decisions affecting their larger regions, which is especially important in an era of rapid technological advancement. With greater capacity at the regional level, the state could give greater deference to the MPOs for project selection and execution. The increased planning capability that the consolidation would result in will allow MPOs to better address the impacts of technological innovations and the sharing economy on transportation planning and infrastructure investment decisions. In addition, more carefully analyzed projects will allow for better prioritization.

Transit Districts

While the Connecticut General Assembly has spent considerable time and effort focusing on the consolidation of regional planning organizations, public safety answering points, health districts, and a multitude of other duplicative services that are traditionally consolidated in most other states, it has failed to address the similar issue of the presence of many small, disconnected, transit districts. Transit service is delivered by the state-owned CTTransit bus system in the Hartford, New Haven, Waterbury, Stamford, New Britain, Bristol, Meriden and Wallingford service areas, with the remainder of the state's urban and rural areas covered by a disparate group of transit districts with their own service policies, labor contracts, boards of directors and local control. In order to deliver and fund transit and paratransit services around the state, CTDOT manages over 20 different contracts (many with multiple services contained within one contract), but has little to no role in service planning, communications, or operations within those districts.

From the consumer side, transit customers are often frustrated by infrequent service, lack of connections between transit districts, and no uniform fare system, among other complaints. Connecticut should take a serious look at the potential consolidation of local or regional transit districts into a single, strong "Connecticut Transit" brand and improved governance system.

Similar to the MPO issues, there is tremendous overlap in staffing, lack of skillsets due to the small size of some of the operations, and little service coordination between transit districts, so customer services are not maximized, operations and assets are often redundant, and operating efficiencies rarely achieved. Currently, state transportation funds cover the vast majority of the operating losses of local transit districts, even though CTDOT has no involvement in setting their routes or their fares and little real control over their operating budgets. Moreover, since the State significantly subsidizes operating losses, little incentive exists for local transit districts to maximize revenues or to reduce expenses.

A single state transit oversight agency would allow for more efficient and productive use of staffing, capital assets including buses, vans, and maintenance and storage facilities, operations centers, information dissemination, etc., including reducing the CTDOT administrative burden of managing the multitude of service contracts. The presence of a single administrator would allow for more efficient and effective planning that would result in the establishment of a more coherently designed statewide bus service plan that coordinates with rail and other modes, setting of appropriate investment priorities,

consistent planning for capital projects, centralized purchasing, and generally higher returns and greater benefits from the investment of scarce public resources. A more flexible, user-focused, and responsive transit system, with improved connectivity and mobility is necessary, and that will require consolidation and coordination of statewide services.

Rail Parking and Operations

CTDOT supports the operation of two passenger rail lines and three branch lines in Connecticut and is in the process of adding additional service from New Haven to Hartford to Springfield. Parking Facilities associated with these commuter rail services are a potential revenue resource for the state. For efficiency and commuters' convenience, CTDOT should centralize and unify management and operation of the state's commuter rail parking facilities, so as to ensure the most efficient utilization of parking resources and encourage greater use of rail services.

Specifically, CTDOT should continue efforts to consolidate the property management of state-owned stations to achieve economies of scale and provide better property management outcomes. CTDOT should also review existing parking lease agreements with municipalities and parking authorities to identify economies of scales, standardize levels of property management, and institute standardized market-based parking rate structures. Additionally, CTDOT should research existing commuter rail parking technology in an attempt to more efficiently collect parking revenues.

At the same time, CTDOT should review parking capacity and identify new opportunities to generate additional revenue sources through the creation of a standardized market-based parking rate structure for monthly and daily customers that includes provisions to periodically index such rates to the rate of inflation. CTDOT should also advocate and support legislation regarding parking enforcement that will promote and improve compliance with the Department's parking rate policies, as well as allow the Department to issue and collect fines for non-compliance.

CTDOT estimates that implementing the above recommendations would result in an incremental decrease in expenditures and an increase in revenues, equaling approximately \$700,000 annually. In addition, the value created by the infrastructure improvements could be captured to help pay for the transportation infrastructure improvements. The concept of "value capture" is described in greater detail in Section VI.

Multimodal Corridor Management

Connecticut has the busiest commuter rail system in the country (Metro-North) running parallel to one of the most congested highway corridors in the nation (I-95). This provides an opportunity to encourage drivers to take the train instead of driving, but, due to dense development, this also makes it expensive for the state to pursue capacity expansion on either system. Thus, Connecticut should look to sister states for ways to provide commuters with better and timelier information about delays on the roads and direct drivers to alternative transit solutions. The state should also continue to roll-out real-time transit information for buses, and begin to institute such a system for trains, so commuters can track this information on their smartphones and on displays at the stations. This would be a cost-effective way to reduce congestion on I-95 and the Merritt Parkway, and increase parking and fare-box revenue, which in turn leads to reduced operational subsidies.

A good example of such an integrated system is found in the Twin Cities region of Minnesota. Minnesota DOT opened an 11-mile HOT lane on I-394 in the Minneapolis-St. Paul region in 2005, with variable pricing to keep traffic flowing, and an additional 16-mile HOT lane on I-35W few years later. Fees range from 25 cents to higher levels, depending on the level of congestion, with the goal of maintaining 50mph speeds. This congestion pricing syncs with alternative transportation options and information: There are park and ride facilities and bus routes along the corridor, transit and car poolers ride for free in the HOT lanes, and regular and variable signage is posted along the corridor to explain access points, pricing levels, current speeds and location of park-and-rides.

This system views the highway corridor as a network of modes. It provides travelers with travel options and pricing information, so they are empowered to make the best choice for themselves. By doing so, Minnesota has created a system that can support commuters from a variety of income levels and with different travel preferences, all while getting the greatest value from the existing highway system.

To achieve this level of information for its commuters, Connecticut will need to explore upgrading its parking and transit facilities to provide real-time parking availability, enhancing bus routes along the parallel Route 1 corridor, and installing new, and better utilizing existing, fixed and variable highway information signs. These would be cost-effective measures to reduce congestion, which will prove especially important during a time of increased construction activity.

Public Awareness

A crucial component to the overall success of instituting the Governor's *Let's Go CT!* transportation plan, and the financing package to sustain it, is the need for public understanding. A multi-faceted effort, with a consistent message, is necessary to inform the citizens of Connecticut about the aspects of the plan and how these projects will benefit the state, and most importantly, the citizens themselves.

CTDOT has already begun this process. However, the need for a more widespread public outreach and understanding is necessary and, if successful, will have a long-term positive effect on the state's ability to both carry out the plan and institute the financing measures to pay for it. A *Let's Go CT!* website has been created with limited information, and this will be an important tool in communicating progress and goals with the public. Enhancing the website to provide current updates in a user-friendly, easy to navigate format will be important in conveying this additional information.

The ultimate goal of any public awareness effort is to proactively engage the public to improve their knowledge and understanding from the outset. It must be made clear how these projects will benefit Connecticut residents, using quantitative data whenever possible. It is also necessary to explain the need for certain projects, as compared to the consequences of the "do nothing" approach. Additionally, a focus on the particularly congested affected routes would be important, especially for the average resident who is uninformed on how they will benefit from the proposed projects and new revenues. The need for direct stakeholder outreach, including public forums, may also be needed

The need for public understanding of both the *Let's Go CT!* plan, and the new financing needed to pay for it, cannot be underestimated. An awareness effort must make clear how residents will benefit and why it's worth it. A greater awareness and public support will also help if a statewide referendum on a constitutional amendment is put to the voters.

Internal CTDOT Operational Reforms

Connecticut, like most states, has a longer list of transportation projects that need funding than funds to build them; this consists of the five year capital plan that is updated each year, as well as, the projects included in *Let's Go CT!*. Across the nation transportation capital plans are developed by analyzing current conditions of roadway pavement and bridges, as well as, the level of traffic delay on major highways. Since these measures have been used with great frequency for decades, state departments of transportation have great familiarity with them. While these are extremely important measures, they are incomplete, and not fully reflective of the priorities of businesses and families. Today's challenging times call for a more sophisticated, efficient and responsive transportation agency.

Even in common areas of measurement, States and MPOs have begun to look more closely at the issue to be more reflective of the user experience. For example, in terms of congestion, transportation agencies are shifting away from measuring any slowdown in travel speeds. Virginia defines congestion as multimodal person throughput, and the Sacramento Council of Governments uses vehicle miles traveled that are spent in congested conditions. Furthermore, in Virginia the Department of Transportation is considering how transportation projects impact access to jobs, their consistency with local economic development plans, and coordination with land use. In Sacramento, they also look at access to jobs, supporting good movement, and protecting farmland.

Over the last few years, CTDOT has made significant strides to transform into a modern 21st Century transportation agency and meet today's challenges. Since 2012 CTDOT has initiated and completed 24 LEAN events and 2 more are pending completion. The agency successfully piloted accelerated bridge construction and tested successfully the alternative delivery methods of design build and construction manager at risk. CTDOT is off to a good start in this era of continuous improvement.

One area CTDOT must persevere in its transformation is with the implementation of Transportation Asset Management to maintain a state of good repair. Traditionally, CTDOT has focused on safety and the state of good repair first and foremost. However, the enhancement projects within *Let's Go CT!* must be prioritized using economic analysis and assessment going beyond the lens of accident and congestion reduction.

Transportation Asset Management is a strategic and systematic process of operating, maintaining, upgrading and expanding physical assets effectively throughout their lifecycle. The lifecycle costs of the projects proposed in *Let's Go CT!* are substantial and will impact travelers and taxpayers for decades. Utilizing the asset management approach enables the state to determine if it can afford to maintain the transportation system it has today, as well as the proposed expansions and enhancements. By understanding the full cost over the life of the asset, the state can reduce the likelihood of future funding crises. CTDOT is in the midst of implementation, and we encourage its fast adoption.

Connecticut is embarking on a transformative infrastructure initiative at a time of federal funding uncertainty, rapid advancement of disruptive technology, and a generational shift in thinking about transportation. It is in the unique position of continuing to reform its planning processes to ensure the state's, and the regions', public policy goals are met, while simultaneously undertaking the significant investments that must be made. To ensure this major level of funding is being spent on the projects necessary for the future, CTDOT should enhance its coordination with other state agencies, MPOs, and the public, to ensure other state and regional planning efforts are complementary and not at odds. The state should also view *Let's Go CT!* as a dynamic plan, not a static document. The world is changing fast, and Connecticut will need to be nimble to benefit from these contextual changes. To do so, CTDOT

should continue to develop tools for right-sizing and prioritizing projects, and metrics to better explain the services and benefits of planned projects. And, finally oversight should not be ignored. Early in the next decade an appropriate successor to this Panel should be convened to evaluate ongoing changes and the impact that they have on the Plan and on the current, recommended, and prospective funding sources and projects.

Inter-Agency Operational Reforms

In addition, to guarantee that ongoing planning efforts have the broadest perspective possible, the state will need to ensure that state agencies, local and regional entities and private partners are working together to advance transportation, economic development, and housing policy reforms and initiatives. In order to ensure a coordinated approach, we recommend an entity outside CTDOT, but within state government, be established to provide independent oversight, research, and planning. This will be especially important to the public as spending ramps up.

The state need only to look at what it currently does with the Office of Policy and Management's Criminal Justice Policy and Planning Division (CJPPD), a unit respected across the state and the country for its research and planning capabilities. CJPPD works across state agencies to coordinate policy approaches and coordinates research into the effects of policies implemented by the state. It also staffs a Criminal Justice Policy Advisory Commission (CJPAC) made up of executive branch agency heads, legislators, Judicial Branch officials, municipal officials, and advocates, which serves as a venue for collaboration and discussion of issues related to Criminal Justice. The combination of an independent planning function and an advisory committee of other stakeholders will bring a greater likelihood of integration with other policy initiatives and facilitate regular re-evaluation of project priorities in light of changing technologies and potential efficiencies in project design and execution. This approach will also assist coordination with transportation initiatives in the aviation and maritime arenas that have already been located in separate entities outside of DOT (CT Airport Authority, CT Port Authority).

Section VI. Recommendations: Revenue Changes

As demonstrated by previous tables showing deficit projections for the STF, the state of Connecticut lacks the required resources to continue funding a basic transportation operations and capital program, let alone, the larger and much-needed *Let's Go CT!* investment program. This section lays out potential revenue options the state can initiate to help fund the increased capital program needed to support economic growth and opportunity in the future. These revenue options are not the only ones available to the state, nor should they be the only ones considered by the Governor and the General Assembly. The Panel specifically avoided proposing anything that would take a significant revenue source away from the General Fund. We also felt that significant projects in congested corridors should have significant funding from the users who benefit from them. Additionally, for each recommendation the Panel did select, we examined the history of each revenue option to see when it was last raised or reduced and also relied heavily on research as to what other states have done the past two years.

The recommendations in this section range from what should be easy decisions, such as seeking corporate sponsors for certain assets, as has been done in other states to cover operations, to more difficult options, like raising the gas tax and instituting tolls. Before asking the public to agree to increased taxes or tolls, the state must first modernize its revenues. There are many small steps that can be made now to increase revenue, including modernizing current leases and advertising revenues, and increasing the costs of licenses, permits, and fees that, in many cases, have not been raised in over 20 years. This section is organized by starting with what the Panel considers the “easiest” revenue options and concluding with the most difficult to implement, either for logistical or political reasons, or both.

Each revenue option is explained independently, and a table is provided at the end of several sections to demonstrate what the revenues would look like every year for 15 years if these revenue options were adopted. As previously explained at the outset of the report, these revenue projections and cost assumptions are based on current conditions and do not reflect any cost savings that would result from the many policy reforms recommended by the Panel. Should any combination of these policy reforms be adopted, the revenue options proposed by the Panel would help enable the state to meet the 15-year mark and also be available to offset the subsequent revenue required each year to cover capital costs, operations, and debt service. The steps below range from initial more modest steps, discussed first, to larger steps.

Revenue at CTDOT to Offset Operations

There are several immediate steps CTDOT can take to increase revenue that, while small compared to other options, should be implemented to offset increased operational costs at CTDOT, resulting from increasing staff to conduct maintenance and execute a larger capital program, and those which can be tied to general inflationary cost increases. These options have been successfully implemented by many states across the country and should be explored in order to reduce the amount of revenue needed from other sources.

Non-commercialized Rest Area Sponsorships

CTDOT maintains seven highway rest areas for the public's convenience. These facilities have parking, lavatories, vending machines, picnic tables, and pet-walking areas, and many have telephones,

information booths, and seasonal dumping facilities for recreational vehicles. The rest areas are open and staffed 24 hours a day, 7 days a week. Unlike the state's 23 newly renovated service plazas, these highway rest areas are prohibited by federal law from having restaurants, fuel, or convenience store facilities on the premises, and do not generate revenue for the state to offset the costs to maintain and staff them.

CTDOT should expedite efforts to pursue implementation of a Rest Area Advertising and Sponsorship Program, with the goal of developing an alternative revenue stream to offset a portion of Department costs associated with the maintenance and operation of these Rest Area locations. Other states have successfully engaged in such sponsorship programs that provide improved vending options, as well as, other enhancements.

Also, in the interest of promoting safe roads and supporting ongoing efforts to reduce distracted driving, corporate-sponsored "Safe Phone Zones" can be implemented, in concert with this program, to provide motorists areas where they can safely use their cell phones and other mobile devices for calling, texting and web surfing. Implementation of "Safe Phone Zone" sponsorship programs in other states, including Arizona, Virginia and Florida, have 5-year contract values that range from \$1 million to \$3.5 million. However, it should be noted that the number of designated locations in these states are significantly greater than Connecticut. Programs are also pending in New York and Pennsylvania. It is estimated that the implementation of a sponsorship program at the Rest Area facilities in Connecticut could generate as much as \$250,000 in annual revenue to the state.

Sponsorship of Highway Assistance Vehicles

The Connecticut Highway Assistance Motorist Program (hereafter, CHAMP) is a roadway service patrol operated by CTDOT along Connecticut's major highways, including areas of I-95, I-84, I-91 and I-291. The service operates each weekday between 5:30 a.m. through 7:00 p.m. and selected holidays and Sundays, providing motorist with assistance such as changing flat tires, jumpstarting vehicles, pushing vehicles to shoulders, providing fuel, and offering shelter. In addition, the service patrols react to accidents and notify Highway Operations Centers in Newington and Bridgeport of the need for State Police, medical, fire and/or other emergency response. CHAMP drivers also remove highway debris and report damaged guide rail, as well as, illumination and drainage problems. CTDOT currently has fifteen service patrol trucks that run daily.

CTDOT should explore the feasibility of a sponsorship program as a potential source of revenue to offset a portion of the operating costs of the CHAMP vehicles. Corporate sponsorship of service patrol programs have been successfully implemented in other states such as Kansas (with an annual sponsorship value of \$73,800) and New Hampshire (\$293,000). More extensive programs, like those in Massachusetts and New Jersey, have annual sponsorship values in excess of \$1 million. It is estimated that the implementation of a sponsorship program in Connecticut, offering advertising space on state-owned CHAMP vehicles, could potentially raise annual revenues by as much as \$120,000.

Advertising Revenue

As previously noted, CTDOT supports the operation of two passenger rail lines and three branch lines in Connecticut and is in the process of adding additional service from New Haven to Hartford to Springfield. Advertising, leasing, and licensing associated with these commuter rail services are a

potential revenue resource for the state. CTDOT should review existing advertising, leasing and licensing agreements and initiate new advertising agreements to increase revenue-generating opportunities.

CTDOT should review and initiate changes to the existing advertising agreements through its operations agreement relationship with Metro-North to increase the level of advertising revenue currently generated onboard railcars, at station platforms, or through electronic messaging at stations along the New Haven Line (approximate incremental increase of \$200,000). It should also look to initiate a revenue generating advertising program to exploit opportunities on-board railcars, at station platforms and through fare media on Shoreline East (approximately \$200,000 annually).

Lastly, the initiation of new service on the Hartford Line is a prime opportunity for the development and implementation of a complete marketing and advertising program that promotes and generates revenue aboard railcars, at station platforms, and through fare media (approximately \$100,000 annually).

CTDOT can also take steps beyond simple advertising programs to modernize the rail facilities program and update leases. CTDOT should review all rail facility agreements to determine if opportunities exist to increase revenue, such as reviewing and evaluating all current revenue received from existing wire, pipe and pole licenses, advertising licenses, leases, and sub leases, to apply current market rates to generate additional revenue (approximate incremental increase of \$200,000- \$300,000).

Furthermore, the Department should review existing commercial lease and sub lease agreements with current tenants at station facilities, in order to evaluate current lease rates versus market rates, modify existing agreements to achieve market rate lease rates, and attempt to create new lease and sub lease opportunities at station facilities (approximately \$50,000 annually).

Value Capture and Rights-of-Way Utilization

One alternative revenue source that many policymakers are currently exploring and utilizing across the country is called “value capture.” New York is an example of one state that has successfully adopted value capture to help leverage capital financing for certain infrastructure improvements. According to the so-called, “benefit principle,” systems are more efficient when their costs and benefits are better related to one another. Transportation improvements create numerous economic, social, and environmental benefits, not only for travelers, but also for the owners and developers of nearby property—including municipalities. The value of these benefits come in the form of higher land values and corresponding enhanced development opportunities. Value capture means recovering a portion of these gains to help fund transportation improvements, thereby reducing the total cost to taxpayers. It can also have the ancillary benefit of concentrating population densities in a way that makes public transit particularly viable, when applied to transit stations.

There are various financing techniques that value capture can employ with regard to property developers. Examples include: land value taxes, tax increment financing, special assessments, transportation utility fees, development impact fees, joint development, and air rights. All of these tools should be considered by CTDOT, but it is important to remember that while multiple value capture policies can be applied simultaneously, the total level of value capture cannot exceed (or indeed come anywhere close to) the total benefits derived from a transportation improvement, or else, the financial

instruments would negate the economic rationale for development. Thus, finding the right balance between value capture techniques and projected benefits is key to successful utilization.

In addition to these more traditional value capture mechanisms, Connecticut should also investigate the viability of leasing or selling highway and railroad adjacent, state-owned Rights of Way for renewable energy generation, development, or public utility. Massachusetts is an example of one state that successfully leases their Rights of Way to developers for the installation and operation of solar panels. This option would decrease routine maintenance costs by shifting those costs to the developer of such facilities through a Power Purchase Agreement (hereafter, PPA), increase the value of such Rights of Way by turning them into energy producers, and help Connecticut reach its goal of increased clean, renewable energy production by 2020. Additionally, the Connecticut Green Bank already has a solar lease program in place that can assist in the financing of such development. Another potential partner for developing Rights of Way may be cellular telephone companies seeking locations for placing cellular telephone antennae. Connecticut's coastline is poorly covered by cellular service, and Amtrak also suffers from poor Wi-Fi along much of the Northeast Corridor. Connecticut should investigate whether cellular phone companies, or Amtrak, would be interested in leasing parts of the railroad Right of Way to provide enhanced service for their respective customers.

In addition, Connecticut may be able to monetize the land that will be freed up or created by some of the highway improvements across the state. CTDOT commissioned a preliminary study of the potential dollar value of development on land parcels that may be freed up by the I-84 Hartford Viaduct project. The study found that the project could result in up to 35 acres of new developable land, with a potential land value of \$45 million, which the state could recoup through sales of the uncovered land. The study also found that potential development value of the land generated in 2016 dollars is approximately \$840 million. While not enough to cover the \$5.3 billion estimated cost, the state can clearly benefit from successfully leveraging its land holdings.

Connecticut should explore all of the various options, review examples of implementation in other states, and decide which of these policies make the most sense for Connecticut, its municipalities, and its various infrastructure improvement projects.

Motor Vehicle Receipts; Licenses, Permits and Fees

At the same time it is looking at new revenue sources, the state also needs to reevaluate current revenue sources found within the STF. As a start, the state should address the declining purchasing power of its various licenses, permits and fees, which directly contribute to the fund's long term health. When the STF was first established, a schedule of predetermined revenue increases was also formed. The Panel recommends a return to this system, as many of the items that make up this category have not been increased since 1993.

The state should first reset rates to current standards and then periodically increase Motor Vehicle Receipts (MVR) and License, Permit and Fee (LPF) revenue sources. Every five years, starting in fiscal year 2018, revenues should be adjusted to keep up with current rates of inflation. Due to the large quantity of different revenue accounts within these two sources, for the purposes of this report it is assumed that any inflationary figure applied would be applied uniformly over all accounts.

Introducing an inflation factor to these accounts ensures that the purchasing power of these revenue items is retained and will provide a predictable schedule of fee increases. Without these adjustments the current revenue streams within the STF will fail to keep up with the growth of current expenses, even without the increased expenditures assumed by the start of *Let's Go CT!* Ultimately, this recommended change will generate an additional \$1.3 billion over the next 15 years, which can be seen in Table 10 below. Although this change does account for inflation into the future, it does not make up for years in which the rates remained flat. An analysis by each state agency will be required to determine what the appropriate "reset" rate should be to begin with; such an analysis would result in more revenue than this report has projected.

TABLE 10

Revenue Impact of MVR and LPF Change
(in Millions)

	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>
Motor Vehicle Receipts	\$ -	\$ -	\$ 31.6	\$ 31.7	\$ 31.8	\$ 31.9	\$ 32.0	\$ 68.3
Licenses, Permits, Fees	-	-	18.0	18.0	18.2	18.9	19.0	39.7
Total	\$ -	\$ -	\$ 49.6	\$ 49.8	\$ 49.9	\$ 50.8	\$ 51.0	\$ 108.0

	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>FY 2029</u>	<u>FY 2030</u>	<u>Total</u>
Motor Vehicle Receipts	\$ 68.5	\$ 68.8	\$ 69.0	\$ 69.2	\$ 110.9	\$ 111.2	\$ 111.6	\$ 836.4
Licenses, Permits, Fees	39.8	40.0	40.2	40.3	64.2	64.4	64.7	485.3
Total	\$ 108.4	\$ 108.7	\$ 109.1	\$ 109.5	\$ 175.1	\$ 175.6	\$ 176.2	\$ 1,321.8

In order to better understand the recommendation, Table 11 below provides an example using passenger vehicle registration fees to illustrate the approximate fee impact if this proposed revenue change were to be implemented. Passenger vehicle registration fees, like many other fees within the STF, have failed keep up with inflation. In 1992 the fee for passenger vehicle registrations was \$70. Today that fee is \$80. This is only a 14.3% change over a 23-year period, well below inflation. The panel's proposal will address this issue and over the 15 year forecast this option would increase the fee by 44.8%.

TABLE 11

Inflation Adjusted Passenger Vehicle Registration Fees

	<u>FY 2016</u>	<u>FY 2018</u>	<u>FY 2023</u>	<u>FY 2028</u>
Approx. Inflation adjusted rate	\$80	\$91	\$102	\$116

Rail and Bus Fares and Parking Rates

With significant, urgent capital needs across the New Haven Line and branch lines, a full bus fleet replacement, the possibility of expanded service on Shoreline East, and the pending initiation of service on the Hartford Line, passengers must contribute more to both the capital improvements and the escalating operational costs of the bus and rail systems. No commuter bus or rail system will ever generate enough fare revenue to cover operations, let alone the pressing and long-ignored capital needs, but there are steps that the state can take to expedite improvements and expand service.

CTDOT should develop a strategy and implementation plan to routinely review inflation rates, which would result in proposed fare increases on the New Haven Line, Shoreline East, and the Hartford Line. Implementation of annual fare and parking fee increases, tied to an assumed annual inflation rate of 2.5%, would yield a total incremental revenue increase across all three major rail lines and state-owned rail parking facilities of approximately \$678 million from FY 2018 to 2030. Similar efforts should also be made to adjust bus fares to account for inflation and increased operational costs. These fare increases will not cover the capital needs of the systems, but will allow CTDOT to continue to operate without requesting for an increase in rail and bus appropriations each year to cover rising operational costs.

Gas Tax Adjustment

In addition to changing fees within the fund, the panel recommends returning the gasoline tax to its 1997 rate. The motor fuels tax, which includes both diesel and gasoline taxes, is the largest and most important revenue component found in the STF. From 1997 through 2000, economic policies were put in place that lowered the gasoline tax, until it hit its current rate of 25 cents per gallon. Without an increase, the purchasing power of the gasoline tax over those last 15 years has declined. If inflation had been taken into consideration over those 15 years, the gasoline tax would be 10 cents higher today, making it 35 cents per gallon, and the current FY 2016 estimated revenue would have increased by between \$120 million and \$140 million. The Panel does not recommend changes to diesel fuel tax rates. Currently the diesel fuel tax rate is calculated using a formula which includes changes in oil prices.

Below, Table 12 shows the impact of stepped increase of 2 cents each fiscal year in the gasoline tax to reach 39 cents by fiscal year 2024. This is an increase of 56% and will generate an additional \$2.0 billion over the current 15 year forecast. Due to the slow increase in the tax over the course of the forecast period, it is not anticipated consumers will significantly change their behavior in any given year. Based on historical data, it is assumed there will continue to be an underlying consumption decline of 0.5%, due primarily to higher fuel efficiency of cars and fewer vehicle miles traveled. As noted in a recent report on state highway funding by the Federal Reserve Bank of Boston, in addition to inflation, tax rates could be periodically adjusted upward as vehicles become more fuel efficient, allowing states to retain some of the revenue they would otherwise lose due to decreased gasoline consumption.⁸

TABLE 12
Motor Fuels Tax Adjustment
(in Millions)

	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>
Motor Fuels Tax Increase	-	-	\$ 29.8	\$ 59.4	\$ 89.1	\$ 118.4	\$ 147.2	\$ 175.8
Tax Rate (¢ /gallon)	25.0	25.0	27.0	29.0	31.0	33.0	35.0	37.0

	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>FY 2029</u>	<u>FY 2030</u>	<u>Total</u>
Motor Fuels Tax Increase	\$ 204.0	\$ 203.0	\$ 202.0	\$ 201.0	\$ 200.0	\$ 199.0	\$ 198.0	\$ 2,026.8
Tax Rate (¢ /gallon)	39.0	39.0	39.0	39.0	39.0	39.0	39.0	

⁸ "State Highway Funding in New England: The Road to Greater Fiscal Sustainability"
<https://www.bostonfed.org/economic/neppc/policyreports/2015/neppcpr1501.htm>

Other states across the country have already begun to increase gas taxes in order to make up for the lost revenue from both the federal government and inflation. States like Georgia (19.3 cents) and Idaho (25 cents) both recently increased their per gallon tax by 6.7 cents and 7.0 cents respectively. In fact, in 2015 alone, eight total states (Georgia, Idaho, Iowa, Michigan, Nebraska, South Dakota, Utah, and Washington) passed legislation to increase gas taxes.⁹ Other states, such as Maryland, have indexed their motor fuels tax to the consumer price index.

Oil Companies Tax Increase

Oil Companies tax, also known as the petroleum gross receipts tax, should also be revisited as it is now an essential component to the long term financial health of the Special Transportation Fund. The panel has, for illustrative purposes, assumed that the tax would increase by one percentage point in FY 2018 from a rate of 8.1% to 9.1%. This increase would generate an additional \$749.1 million over the 15 year forecast period. The panel does concede that the increase would result in greater volatility within the fund, as has been witnessed over the last year, since the price of oil will be the determining factor for how well this tax performs. Also, compared to many other revenue sources within the fund, the oil companies tax has been periodically increased over the last 10 years, rising from 5.8% in 2006 to 8.1% in 2014.

All Users Should Contribute to the Maintenance of our Roads and Transit System

Let's Go CT! was proposed as a long-term vision for fixing Connecticut's ailing infrastructure in a sector that is constantly evolving. The transportation challenges of today look very different than they did 75 years ago, and they will look substantially different in another 30 years. As such, the state's strategies for financing projects and collecting revenue must prepare for these changes, and the advent of disruptive technology, wherever feasible. Connecticut must explore innovative alternatives to transportation funding that prioritize equitable driver participation and collection methodologies. If the state fails to do so, oncoming technologies and transportation trends, such as car-sharing, electric and other alternatively fueled vehicles, and highly fuel efficient vehicles, will increasingly continue to impact Connecticut's roads, while the state is left unable to fund the proper maintenance of such roads.

Electric Vehicles

With the increasing popularity and marketability of electric vehicles and plug-in hybrids, more electric vehicles are using state roads and bridges than ever before. Although this growing trend has clearly positive effects on the environment, it also has negative consequences for the financing of the state's transportation infrastructure. Electric vehicles' usage of Connecticut infrastructure impacts such roads and bridges to the same degree as traditional gasoline-powered vehicles. However, electric vehicles contribute far less to funding and maintaining the state's transportation infrastructure because they either pay zero, or, in the case of hybrids, significantly less, in gasoline taxes. Thus, these vehicles utilize Connecticut's infrastructure system without contributing their fair share for upkeep and improvement. The state should offset this lack of contribution by increasing registration fees on such electric vehicles

⁹ <http://www.ncsl.org/research/transportation/2013-and-2014-legislative-actions-likely-to-change-gas-taxes.aspx>

or by imposing a fee on the use of public, electric charging stations—or both. All drivers should be required to pay for the impact their usage has on public roadways; drivers of electric vehicles are no different.

It is important to note that while fees on electric and hybrid vehicles are important to the future stability of Connecticut's transportation infrastructure, these additional costs to the drivers of such vehicles should be slowly implemented over time. Incentivizing alternative fuels and greener technology is, recognizably, an important environmental initiative for the state, and there is no need for this to change. While, from a policy perspective, it may be important to encourage an increase in the proportion of electric vehicles to gasoline vehicles, this incentive can be maintained through a differential in charges over an introductory period, where electrics and hybrids still bear an increased portion of their actual infrastructure costs, but at a lower rate than traditional gasoline powered vehicles. This is a long-term solution to a growing concern, but it need not hinder the expansion or usage of alternative fuels and vehicles.

User-based Alternative Revenue Mechanisms

As vehicular fuel efficiency increases, hybrid and electric cars become more prevalent, construction costs climb, and oil prices stay well below levels of just 2-3 years ago, traditional fuel taxes will increasingly fail to meet infrastructure revenue needs. This is as true in Connecticut, as it is across the entire country. To counteract such losses, Connecticut should consider moving away from its reliance on a state gas tax and look to more efficient and reliable alternatives.

One promising model, already underway, is Oregon's voluntary mileage-based user fee pilot program. This particular vehicle miles traveled (hereafter, VMT) program relies on participation by volunteers who are charged for the sum total of miles driven on state roads and then reimbursed for all gas taxes paid during that same time period.

Several states and major cities have already joined Oregon in experimenting with VMT programs, and many others are seriously considering plans to do the same. By charging citizens a fee based on the number of miles driven in-state, this tax is the fairest way for users to pay for their share of infrastructure upkeep: the more someone drives, the more he or she individually degrades infrastructure conditions, so the more that driver pays. However, since there are legitimate privacy concerns regarding the collection of such mileage information, all strategies and models – both national and international – should be thoroughly explored and vetted.

State agencies should be directed to design a volunteer pilot program that looks to potentially one day replace the state fuel tax with a manageable VMT system, balancing the concerns of the public with the need for a fairer and more reliable revenue stream. In doing so, the state should take advantage of federal efforts to allocate research funding aiming to “demonstrate and test” user-based alternative revenue mechanisms. With the recent passage of the Fixing America's Surface Transportation (FAST) Act of 2015 (H.R. 22) by the United States Congress and signed into law by President Obama on December 4, 2015, the increased availability of federal funds for such user-based alternative programs has become a reality. H.R. 22 contains \$95 million in federal dollars for research and testing alternatives to the traditional gas tax, including VMT pilot programs.

Retail Sales Tax

The 2015 legislative session instituted an important new revenue source for transportation. Starting in FY 2016 a portion of the state's general retail sales tax will be transferred to the STF. Due to the impact on the General Fund, there will be a two year ramp-up period before the tax reaches the equivalent of a 0.5% sales tax on all general retail sales. The scheduled changes are as follows: starting from December 1, 2015, to September 30, 2016, 0.3%; October 1, 2016 to June 30, 2017, 0.4%; July 1, 2017 and each year thereafter, 0.5%. This change guarantees a positive balance for the fund over the next four fiscal years, but at a cost to the General Fund.

Due to the significant impact this change would have on the resources of the General Fund, the Panel does not recommend an increase over the currently diverted funds. Instead, the Panel recommends increasing the current sales tax by 0.5%, from 6.35% to 6.85%, and transferring an additional 0.5% to the STF in order to provide a full 1% of sales tax revenue for transportation. A starting date of July 1, 2017 would generate an additional \$5.8 billion over the 15 year forecast.

Doubling the portion of the sales tax for the fund will have a substantial positive impact on the long-term financial sustainability of the fund. The sales tax will provide a reliable source of revenue, reducing the need for future increases in other taxes.

Alternatively, instead of transferring the additional 0.5% of the retail sales tax in the STF, the state could move all motor vehicle-related sales taxes to the STF. Currently, only sales tax generated from "casual sales," or sales of automobiles between private individuals, is placed into the STF. This represents a tiny fraction of total car sales per year. The majority of sales come from private dealers who remit sales tax directly to the General Fund. It is estimated that roughly 9.7% of total sales tax collections, or \$400 million, come directly from vehicle sales or sales related to the maintenance of motor vehicles. Transferring this to the STF would achieve \$6.2 billion with a start date of July 1, 2017.

All-Electronic Tolling to Mitigate Congestion

It is understandable, given Connecticut's history, that this section of the report will garner the most attention. When faced with the enormity of the infrastructure needs in Connecticut, tolling is an option that must be considered to help fill funding gaps in CTDOT's capital program. If there is to be a reduction of congestion, and the major economic costs it imposes on the state's economy, it will be necessary that corridor users bear a portion of the cost of the required projects; there is simply no other way to manage this challenge. Times have changed, tolls are collected in an entirely different, far less obtrusive way than in the past, and Connecticut stands out from the rest of the northeast as an outlier because of its lack of tolls on its major interstate highways. In fact, of the 15 most densely populated states in the country, 13 have toll roads and bridges, with Connecticut and Hawaii being the exceptions. Every state with coastline on the Atlantic Ocean has toll facilities, except Connecticut.

This section of the report provides an analysis of tolling as a revenue option, but it also explains Connecticut's past history with tolls, how the state would be permitted today to install tolls under federal law, and how modern 'electronic' tolling technologies allow efficient, delay-free, and safe toll collection that is vastly improved compared with the old and outdated toll plazas requiring drivers to slow down and stop.

History of Tolls in Connecticut

Tolling was used as the primary method of finance for both the Merritt / Wilbur Cross Parkways and the Connecticut Turnpike (I-95). In addition, there were once several toll bridges in the greater Hartford area. While long a significant source of revenue to the state, tolling in Connecticut was also known as a major source of delay and congestion at toll plazas, which were also a continuing safety concern.

For most of its length, I-95 was constructed as the Connecticut Turnpike in the pre-Interstate era, but it was subsequently incorporated into the federal Interstate Highway System. Thus, between the New York-Connecticut state line in Greenwich all the way to Waterford, I-95 remained tolled, until 1985, despite the federal prohibition on tolling the Interstate System. All other Interstate highways in Connecticut, including the portion of what is now I-95 between Waterford and the Connecticut-Rhode Island border, were originally constructed as part of the Interstate Highway program, and thus, never had tolls. From the time of their construction, these highways (including I-84) have been subject to the federal ban on tolling.

On August 30, 1983, in the wake of the collapse of the bridge that carried I-95 over the Mianus River in Greenwich, Connecticut and USDOT entered into an agreement that allowed mileage on what had been a tolled facility to be factored into the State's apportionment formula for resurfacing, restoring, rehabilitating, and reconstructing its highways (Interstate 4R Funds). The agreement was conditional on Connecticut removing tolls from the Connecticut Turnpike (essentially, I-95 in Connecticut). Still reeling from a multiple fatality crash at the Stratford toll plaza on I-95 in January 1983, Governor O'Neill and the legislature were all willing to accept the removal of tolls. The State's ability to include this mileage in the calculation of Connecticut's eligibility for formula Interstate 4R Funds was an important financial consideration in the implementation of a broad and extensive program to reconstruct and restore its transportation infrastructure.

Since the late 1980s, Connecticut has had no tolls on any bridge, tunnel, or highway. Between 1983 and 1985, action was taken to remove tolls from the Connecticut Turnpike/I-95 and from several bridges over the Connecticut River. In 1986, the legislature required the end of tolling on the Merritt and Wilbur Cross Parkways, and the last toll in Connecticut was paid on the Charter Oak Bridge over the Connecticut River on April 28, 1989.

Federal Restrictions

Under current Federal Law, there remain federal restrictions on the use of tolls on currently toll-free interstate highways. Over the last two decades, these restrictions have been significantly reduced through expanded exemption programs; this trend is likely to continue in the future, given the building pressure from many states that are in search of new and sustainable revenue sources. Connecticut would have the ability to utilize two or more of the federal exemption programs.

Exceptions include:

- Interstate System Reconstruction and Rehabilitation Pilot Program (ISRRPP): with federal authorization, up to three states can add tolls to Interstate routes being reconstructed. While all three "slots" are provisionally filled for this pilot program, no state has yet to implement tolling on the Interstate System under this Pilot Program.

- Value Pricing Pilot Program (VPPP): 15 states may participate in the FHWA VPPP at any one time. These pilot states may implement interstate tolling with federal approval, if congestion pricing is part of the tolling.
- Under current law (Section 129 of Title 23 U.S.C., the general toll program) **new** highways, bridges, and tunnels (including such facilities on the Interstate System) can be constructed as tolled facilities without application or approval for inclusion in one of the pilot programs. Similarly, new tolled lanes can be added to existing highways (as long as the number of existing toll-free lanes, excluding auxiliary lanes, is not reduced), non-Interstate Highways can be reconstructed, and bridges and tunnels can be reconstructed or replaced, all as tolled facilities.
- High-occupancy vehicles (HOV) lanes can be converted to high-occupancy toll (HOT) lanes under Section 166 of Title 23 U.S.C., whereby non-carpoools or single-occupant vehicles would be able to use HOT lanes for a variable toll rate. There are 30 of these unique facilities operating in the U.S. now.

Value Pricing Pilot Program (VPPP) & Connecticut's VPPP Studies

In 2011, CTDOT submitted two applications to the Federal Highway Administration (FHWA) VPPP for study of the I-95 (New Haven to Greenwich) and I-84 (Hartford) Corridors. Both studies were selected for funding by FHWA, and the studies concluded in 2015. The two VPPP studies evaluated whether congestion pricing using electronic tolling, in combination with other transportation system improvements, could reduce traffic congestion.

Congestion pricing involves charging higher toll rates during peak traffic periods to reduce peak demand, and it can enhance the effectiveness on any highway improvements done in conjunction with pricing. The two studies included thorough technical analyses of the impacts of a variety of tolling, pricing, and highway/transit improvement options. The analytic results provide a better understanding of tolling and congestion relief options and will allow state policy leaders to make more informed decisions about whether or not to implement tolling in Connecticut.

Once a state has received one of the fifteen slots under VPPP, as Connecticut has, there is no limit to the number of value pricing projects that can be implemented under that slot, provided that the tolling is used for congestion pricing purposes and is done using All-Electronic Tolling (AET) systems. This means that Connecticut could implement value pricing projects outside the two current VPPP study areas, which is recommended below.

Impact on the 1983 Agreement if Tolls are Introduced

The 1983 agreement between the State of Connecticut and USDOT has been the source of much discussion over the years. The primary focus of the debate has been whether or not this agreement would require Connecticut to repay the federal government hundreds of millions of dollars were it to reinstate tolls on those portions of I-95 from which they had been removed.

The 1983 agreement provides the following: "When freed of tolls, the Connecticut Turnpike toll road subject to this Agreement . . . shall be treated the same as any other portions of the Interstate and Primary Systems which were constructed with Federal aid." This language demonstrates that were variable tolls implemented on any portions of I-95 between the Connecticut-New York state line and the City of New Haven, pursuant to the provisions of VPPP, there would be no consequences under the 1983

agreement. Under these circumstances, Connecticut would not have to return any Interstate 4R Funds or any other federal highway aid received since the execution of the 1983 agreement. Moreover, pursuant to VPPP, mileage on an Interstate Highway facility subject to tolls would not be deducted from the state's total highway mileage used in calculating Connecticut's eligibility for federal highway grants, under Title 23 of the United States Code.

Modern Tolling Systems

Tolling systems throughout the U.S. and world have been implemented under a variety of scenarios and configurations. Until the early 1990s, most toll collection systems were cash collection systems that required vehicles to stop and pay cash to a toll collector or an automatic coin machine. These old-style toll plazas often caused traffic back-ups, accidents, and air pollution. Since then, tolling technology has dramatically changed the collection process and eliminated the need for 'toll plazas' and the traffic and safety problems associated with them.

The current trend in the industry is to adopt All-Electronic Tolling (AET) that eliminates toll plazas completely, and all tolls are collected from vehicles at full highway speed. The technology utilizes "video tolling" (a camera operates as a vehicle enters a tolling zone) that allows drivers without a transponder or toll tag to use the highway. The AET solution is a cashless system whereby customers join the electronic toll collection program. If a driver chooses not to join the toll program, or if he or she has a transponder from another state, that driver is typically charged a higher toll rate because the toll agency must send invoices to the registered vehicle owner to collect the toll. The mailing address is typically retrieved using the license plate number obtained from cameras.

All new toll roads being planned and built in the United States are implementing AET. Additionally, conversions of existing cash and electronic tag (like E-ZPass) toll roads have occurred in Denver (E-470) and Miami (MDX), and many more are in their planning stages. The Tobin Bridge in Boston was recently converted to AET, and a full conversion of the Massachusetts Turnpike is scheduled to occur in October 2016. Tolling in Connecticut would be implemented with a fully cashless AET system that does not require vehicles to stop or slow down to pay the toll. FHWA actually requires AET for any tolling projects implemented under its pilot programs such as the Value Pricing Pilot Program (VPPP).

Benefits of All Electronic Tolling (AET)

The use of AET eliminates the problems often cited by users of facilities with prior toll collection methods. With AET, there are no traffic delay or accident problems because vehicles are able to pass under the tolling gantry at highway speeds.

The primary benefits of tolling and AET are explained below:

Provide a Sustainable Revenue Source

AET can be a substantial and sustainable new revenue source, and it is well suited for Interstates and other major expressways.

Interstates and expressways carry the largest volumes of traffic and the highest percentage of heavy trucks and commercial traffic. The heavy traffic and constant use place more wear and tear on these roads than local roads and undivided roadways. Tolling can provide the necessary revenue to help maintain, repair, and rebuild these critical highway facilities.

Unlike the gas tax, toll revenues are sustainable over time. Gas tax revenues are expected to decline as cars and trucks become increasingly fuel efficient, people drive less, and fewer gallons of gas are sold. AET also makes it easy to adjust toll rates, as needed, to keep pace with inflation over time.

Collect from those who Use & Benefit from the Highway

AET introduces direct user charges to appropriately allocate the cost of highway maintenance and improvement to those who directly benefit. This includes collecting revenue from out-of-state drivers. Drivers from other states who travel through Connecticut often do so without stopping for fuel in Connecticut. They benefit from the state's highways, but do not help pay for them.

AET rates can also be set higher for large and heavy trucks that cause much more wear and tear on highway pavements and bridges than cars and other smaller vehicles. The toll rates can be set at a level that reflects the higher physical impact that such heavy trucks have on highways.

Ability to Provide Discount Programs

With AET, many toll agencies have instituted policies to help reduce the cost burden on residents who are frequent users, such as commuters, and also for low-income residents. In many northeastern states, agencies have programs to give discounts to commuters and frequent users who make a certain number of trips each month. Discounts can also be given to drivers that purchase their transponder from their own state agency, and the state could minimize the impact on local users by waiving the fee for the first toll gantry for each respective user. In addition, states can offer special assistance to low-income drivers and, in some cases, expand transit services in the affected corridor to address equity concerns.

Congestion Management

AET can also be paired with congestion pricing to help reduce congestion on a highway. Congestion pricing is a proven and effective congestion management method. With an AET system, toll rates during peak periods can be set higher than those in the off-peak periods (known as congestion or value pricing). This has the impact of shifting trips to less congested time periods, reducing discretionary trips during peaks, and shifting peak period commuters to transit or alternate modes, or to alternate routes. The result is less congestion and increased reliability for Interstate travelers. Rates can also be adjusted over the long-term to manage increased traffic growth due population and employment changes.

Recommendations for Implementing All Electronic Tolling in CT

There are numerous variations of tolling programs and approaches that exist across the country: tolls can be implemented statewide on all expressways, just on selected highway corridors, or just for individual projects and bridges. They can also be implemented just for conversion of existing HOV lanes to HOT lanes, tolling just new roadways, or tolling existing highways that are being reconstructed and substantially improved. The Panel recommends three distinct approaches to tolling in Connecticut.

A description of the approaches is below, followed by a financial analysis of each recommendation:

Corridor Tolling Approach

In Connecticut, the most significant and impactful way to implement tolling, both in terms of revenue and congestion mitigation, would be at a broad corridor level, with the flexibility to allow some project-specific toll locations. The primary candidates for corridor tolling are: I-84 from New York to Hartford, I-

95/Route 15 from New York to New Haven, and I-95 from New Haven to Rhode Island. The corridor approach to tolling is suggested for a number of reasons:

- **Major Investment Corridors.** Many of the largest proposed roadway investments in *Let's Go CT!* are located in just a few of the major highway corridors in CT. Implementing corridor-wide AET in those corridors will directly link new AET revenues to those corridors where major investments are being made. In these cases, the user fee (toll) is directly charged to the users who benefit from the major investments.
- **More Equitable.** Corridor tolling is generally a more equitable form of tolling since it spreads out the toll charges over a long corridor and reduces the impacts on any single area. This creates a more equitable distribution of costs over the full length of the corridor where numerous investments are being made; and it minimizes the problem of any one location and its residents from being unfairly or disproportionately impacted.
- **Less Traffic Diversion.** Corridor tolling also reduces the amount of traffic being diverted to local streets to avoid a toll. With corridor tolling there are multiple toll locations spread over a long distance, and the toll costs at each toll location are typically less than a toll charged at a standalone single-point toll. Single-point all-electronic tolls are effective for special situations such as river crossings and tunnels. CTDOT has identified some major projects where single-point or spot all-electronic tolling might be effective and should be considered. They are discussed in further detail below.
- **More Effective Congestion Management.** Corridor tolling allows for better and more effective traffic and congestion management. The implementation of AET allows for toll rates to be set higher during more congested times of the day, by travel direction, and could even be varied across different segments of a corridor (as necessary). Congestion pricing is also required, if Connecticut chooses to use its special Value Pricing Pilot Program authority to seek approval from the Federal Highway Administration to implement tolling.

It should be emphasized that data from CTDOT indicates that for Connecticut's most congested highway corridors the combination of congestion pricing through automatic tolling, rail and transit efficiency improvements to divert corridor traffic, and capacity improvements on I-84 and I-95, traffic congestion will be dramatically eased. No single step of this trio alone will work to achieve this, but the data indicates the combination will be quite effective.

Project-Specific All-Electronic Tolling

Project-specific all-electronic tolling is a form of single-point or spot tolling that is best suited for bridge or tunnel replacement projects. Under certain traffic situations, project-specific all-electronic tolling can also be considered for new roadways or segments of highways that are going to be reconstructed. Special care must be taken to ensure that tolling does not create excessive diversion of traffic to local roads. A number of *Let's Go CT!* projects have been identified as candidates for project-specific tolling and are included as revenue options below. Each has the potential to partially or completely fill the funding gap on the respective *Let's Go CT!* project.

HOV Lane to HOT Lane Conversion

The existing I-84 and I-91 High Occupancy Vehicle (HOV) lanes in the Hartford area should be converted to High Occupancy Toll (HOT) lanes to allow single-occupant vehicles to use the HOT lane if they are willing to pay a toll. Both HOV lanes have sufficient extra capacity to allow as many as 500-600 drivers

an hour to shift into the HOT lane and still maintain 50-55 mph speeds. The HOT lanes will not generate substantial toll revenue, but the diversion of 500-600 cars from the general purpose lanes during the peak traffic period will significantly reduce congestion in the general purpose lanes, which remain free to use. HOV-HOT conversion is not a significant source of new toll revenue. However, it is recommended as an effective congestion management tool.

Revenue Analysis of Tolling Recommendations

The Panel requested an analysis of potential tolling costs and revenues by CTDOT in order to provide an estimate of how much toll revenue might be raised to offset the cost of certain capital projects in *Let's Go CT!* The analysis revealed that tolling can help fill a substantial part of the funding gap for many of the major capital projects. However, tolling can fill only part of the funding gap for the entire *Let's Go CT!* program. Furthermore, estimates show that it could take up to 7 years to pass state legislation, get federal approvals, organize a tolling office or agency, and procure and install tolling infrastructure. This means tolling revenues will not be available in the first 7 years of the new capital program. The Panel recommends the implementation of previously discussed revenue options in the near term, while the state takes steps to implement a tolling program.

Prior to implementation of any tolling program, a more thorough assessment is required to fully account for all requirements, costs, and revenues of a tolling system. Options such as discount programs for residents and frequent users, tolling transponder company adoption rates, environmental concerns, reciprocity agreements with neighboring states, and technology options need to be fully understood and addressed.

The full results of the analysis are presented at the end of this section, but the key findings, assumptions, and risks are presented directly below:

- Tolling must use congestion pricing and be implemented as part of a congestion management program.
- For the most part, tolling should be limited to major investment corridors or facilities, with a preference for corridors. It is more cost effective to install a system in a full corridor rather than isolated projects (spot tolling). While spot tolling often results in more traffic diversion to local streets, which multiplies local congestion problems, certain projects can be good candidates for spot tolling where such diversions would be limited. Besides major investment facilities, some additional locations would need to be included, since they are part of an inter-dependent system of alternate routes, and excluding a nearby bridge or parallel route would result in unwanted diversions to the alternate routes.
- Tolling could take 7 years to implement and requires passage of state legislation and federal approvals that are not yet secured, so it is not a revenue source in the short-term.
- Tolling could raise as much as \$18.3 billion in net revenues over a 20-year period to offset transportation investment costs in the same corridors and facilities.

Full Toll Revenue & Financial Analysis

This section presents a summary as well as a full analysis of each individual corridor and project-specific location. Each corridor includes an assessment of the cost of highway improvements in the corridor,

projected toll revenues, and other funding sources needed to fill the financial gap between highway improvement costs and toll revenues.

Toll Revenue (\$18.3 billion). The total “net” toll revenue that can be raised from the three major investment corridors and the four project-specific locations is estimated to be \$18.3 billion. This is the cumulative amount collected over nearly 20 years and represents what is available to pay for major investments after the costs of building the tolling infrastructure, and operating the tolling system, are deducted from the gross toll revenue. These total revenues are collected starting in year 2022 and continuing through the year 2040. The revenues assume a 5% increase in toll rates every 5 years.

Out-of-State Revenues (30%). About 30 percent of the toll revenue is expected to come from out-of-state drivers who travel through the proposed toll locations in Connecticut. This percentage is higher in the major corridors (34%) with lots of interstate traffic than smaller project-specific locations, where the percentage drops to 12 percent.

Truck Revenues (24%). Heavy trucks comprise 10-12 percent of traffic on Interstates in Connecticut, but they are expected to pay about 24 percent of the toll revenues. This is because toll rates are set higher for trucks than automobiles. The higher rates reflect the greater wear and tear large trucks put on roads and bridges with their heavy loads.

Glossary of Toll Revenue & Financial Terms

The tables below are organized to provide key information on each candidate location. This includes:

- **Tolling corridor or location**
- **Tolling start date.** Proposed start date for tolling. These dates are what are believed to be the *earliest likely start date*. They assume the state passes enabling legislation, federal approval process is completed, toll gantries and related infrastructure is installed, and the administrative process for collecting tolling is established. It also assumes that toll collection starts after construction begins on the first major highway improvement project in the corridor.
- **Toll rate.** A simple average rate was assumed for this analysis. Based on the VPPP study conducted for I-95, CTDOT believes this average rate yields comparable revenue results to the variable-by-time-of-day rates used in congestion pricing.
- **Annual gross revenue.** Toll revenue collected without subtracting operating costs.
- **Annual operating cost.** Cost to operate, maintain, and administer the toll system.
- **Annual net revenue.** Gross revenue minus operating cost and annualized capital cost.
- **Percent out-of-state revenue.** Percent of annual toll revenues collected from out-of-state drivers.
- **Percent truck revenue.** Percent of annual toll revenues collected from trucks.
- **Toll system capital cost.** Cost to purchase and install the gantries and related infrastructure
- **Capital cost of highway improvement.** Capital cost of the major highway investments proposed for the corridor.
- **Net (cumulative) revenue.** This is the net revenues collected over the timespan *from start of tolling to the end of year 2040*. It assumes traffic growth.
- **Revenue/Cost Ratio.** This is the ratio of *cumulative ‘net’ revenue* relative to *capital cost of the major highway improvements* proposed for the corridor or location. This ratio is intended to serve as a *simple and rough* measure of the proportion of the highway investment that can be paid by toll revenues from that same facility.

I-84 West Investment & Tolling Corridor

(New York to Hartford)

Highway Improvement Cost (\$13.8 billion). Total highway and bridge construction costs within the corridor are \$13.8 billion. The reason for the high improvement cost is that two of the largest and most critical initiatives in the entire *Let’s Go CT!* program are on the I-84 corridor. The I-84 Viaduct (\$5.3 billion) and the I-84 Mixmaster (\$7.1 billion) are exceptionally large, complex, and aging structures that need replacement and are too important to risk serious deterioration. The structures serve 130,000 - 170,000 cars and trucks daily. It is essential that these two critical links on I-84 be replaced and keep travelers, commuters, and commerce moving. The I-84 corridor improvement program includes widening the highway from 2 lanes to 3 lanes between New York and Waterbury.

<u>Major Initiatives:</u> ¹⁰	<u>Initiatives Cost</u>	<u>Start Construction</u>
Phase 1: I-84: Replace Viaduct in Hartford	\$5,270M	2022
Phase 2: I-84: Widen from Exit 3 to Exit 8 in Danbury	\$640M	2023
Phase 3: I-84: Widen from New York to Exit 3	\$150M	2026
Phase 4: I-84: Widen from Exit 8 to Waterbury	\$720M	2031
Phase 5: I-84: Replace Mixmaster in Waterbury	\$7,065M	2034

Viaduct Costs (range: \$3 - 12 billion). Cost estimates for the Viaduct are preliminary and depend on the final alternative selected. Alternatives under consideration range from \$3 billion for a ‘repair in place’ option to \$12 billion for a tunnel option. \$5.3 billion represents the ‘lowered highway’ alternative.

Mixmaster Costs (range: \$3 - 8 billion). Cost estimates for the Mixmaster are preliminary and depend on the final alternative selected. The Mixmaster costs are based on an older study that evaluated alternatives ranging in cost from \$3 billion to \$8 billion.

Toll Revenue (\$4.3 billion). The total net toll revenue estimated for the I-84 corridor is approximately \$4.3 billion between 2022 and 2040. This compares to a total improvement cost of \$13.8 billion in the corridor.

% Out of State Revenue	% Truck Revenue	Toll System Capital Cost	Avg. Gross Annual Toll Revenue	Avg. Toll Operating & Annualized Capital Costs	Avg. Net Annual Toll Revenue
30%	31%	\$82M	\$244	\$20M	\$224M
Tolling Start Date				2022	
Total Net Tolling Revenue through 2040				\$4,258,800,000	
Total Corridor Cost				\$13,845,000,000	

Financial Summary. To pay for these corridor improvements, the state anticipates approximately \$1 billion to come from federal funds, \$200 million from the state to match the federal funds, approximately \$45 million from the sale of surplus highway project property in Hartford, and another \$4.3 billion to come from potential tolling revenue. This leaves a **funding gap of about \$8.3 billion.**

¹⁰ Note: for phases 1 and 5, as mentioned in Section IV, a range of project costs is under consideration; to establish more specific baseline costs for evaluation in this section, a likely mid-range option is selected.

Total Capital Funding Required:	\$13,845,000,000
Less: Funding from Sale of Surplus Hwy Project Property for Development	\$ (45,000,000)
Funding from Value Capture and Rights of Way	Unknown
Funding from State Bonding Program:	\$ (206,350,000)
Funding from Federal Sources:	\$ (1,031,750,000)
Funding from Tolling Revenue:	\$ (4,258,800,000)
Additional Revenue Required to Fund Construction Costs:	\$ 8,303,100,000

I-95 East Investment & Tolling Corridor

(New Haven to Rhode Island)

Highway Improvement Cost (\$1.7 billion). Total highway improvement cost within the I-95 East tolling corridor is \$1.7 billion. Daily traffic on this stretch of I-95 is about 84,000 vehicles per day, nearly 11 percent of which are trucks. The I-95 East tolling corridor improvements includes completing an additional lane of travel in each direction and rehabilitating pavement and bridges on I-95 between Branford and Rhode Island. The multi-phased enhancement will substantially improve the operational safety, speed and reliability of travel.

<u>Major Initiatives:</u>	<u>Initiatives Cost</u>	<u>Start Construction</u>
Phase 1: I-95: Widen from Baldwin Bridge to Goldstar Bridge <i>(includes I-95/I-395 Interchange)</i>	\$700M	2024
Phase 2: I-95: Widen from Branford to Baldwin Bridge	\$720M	2029
Phase 3: I-95: Widen from Gold Star Bridge to Rhode Island	\$290M	2037

Toll Revenue (\$2.7 billion): The total net toll revenue estimated for the I-95 East Tolling corridor is approximately \$2.7 billion between 2024 and 2040. This compares to a total highway improvement cost of \$1.7 billion in the corridor.

% Out of State Revenue	% Truck Revenue	Toll System Capital Cost	Avg. Gross Annual Toll Revenue	Avg. Toll Operating & Annualized Capital Costs	Avg. Net Annual Toll Revenue
35%	27%	\$82M	\$173M	\$17M	\$156M
Tolling Start Date				2024	
Total Net Revenue through 2040				\$2,657,000,000	
Total Corridor Cost				\$1,710,000,000	

Financial Summary. To pay for these corridor improvements, the State anticipates approximately \$300 million to come from federal funds, \$60 million in state funds to match the federal, and another \$2.7 billion to come from potential tolling revenue. This leaves a **funding surplus of about \$1.3 billion** to construct these major initiatives in the corridor. Surplus funds may be used to offset other capital costs in the corridor, including bus and rail capital costs, as well as other portions of I-95.

Total Capital Funding Required:	\$1,710,000,000
Less: Funding from State Bonding Program:	\$ (60,891,600)
Funding from Federal Sources:	\$ (304,458,000)
Funding from Tolling Revenue:	\$ (2,657,000,000)
Funding from Value Capture and Rights of Way	Unknown
Surplus Toll Revenue Available for Other Corridor Improvements:	\$ (1,312,349,600) Surplus

I-95 West Investment & Tolling Corridor

(New York to New Haven)

Highway Improvement Cost (\$9.4 billion). The total highway improvement cost within the I-95/Route 15 West tolling corridor is \$9.4 billion. Highway improvements include adding a lane of travel in each direction on I-95 between New York and New Haven (through some of the most expensive real estate areas in Connecticut) as well as rehabilitating the existing pavement and bridges along this section of the Interstate. Daily traffic on this stretch of I-95 varies widely, but an average section accommodates over 135,000 vehicles daily, including over 18,000 trucks. Other highway improvements in this tolling corridor are projects that will improve traffic operations and reduce congestion on Route 15. These projects include the reconfiguration of the Route 15/Route 7 Interchange in Norwalk and capacity enhancements to the West Rock Tunnel in New Haven/Hamden, constructing a new northbound tunnel and widening the existing southbound tunnel.

Major Initiatives:

	<u>Initiatives Cost</u>	<u>Start Construction</u>
Phase 1: Route 15: West Rock Tunnel & Interchange 59	\$300M	2021
Phase 2: Route 15: Route 15 / Route 7 Interchange	\$135M	2022
Phase 3: I-95: Widen from Stamford to Bridgeport	\$4,085M	2028
Phase 4: I-95: Widen from New York to Stamford	\$1,660M	2031
Phase 4: I-95 - Widen from Milford Connector to New Haven	\$1,325M	2032
Phase 6: I-95: Widen from Bridgeport to Milford Connector	\$1,930M	2034

Toll Revenue (\$8 billion): The total net toll revenue estimated for the I-95 and Route 15 West Tolling corridor is about \$8 billion between 2022 and 2040. This compares to a total highway improvement cost of \$9.4 billion. All-Electronic Tolls would be placed on both I-95 and Route 15 to reduce congestion.

% Out of State Revenue	% Truck Revenue	Toll System Capital Cost	Avg. Gross Annual Toll Revenue	Avg. Toll Operating & Annualized Capital Costs	Avg. Net Annual Toll Revenue
35%	23%	\$142M	\$468M	\$48M	\$420M
Tolling Start Date				2022	
Total Net Tolling Revenue through 2040				\$7,981,300,000	
Total Corridor Cost				\$9,435,000,000	

Financial Summary. To pay for these corridor improvements, the state anticipates approximately \$416 million to come from federal funds, \$83 million in state funds to match the federal, and another \$8 billion to come from potential tolling revenue. This leaves a **funding gap of approximately \$955 million** to construct these major initiatives in the corridor.

Total Capital Funding Required:	\$9,435,000,000
Less: Funding from State Bonding Program:	\$ (83,110,000)
Funding from Federal Sources:	\$ (415,550,000)
Funding from Tolling Revenue:	\$ (7,981,300,000)
Funding from Value Capture and Rights of Way	Unknown
Additional Revenue Required to Fund Construction Costs:	\$955,040,000

CT River Bridge Improvements and Tolling
(Hartford Area)

Highway Improvement Cost (\$700 million). This group of tolling locations consists of four bridges in the Hartford area that are in such close proximity to one another that they often serve as alternate routes for each other when problems on one bridge cause traffic diversions to the others. Because they are so closely linked, they need to be treated as a single tolling system. Total highway construction costs associated with the reconstruction of the Putnam Bridge and the ramps to the Charter Oak Bridge are approximately \$700 million. No major improvements are programmed yet for the Bulkeley and Founders bridges, but they need to be included in the tolling system to balance traffic among the 4 bridges.

Major Initiatives:	Cost	Start Const.
Charter Oak Bridge (Rt 15: Hartford-East Hartford): New ramps to/from I-91	\$295M	2018
Putnam Bridge (Rt 3: Wethersfield-Glastonbury): Reconstruction	\$400M	2036
Bulkeley Bridge (I-84: Hartford-East Hartford): major reconstruction not yet set	-----	-----
Founders Bridge (Rt 2: Hartford-East Hartford): major reconstruction not yet set	-----	-----

Toll Revenue (\$2.3 billion): The total net toll revenue estimated for this 4-bridge system is approximately \$2.3 billion between 2022 and 2040. This compares to a total improvement cost of \$700 million.

% Out of State Revenue	% Truck Revenue	Toll System Capital Cost	Avg. Gross Annual Toll Revenue	Avg. Toll Operating & Annualized Capital Costs	Avg. Net Annual Toll Revenue
15%	19%	\$26M	\$134M	\$14M	\$120M
Tolling Start Date				2022	
Total Net Tolling Revenue through 2040				\$2,287,560,000	
Total Highway Improvement Cost				\$700,000,000	

Financial Summary. To pay for these improvements, the state anticipates approximately \$26.5 million in funding to come from federal sources and another \$2.3 billion to come from potential tolling revenue. This excess toll revenue beyond the capital funding required for these improvements is approximately \$1.4 billion (**funding surplus of \$1.6 billion**). These funds could be used to pay for regular maintenance and repair to the bridges, or other highway construction projects on Routes 2, 3, or I-84.

Total Capital Funding Required:	\$700,000,000
Less: Funding from State Bonding Program:	\$ (5,310,000)
Funding from Federal Sources:	\$ (26,550,000)
Funding from Tolling Revenue:	\$ (2,287,560,000)
Surplus Toll Revenue Available for Other Corridor Improvements:	\$ (1,619,420,000)

Route 2 Improvements and Tolling

(East Hartford & Glastonbury)

Highway Improvement Cost (\$155 million). The total highway construction cost for the Route 2 improvements is \$155 million. These improvements will address safety and operational issues along a 6-7 mile stretch of Route 2 from the I-84 interchange in East Hartford to south of the Route 17 interchange in Glastonbury. This area of Route 2 is heavily congested and in need of safety improvements, especially between exits 3-5 and at the major interchanges. These tolled improvements will reduce congestion, enhance traffic operations, improve safety characteristics at key interchanges, and allow for better access to Rentschler Field, supporting future economic development.

<u>Major Initiatives:</u>	<u>Initiative Cost</u>	<u>Start Construction</u>
Rt. 2: Exit 3 – 5 Safety & Operational Improvements	\$40M	2022
Rt. 2: Interchange Improvements with I-84	\$5M	2023
Rt. 2: Access Improvements to Rentschler Field	\$10M	2024
Rt. 2: Interchange Improvements with Rt. 17	\$100M	2025

Toll Revenue (\$216.2 million). The total net toll revenue estimated on this stretch of Route 2 is \$216.2 million between 2022 and 2040. This compares to a total improvement cost of \$155 million.

% Out of State Revenue	% Truck Revenue	Toll System Capital Cost	Avg. Gross Annual Toll Revenue	Avg. Toll Operating & Annualized Capital Costs	Avg. Net Annual Toll Revenue
5%	14%	\$5M	\$14M	\$3M	\$11M
Tolling Start Date				2022	
Total Net Tolling Revenue through 2040				\$216,200,000	
Total Highway Improvement Cost				\$155,000,000	

Financial Summary. To pay for these improvements, the state anticipates approximately \$6.4 million to come from federal funds, \$1.3 million in state funds to match the federal, and another \$216.2 million to come from potential tolling revenue. This leaves a **funding surplus of \$68.9 million** beyond the capital funding required for these improvements. Surplus toll revenues would be available for other highway improvements in the Route 2 corridor as well as transit improvements within the corridor.

Total Capital Funding Required:	\$155,000,000
Less: Funding from State Bonding Program:	\$ (1,280,000)
Funding from Federal Sources:	\$ (6,400,000)
Funding from Tolling Revenue:	\$ (216,200,000)
Surplus Toll Revenue Available for Other Corridor Improvements:	\$ (68,880,000)

I-91 / I-691 / Rt. 15 Interchange Improvements and Tolling
(Meriden)

Highway Improvement Cost (\$90 million). Total highway construction cost for the I-91 / I-691 / Rt. 15 interchange improvements is approximately \$90 million. These improvements will address safety concerns and reduce congestion. Traffic backed-up at this interchange causes congestion in other nearby areas of the I-91 corridor. Incorporating an additional operational lane in each direction between exits 15 and exit 20 on I-91 will allow for smoother flow of traffic converging from 3 major highways. The improvements will reduce accidents and provide a higher level of operations along this section of I-91 as well Route 15 (Wilbur Cross Parkway) and I-691.

<u>Major Initiative:</u>	<u>Initiative Cost</u>	<u>Start Construction</u>
I-91 / I-691 / Rt. 15 Interchange Improvements	\$90M	2022

Toll Revenue (\$494.2 million). The total net toll revenue estimated for the I-91 / I-691 / Rt. 15 Interchange is \$494.2 million between 2022 and 2040. This compares to a total improvement cost of \$90 million.

% Out of State Revenue	% Truck Revenue	Toll System Capital Cost	Avg. Gross Annual Toll Revenue	Avg. Toll Operating & Annualized Capital Costs	Avg. Net Annual Toll Revenue
10%	22%	\$12M	\$32M	\$6M	\$26M
Tolling Start Date				2022	
Total Net Tolling Revenue through 2040				\$494,200,000	
Total Highway Improvement Cost				\$90,000,000	

Financial Summary. To pay for these improvements, the state anticipates approximately \$1.6 million to come from federal funds, \$8 million in state funds to match the federal, and another \$494.2 million to come from potential tolling revenue. This leaves a **funding surplus of \$413.8 million** beyond the capital funding required for these improvements. Surplus toll revenues would be available for other improvements to I-91, I-691, and Route 15, as well as transit improvements within the corridor.

Total Capital Funding Required:	\$90,000,000
Less: Funding from State Bonding Program:	\$ (1,600,000)
Funding from Federal Sources:	\$ (8,000,000)
Funding from Tolling Revenue:	\$ (494,200,000)
Surplus Toll Revenue Available for Other Corridor Improvements:	\$ (413,800,000)

Route 11 Extension and Tolling
(Salem to East Lyme / Waterford)

Highway Improvement Cost (\$700 million). The total highway construction cost for the extension of Route 11 expressway is estimated at \$700 million. The initiative includes constructing the missing 8.5 mile expressway link from the current terminus of Route 11 in Salem at Route 82 to the I-95/I-395 interchange in East Lyme and Waterford. However, the improvement cost does not include the I-95/I-395 interchange cost, which is included in the estimated cost for the I-95 East corridor widening from the Baldwin Bridge to the Goldstar Bridge. Completing this missing expressway link will improve overall mobility in eastern Connecticut and remove through traffic from Route 85.

Major Initiative:	Initiative Cost	Start Construction
Rt. 11: Extension to I-95 / I-395 Interchange	\$700M	2035

Toll Revenue (\$42.2 million). The total net toll revenue estimated on Route 11 is about \$42.2 million between 2032 and 2040. This compares to a total improvement cost of \$700 million.

% Out of State Revenue	% Truck Revenue	Toll System Capital Cost	Avg. Gross Annual Toll Revenue	Avg. Toll Operating & Annualized Capital Costs	Avg. Net Annual Toll Revenue
5%	8%	\$8M	\$7M	\$2M	\$5M
Tolling Start Date				2032	
Total Net Tolling Revenue through 2040				\$42,200,000	
Total Highway Improvement Cost				\$700,000,000	

Financial Summary. To pay for these improvements, the state anticipates approximately \$52.5 million to come from federal funds, \$10.5 million in state funds to match the federal, and another \$42.2 million to come from potential tolling revenue. This leaves a **funding gap of approximately \$595 million** to construct the extension of Route 11.

Total Capital Funding Required:	\$ 700,000,000
Less: Funding from State Bonding Program:	\$ (10,500,000)
Funding from Federal Sources:	\$ (52,500,000)
Funding from Tolling Revenue:	\$ (42,200,000)
Additional Revenue Required to Fund Construction Cost:	\$ 594,800,000

Route 9 Improvements and Tolling

(Middletown Area)

Highway Improvement Cost (\$2.82 billion). Total highway construction cost for the Route 9 Middletown area improvements is \$2.82 billion. These improvements include reconstruction of the Arrigoni Bridge and a new river crossing in Middletown as well as 2-3 miles of roadway improvements and interchange reconfigurations on Route 9, near the traffic signals in Middletown. This area is heavily congested and is in need of safety improvements, especially at each of the existing at-grade signalized intersections with Route 66 and Route 17. The bridge improvements, and reconfiguration of key interchanges, will eliminate the 2 traffic signals, reduce the number of traffic accidents, and reduce the congestion along Route 9. It will also improve access to downtown Middletown and across the Connecticut River.

Major Initiatives:

	Initiative Cost	Start Construction
Rt. 9: Interchange Improvements with Rt. 17	\$30M	2024
Rt. 9: Interchange Reconfiguration with Rt. 66	\$390M	2029
Rt. 9: Arrigoni Bridge Reconstruction	\$400M	2035
Rt. 9: Build 2 nd bridge over CT River	\$2,000M	2036

Toll Revenue (\$383 million). The total net toll revenue estimated in the Middletown Area of Route 9 is about \$383 million between 2022 and 2040. This compares to a total improvement cost of \$2.82 billion.

% Out of State Revenue	% Truck Revenue	Toll System Capital Cost	Avg. Gross Annual Toll Revenue	Avg. Toll Operating & Annualized Capital Costs	Avg. Net Annual Toll Revenue
5%	11%	\$16M	\$29M	\$6M	\$23M
Tolling Start Date				2024	
Total Net Tolling Revenue through 2040				\$382,920,000	
Total Highway Improvement Cost				\$2,820,000,000	

Financial Summary. To pay for these improvements, the state anticipates approximately \$231 million to come from federal funds, \$46 million in state funds to match the federal, and another \$383 million to come from potential tolling revenue. This leaves a **funding gap of approximately \$2.2 billion.**

Total Capital Funding Required:	\$2,820,000,000
Less: Funding from State Bonding Program:	\$ (46,226,000)
Funding from Federal Sources:	\$ (231,130,000)
Funding from Tolling Revenue:	\$ (382,920,000)
Additional Revenue Required to Fund Construction Cost:	\$ 2,159,724,000

Section VII. Recommendations: Financing State of Good Repair and Congestion Mitigation

Although revenues are key to the immediate health of the STF, it is not enough to ensure the long term viability of the fund. The current financing program, which has been a successful part of the fund's current growth, cannot be the only financing tool in the state's pocket. In order to be successful, the state needs to look at alternative forms of financing, including but not limited to: Green Bonds, TIFIA, RRIF, and Public Private Partnerships. These additional measures will ensure the long term success of not just the *Let's Go CT* program but also future transportation endeavors.

The Current State Financing Program

The issuance of bonds to finance a significant portion of the state's transportation infrastructure needs has a long-standing history in Connecticut. The issuance of STO bonds were first authorized in Public Act 84-254 in September of 1984. The bonds issued for the infrastructure program are special obligations of the state and can only be paid from the revenues of the state pledged for the bonds (Pledged Revenues). Pledged Revenues consist of taxes, fees, charges and other receipts, funds, or moneys of the state credited to the STF as well as the investment earnings of the fund.

The Pledged Revenues offer bondholders a robust and secure source of funds for the debt service obligations that must be met over the life of the several series of bonds that have been issued by the state over many years. Not only do the bonds issued by the state benefit from this secure funding of the STF, but there are several provisions related to the bonds that enhance their attractiveness to investors. These include:

- A 2 times annual debt service coverage requirement for senior and second lien bonds of pledged revenues to debt service;
- A stream of pledged revenues that are diversified;
- The creation of a statutory "lockbox," in 2015, ensures monies within STF remain available for transportation purposes only;
- A conservative 20-year repayment of the bonds.

These, and other factors, have led to investor appeal and solid ratings from the three major credit rating agencies (Moody's: Aa3; S&P: AA; Fitch: AA). As of September 2015 there were \$4.0 billion in outstanding STO bonds.

Bond Maturity

The Panel considered extending the maturity of the bonds from the current term of 20 years, to 25 or even 30 years, to better match the estimated useful lives of the many infrastructure investments to be made over the next 30 years. A key benefit to such an approach is that more capital can be raised for every given dollar of debt service. Based on a presentation to the Panel by the Office of the State Treasurer, debt service was estimated for two hypothetical STO bond sales, each with a \$1,000,000,000 Par Amount, using then current market interest rates (as of Nov. 9th, 2015) and the "spreads" on the STO bond sale in October 2015, structured to provide level annual debt service payments with 20-year and 30-year final maturities, respectively.

TABLE 13

Summary of New Money Bond Results

	<u>20-Year Term</u>	<u>30-Year Term</u>
Par Amount of Bonds	\$1,000,000,000	\$1,000,000,000
Total Interest	\$592,320,889	\$947,770,983
Total Debt Service	\$1,592,320,889	\$1,947,770,983
Average Annual Debt Service	\$80,669,226	\$65,293,999
Final Maturity	2035	2045
Average Life	11.866	18.845
Average Coupon	4.99%	5.00%
All-in-T.I.C.	3.30%	3.89%

Note: bonds are issued at a “premium” to “par value”. Assuming that the “premium-to-par” relationship holds, approximately \$1.174 billion would be raised for the 20-year issue and \$1.150 billion would be raised for the 30-year bond issue. Based on annual debt service, the 20-year bond would raise \$14.55 per dollar of debt service, while the 30-year bond would raise \$17.61 per dollar of debt service, which equates to 21% more capital.

However, this higher capital raised per dollar of debt service comes at a cost:

- The debt’s average life would greatly increase from about 12 years to nearly 19 years;
- The true interest cost (or “TIC”) would be higher for the 30-year bond and total interest paid would be 60% greater;
- The change in policy could weaken the bond ratings, as determined by the credit rating agencies;
- Most states issue 20-year bonds for transportation infrastructure purposes, so longer maturities could lessen appeal amongst the state’s bond issuing peer group.

Based on these factors, the Panel agreed that, not only should revenue bonds continue to be the primary tool for financing transportation projects in Connecticut, but it also determined that the state is currently best served by continuing to issue 20-year bonds, rather than issuing bonds with a longer maturity. While longer dated bonds could raise more capital per dollar of debt service, under current market conditions, this benefit is not worth the significantly greater interest cost the state would have to bear and the potential adverse impact on the STO bonds’ credit ratings.

However, the state should consider commissioning a study to determine whether a pledge of certain long term revenues (such as potential tolling revenues) would create benefits to the state to support the issuance of a limited class of longer dated maturities for some portion of the Infrastructure Program’s capital requirements. Many states have done this to good effect, but a number of these issuers also found it necessary to establish separate tolling authorities, and other revenue dedication mechanisms, to achieve bonds with a 25- or 30-year maturity that are attractive to investors.

Debt Service Coverage

The Panel also considered modifying the Special Tax Obligation Bond Indenture to require 1.5 or 1.75 times debt service coverage, rather than 2 times coverage presently required. A relaxation of this requirement would free-up capital to be used for projects or debt service payments. Staff of the Office of the State Treasurer discussed this requirement with the Panel and made the following observations:

- While the Special Tax Obligation Bond Indenture requires 2 times debt service coverage, historically, the Pledged Revenues coverage of debt service has been much greater, with the ratio being in excess of 3 times in each of the last 5 years (and 3.7 times in 2015);
- The credit rating agencies specifically noted this higher actual coverage as one of the strengths they considered in granting their final ratings;
- For the three years outside of the biennium, the coverage ratio is on a downward trend toward 2.5 times coverage, and this decline was noted by the credit rating agencies as a matter of some concern.

From the discussions with the Office of the State Treasurer, it is clear that an adequate debt service coverage ratio *in excess of* the Special Tax Obligation Bond Indenture requirement for 2 times debt service coverage is a key element considered by the credit rating agencies in determining ratings for STO bonds. Moreover, other states with comparable bond ratings have actual debt service coverage similar to, if not more than, Connecticut. The Panel recommends maintaining the Special Tax Obligation Bond Indenture requirement of 2 times debt service coverage and that the state maintain an actual coverage of debt service at higher levels, in order to sustain the current STO bond ratings.

Potential for Special Tax Obligation “Green Bonds”

According to the federal Environmental Protection Agency (EPA), the combustion of fossil fuels to transport people and goods is the second largest source of CO₂ emissions, accounting for about 31% of total U.S. CO₂ emissions and 26% of total U.S. greenhouse gas emissions in 2013 (40% of Connecticut’s greenhouse gas emissions originate from the transportation sector). This category of combustion includes transportation sources such as highway vehicles, air travel, marine transportation, and rail. While much attention has been given to the impact of reducing energy consumption by increasing the fuel economy of cars and light trucks through the Corporate Average Fuel Economy (CAFE) standards, much less consideration has been given to the impact that reducing traffic congestion can have on decreasing CO₂ emissions.

Connecticut’s traffic congestion problems have not only resulted in lost time and revenue, but also much higher CO₂ emission rates than are possible when traffic moves at typical highway speeds. Therefore, the potential exists for our state to have a meaningful impact on CO₂ emissions by improving the flow of traffic on our highways and interstate corridors. Capital projects that aim to reduce congestion, and thereby reduce CO₂ emissions, may be prime candidates to finance by Green Bonds.

Green Bonds are fixed-income instruments where the capital raised is dedicated for investment in projects with environmental benefits. While standards for Green Bonds are not well established, a voluntary standard for issuing Green Bonds, known as the Green Bond Principles (GBP), was established in 2014 by a group of environmental finance experts and banks active in the development of the Green

Bonds market. The GBP are voluntary process guidelines that recommend transparency and promote integrity in the development of the Green Bond market by clarifying the approach for issuance of such Green Bonds.

In 2015, the state issued, with great success, its first Green Bond: \$250 million in Clean Water Fund bonds used to finance critical wastewater and drinking water infrastructure projects statewide, through the state's Clean Water and Drinking Water Programs. The benefits of CO2 mitigation from investments to reduce congestion on our highways and interstate corridors, as well as, investments that promote increased use of mass transit, like bus and rail transport, clearly qualify for Green Bond designation. This Green Bond status should be considered for those bonds issued, where proceeds will be dedicated to such purposes. Capital market benefits for Green Bonds, such as lower interest rates, have only been seen in some secondary markets, institutional and retail investors are increasingly seeking investments in securities that promote sustainable investments and improve the environment. Recently, foundations and pension funds are increasingly seeking to divest and diversify from fossil fuel-intensive portfolios. With such considerable investor interest in Green Bond issuances, STO bond sales could benefit from Green Bond designation, thereby, augmenting the interest of these investors.

Federal Financing Programs

The federal government offers alternative financing mechanisms that have received increased interest by states, municipalities, transit agencies, and other transportation-related entities. The most frequently discussed is the federal TIFIA program, which was established in 1998 as part of the Transportation Infrastructure Financing and Innovation Act. Largely created to help finance transportation projects with tolls and other forms of user-backed revenues, TIFIA offers three types of financial assistance: direct loans, loan guarantees, and standby lines of credit. TIFIA can be applied for by state governments, private firms, local governments, quasi-governmental authorities, and transportation improvement districts, and can be used for almost any type of large transportation project, including: roads, bridges, transit systems, and stations.

As a result of growing interest across the country, Congress bolstered TIFIA by greatly increasing its authorization levels (eight-fold) under MAP-21, authorizing \$750 million in FY13 and \$1 billion in FY14. Since then, the recent transportation legislation passed by Congress reduced those numbers to levels between \$250 and \$300 million per year. The reduction in authorization means TIFIA will only become even more competitive moving forward. A similar program also exists for rail infrastructure, known as the Railroad Rehabilitation and Improvement Financing program (hereafter, RRIF). While the discussion in this section will focus on TIFIA, much of the recommendations can be applied to RRIF as well.

Connecticut has traditionally relied upon a bond-based transportation program; which has worked well for the state. However, with the significant number of projects on the horizon, Connecticut will need to diversify the funding and financing mechanisms it utilizes in order to execute these projects without crippling the state's STF. TIFIA is an excellent financing option for several of the projects under consideration, especially when tolls are implemented on many of the highway and bridge projects. TIFIA or RRIF could also be used for rail projects that generate user revenues such as the New Haven Line. While the state currently enjoys very low interest rates on STO bonds, which are about the same as can be expected through the TIFIA program, interest rates may rise as the state seeks to bond increasingly

greater amounts. In addition, TIFIA offers alternative, flexible repayment options, allowing the state to defer repayment until the project actually begins generating user-fees or other revenues.

A major benefit of using alternative financing for Connecticut would be the more effective use of funds to meet the coverage test ratio that is required in STO bond indentures. Should the entire *Let's Go CT!* program be done through bonding, billions of dollars would be required to sit on the sidelines, instead of being used to execute projects, as a result of the revenue coverage requirements. TIFIA, RRIF, and other forms of alternative financing can often be accessed with lower ratios of projected revenues to total debt service, and potentially, by subordinating these obligations to other indebtedness, such as STO bonds. Together, STO bonds with effective use of alternative financing could allow more projects to be completed with the same amount of revenues and completed more quickly.

Institutional Capacity and Flexibility

Traditionally, national transportation projects have been funded through the gas tax, both state and federal. In the building of the Interstate Highway system, the program was sufficiently focused and funded to accomplish the task of connecting cities and towns across the country by highway. Sometimes this system moved slowly, but it was reliable and effective. Since then, the cost of building and rebuilding major projects has risen and the task has gotten significantly more complicated. State of repair projects are disruptive to travel and more likely to disturb businesses and homes in densely developed areas. The public expects transportation projects to be multimodal and context sensitive; however, the old formula grant program is often unable to support such projects in a timely and efficient manner.

Successful states have turned to a broader array of options to finance significant projects such as federal financing tools like the TIFIA and RRIF programs noted above. These programs are first come, first serve, so Connecticut needs expertise to understand each program and how to provide good financial information to USDOT, in order to take advantage of the respective program. There are several other innovative funding techniques being utilized across the country such as private public partnerships, congestion pricing, and value capture mechanisms. All such financing tools require specific knowledge and experience in order to make an individual project successful and protect the state's investment. In P3s, for example, the private entities always arrive with a large number of lawyers and financial experts to look after their needs and priorities. The state needs an equal quality of expertise to look after the taxpayers' interests.

All financing tools require in-house experience in both the financial tools themselves and the models and data needed to support the financial analysis. As some tolling projects have failed and gone bankrupt, rating agencies and private partners are likely to expect a higher quality of travel demand modeling to ensure public and private investments are protected. Moreover, as states field newer techniques for raising money, like value capture, their data and methodology will have to be tight in order to provide confidence to the market and the taxpayer.

Improving models and data can also help the state evaluate which funding option is ideal or whether a particular project is even a good investment, in the first place. Just because a project can pay its own way does not mean it is a good project. A project that induces traffic demand can generate great profits

and pay loans quickly, but it could also generate a burden on local travelers by extending trips, limiting non-motorized access to jobs, and negatively impacting the natural and built environment.

To fully avail itself of all financing options and apply them to the best projects, while recognizing that these tools are loans that must be repaid and not a revenue source for the STF, Connecticut must develop or access strong expertise in data collection, modern travel demand modeling, performance management (beyond traditional engineering measures), and financial analysis, including the ability to use innovative financing techniques. After executing a few projects with consultant support, Connecticut should consider establishing a state “Office of Innovative Finance,” as has been done in other states, to pursue projects and build the institutional capacity that is necessary to work with the private sector, or potentially join with neighboring states to develop regional expertise.

Section VIII. Final Forecast

Table 14 provides the final forecast based on the panel's revenue and finance recommendations. This table includes all revenue and expenditure recommendations which can be seen in full detail in Section VI of this report.

Revenues

Revenues can be seen on lines 1, 2 and 3 in Table 14. A description of these lines is as follows:

- **Revenues before Adjustments:** This line is the "base" revenue amount and does not include any revenue recommendations made within this report. For fiscal years 2016 through 2020 consensus revenue as of November 10, 2015 as modified by Public Act 15-1 of the December Special Session was used. For fiscal year 2021 through fiscal year 2030 the forecast is based on assumptions from Section III of this report. Descriptions of each individual revenue source can be seen in Attachment B of this report and includes a history of revenue collections.
- **New Revenues:** All recommendations for new revenues can be found in Section VI of this report. These numbers reflect the net increase in revenue for each recommendation.
- **Revenues After Adjustments:** The sum of lines 1 and 2.

Expenditures

Expenditures can be seen on lines 4, 5 and 6. A description of these lines is as follows:

- **Expenditures before Offsets:** This line is the "base" expenditure amount and does not include any expenditure recommendations made within this report. It does include all expenditure increases, including debt service, as a result of the *Let's Go CT!* program.

Debt service is a significant part of this line. The Special Tax Obligation (STO) bond program, as described in section VII of this report, is the primary source of capital spending for all *Let's Go CT!* projects. Principal and interest payments from this program make up the vast majority of debt service. It is important to note that both federal grants and the surplus cap from line 9 of Table 14 impact the size of debt service. Federal capital grants are used for specific projects which will reduce the need for borrowing and a more detailed description can be found in Section VI of this report. Attachment C of this report provides a detailed table showing the estimated issuance schedule.

Fiscal year 2016 is from the Office of Policy and Management's December 18, 2015 Letter to the Comptroller. For fiscal year 2017 the expenditure number is based on Public Act 15-244 as modified by Public Act 15-5 of the June Special Session. For the rest of the forecast, fiscal years 2018 through 2030, the expenditure forecast is based on the assumptions from Section III of this report and from estimates of the *Let's Go CT!* transportation infrastructure program as of December 1, 2015.

- **New Expenditure Offsets:** This line includes all fare and parking revenue increases. These increases are used to offset state bus and rail subsidies to both the Connecticut transit system and Metro North.
- **Expenditures After Adjustments:** The sum of lines 4 and 5.

Surplus Cap

In order to guarantee the long term funding of all of the major projects in the *Let's Go CT!* program, many of the revenue adjustments are recommended to begin before significant construction projects get underway to ensure the funds are available. This will initially lead to large unencumbered cumulative surpluses, which presents an opportunity to reduce the fund's long-term interest cost by establishing a significant pay-as-you-go component. The panel recommends that there exist a cap on surpluses at 5% of the total annual expenses. All dollars above the 5% cap will be used to cash flow projects without the need to borrow. This will both help reduce the amount the state will have to borrow by nearly \$9.0 billion over the 15 year period and guarantee funds will be available to get projects started right away. If this recommendation is pursued, the state will save roughly \$2.7 billion in interest payments over the 15 year period and over \$6.0 billion in interest over what would have been the life of the bonds (please see Attachment C for the issuance schedule). Lines 7 through 9 in Table 14 show the impact of this recommendation.

Coverage Test Ratio

Under the terms of the STO bond indentures is a requirement for all revenues pledged to the STF to cover at least 2 times annual debt service. Line 11 of Table 14 provides a forecast of the ratio between revenues after the adjustments and forecasted debt service payments. For most of the forecast period the ratio exceeds the 2 times requirement by a significant amount. It is not until fiscal year 2029 that the ratio dips below the required amount. Adjustments must be made before the fiscal year 2029 in order to maintain required coverage ratios. These adjustments include, but are not limited to, other forms of financing that can be seen in Section VII of this report, changes in the timing of certain projects, the increase in federal subsidy or even the difference between estimated assumptions and actual results.

TABLE 14
SPECIAL TRANSPORTATION FUND
Let's Go CT! Balance Forecast with Revenue Adjustments
(in Millions)

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
1. Revenues Before Adjustments¹	\$ 1,388.2	\$ 1,547.9	\$ 1,683.8	\$ 1,735.6	\$ 1,774.9	\$ 1,802.8	\$ 1,832.0	\$ 1,862.4	\$ 1,894.0	\$ 1,926.6	\$ 1,960.4	\$ 1,995.6	\$ 2,032.2	\$ 2,070.1	\$ 2,109.5
2. New Revenues²															
Motor Vehicle Receipt Inflation	-	-	31.6	31.7	31.8	31.9	32.0	68.3	68.5	68.8	69.0	69.2	110.9	111.2	111.6
License, Permit and Fee Inflation	-	-	18.0	18.0	18.2	18.9	19.0	39.7	39.8	40.0	40.2	40.3	64.2	64.4	64.7
Motor Fuels Tax Inflation	-	-	29.8	59.4	89.1	118.4	147.2	175.8	204.0	203.0	202.0	201.0	200.0	199.0	198.0
Oil Companies 1% Increase	-	-	40.0	44.4	49.3	51.3	53.3	55.4	57.7	60.0	62.4	64.9	67.4	70.1	73.0
Sales Tax to 1% in FY 2018	-	-	359.1	372.0	385.2	398.7	412.6	427.1	442.0	473.5	490.1	507.2	525.0	543.4	543.4
Other Revenues ³	-	-	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4
Corridor All-Electronic Tolling															
Corridor 1: I-84 West	-	-	-	-	-	-	191.8	193.2	194.7	196.1	208.4	210.0	211.6	213.1	214.7
Corridor 2: I-95 East	-	-	-	-	-	-	-	-	135.8	136.8	137.9	138.9	147.8	148.9	150.0
Corridor 3: I-95 West	-	-	-	-	-	-	361.6	364.4	367.2	370.1	393.9	397.0	400.1	403.2	406.4
Project All-Electronic Tolling															
CT River Bridges: HFD Area	-	-	-	-	-	-	105.2	105.7	106.3	106.8	113.4	114.0	114.5	115.1	115.7
Route 2: E. Hartford & Glastonbury	-	-	-	-	-	-	9.8	9.9	9.9	10.0	10.7	10.7	10.8	10.8	10.9
Route 9: Middletown	-	-	-	-	-	-	19.6	19.7	19.8	19.9	20.0	20.1	21.5	21.6	21.7
I-91, I-691, RT15 Interchange	-	-	-	-	-	-	22.5	22.6	22.7	22.8	24.4	24.5	24.6	24.8	24.9
Total New Revenue	\$ -	\$ -	\$ 479.6	\$ 526.6	\$ 574.6	\$ 620.2	\$ 1,375.8	\$ 1,483.0	\$ 1,669.7	\$ 1,692.9	\$ 1,756.9	\$ 1,781.8	\$ 1,881.8	\$ 1,908.5	\$ 1,936.1
3. Revenues After Adjustments	\$ 1,388.2	\$ 1,547.9	\$ 2,163.4	\$ 2,262.2	\$ 2,349.5	\$ 2,423.0	\$ 3,207.8	\$ 3,345.4	\$ 3,563.6	\$ 3,619.6	\$ 3,717.3	\$ 3,777.4	\$ 3,914.0	\$ 3,978.7	\$ 4,045.7
4. Expenditures Before Offsets⁴															
Debt Service ⁵	\$ 498.0	\$ 563.0	\$ 591.7	\$ 637.0	\$ 669.4	\$ 715.4	\$ 756.1	\$ 819.4	\$ 910.2	\$ 1,050.0	\$ 1,230.0	\$ 1,498.9	\$ 1,822.1	\$ 2,200.5	\$ 2,567.3
All Other	890.2	933.1	971.0	1,034.8	1,092.5	1,140.4	1,184.3	1,235.1	1,288.1	1,405.6	1,466.5	1,530.1	1,596.5	1,665.8	1,745.6
Total Expenditures Before Offsets	\$ 1,388.2	\$ 1,496.1	\$ 1,562.7	\$ 1,671.8	\$ 1,761.9	\$ 1,855.9	\$ 1,940.4	\$ 2,054.4	\$ 2,198.3	\$ 2,455.5	\$ 2,696.5	\$ 3,029.0	\$ 3,418.6	\$ 3,866.2	\$ 4,312.9
5. New Expenditure Offsets⁶															
Fare and Parking Increases	\$ -	\$ -	\$ (6.7)	\$ (13.6)	\$ (20.7)	\$ (28.0)	\$ (35.4)	\$ (43.0)	\$ (50.8)	\$ (58.8)	\$ (67.1)	\$ (75.5)	\$ (84.1)	\$ (92.9)	\$ (102.0)
Total Expenditure Adjustments	\$ -	\$ -	\$ (6.7)	\$ (13.6)	\$ (20.7)	\$ (28.0)	\$ (35.4)	\$ (43.0)	\$ (50.8)	\$ (58.8)	\$ (67.1)	\$ (75.5)	\$ (84.1)	\$ (92.9)	\$ (102.0)
6. Expenditures After Adjustments	\$ 1,388.2	\$ 1,496.1	\$ 1,555.9	\$ 1,658.2	\$ 1,741.2	\$ 1,827.9	\$ 1,905.0	\$ 2,011.4	\$ 2,147.4	\$ 2,396.7	\$ 2,629.5	\$ 2,953.5	\$ 3,334.5	\$ 3,773.3	\$ 4,210.9
7. Surplus/(Deficit)	\$ -	\$ 51.8	\$ 607.5	\$ 604.1	\$ 608.4	\$ 595.1	\$ 1,302.8	\$ 1,334.0	\$ 1,416.2	\$ 1,222.9	\$ 1,087.9	\$ 823.9	\$ 579.6	\$ 205.3	\$ (165.2)
8. Use of Surplus for Pay-Go Purposes ⁷	-	-	529.7	521.2	521.3	503.7	1,207.6	1,233.4	1,308.8	1,103.0	956.4	676.2	412.8	16.7	-
9. Net Surplus/(Deficit) - 5% Cap⁷	\$ -	\$ 51.8	\$ 77.8	\$ 82.9	\$ 87.1	\$ 91.4	\$ 95.3	\$ 100.6	\$ 107.4	\$ 119.8	\$ 131.5	\$ 147.7	\$ 166.7	\$ 188.7	\$ (165.2)
10. Cumulative Balance	\$ 180.0	\$ 231.8	\$ 309.6	\$ 392.5	\$ 479.5	\$ 570.9	\$ 666.2	\$ 766.7	\$ 874.1	\$ 993.9	\$ 1,125.4	\$ 1,273.1	\$ 1,439.8	\$ 1,628.5	\$ 1,463.2
11. Debt Service Coverage Ratio⁸	2.8	2.7	3.7	3.6	3.5	3.4	4.2	4.1	3.9	3.4	3.0	2.5	2.1	1.8	1.6

Note:

¹ Assumes consensus revenue as of November 10, 2015 as modified by Public Act 15-1 of the December Special Session for Fiscal Year 2016 through Fiscal Year 2020, Fiscal Year 2021 through Fiscal Year 2030 forecast based on assumptions from Section III of this report.

² Descriptions of all revenues sources can be found in Section VI of this report.

³ Includes: Rest Area Sponsorships, Highway Assistance Sponsorships, and Advertising Revenue

⁴ Fiscal Year 2016 based on the Office of Policy and Management's December 18, 2015 Letter to the Comptroller. Fiscal Year 2017 per Public Act 15-244 as modified by Public Act 15-5 of the June Special Session. Fiscal Year 2018 through Fiscal Year 2030 expenditure forecast based assumptions from Section III of this report and from estimates of the *Let's Go CT!* transportation infrastructure program as of December 1, 2015.

⁵ Based on the *Let's Go CT!* estimated debt issuance table found in Attachment C of this report.

⁶ Increases in fare, parking and other revenues are used to offset budgetary expenses.

⁷ Surplus cap of 5.0% of total expenditures. All excess surplus will be used to pay for projects in the ensuing fiscal year offsetting the need to borrow.

⁸ The ratio of Revenues After Adjustment to total debt service for that fiscal year.

Section IX. Conclusion

When the Governor made clear his intentions to focus on improving the transportation infrastructure in Connecticut, he took on an issue that has eluded many governors and legislatures across the country for decades. Our nation's infrastructure is reaching a crisis point: systems built in the 1950s and 1960s boom-time of federal highway and transit investment are reaching the end of their useful life, oil prices are tumbling and depressing tax receipts for states, and generational preferences and disruptive technologies are poised to upend the transportation system that has existed for the past half century.

Let's Go CT! is a blueprint for what the future of Connecticut might look like, but it is only one part of the equation. Behind the \$100 billion capital plan are CTDOT employees, who will need to execute the momentous projects on the horizon, the increasing operational costs to run a safe and reliable commuter rail network and urban and suburban bus system, and the growing investment that will ultimately need to be funded. These expenditures must all be paid for by the limited resources in the STF in order to have a properly functioning transportation system, and the recommendations included in this report have taken them into consideration.

The options provided in this report lay out a path for Connecticut to achieve the vision in *Let's Go CT!*, but they are just some of the many options available to the state. Continuing to address the backlog of transportation needs will not be easy and cannot be done through bonding alone. The recommended revenue options will fund the STF through the year 2030, the halfway point of *Let's Go CT!* If the state has the courage to take on some of the policy reforms included in this report, it will see costs go down, efficiencies increase, and the revenues offered will be able to take the state beyond the first 15 years of the *Let's Go CT!* program. Failure to continue the modernization already underway at CTDOT, will greatly impair the state's ability to accomplish this much-needed investment in its transportation infrastructure; the ability to execute major capital projects that far exceed anything ever attempted by CTDOT will not be possible without continued project delivery enhancements and operational reforms.

We have presented a number of revenue options in this report. While some are changes to existing revenue streams, others represent shifts in philosophy on how the State approaches raising the revenue necessary to undertake such a large scale transportation vision. When looking at the needs identified in the 30-year program and recognizing that nearly two-thirds of the costs are attributed to preservation of existing assets, it is clear the state must not fail in this endeavor. Connecticut must act. Difficult choices will need to be made by the Governor, the General Assembly, and the citizens of Connecticut. But, the question we would pose is this: do Connecticut's citizens want the state to continue to function and be competitive in an increasingly mobile and global economy? If the answer is yes, then they must be willing to invest in that competitive edge. An infrastructure preservation, enhancement and congestion reduction transportation program is undoubtedly the key to Connecticut's future success. Without such a program, the state has little chance at successfully competing in the near future and growing its economy. Connecticut cannot afford to do nothing.

Attachment A

Summaries of Transportation Finance Panel Meetings & Presentations

April – Governor welcomed members of the panel with opening remarks, followed by Panel introductions; Presentation by Commissioner Jim Redeker (CTDOT) on state of Connecticut’s infrastructure and specifics of *Let’s Go CT!*; presentation by Secretary Benjamin Barnes (OPM) on state of STF, revenue projections, and estimated future funding gap; discussion of panel on processes & procedures for moving forward.

May – Presentation by Senate Minority Leader Len Fasano and Rep. Christopher Davis on the Republican plan for funding transportation needs and their opposition to both tolling and any tax increases; presentation by Commissioner Catherine Smith (DECD) on the importance of transportation infrastructure for the state’s economic vitality; presentation by Rep. Tony Guerrera (Chairman of the General Assembly’s Transportation Committee) on the importance of properly funding and fixing Connecticut’s transportation infrastructure; comments by Rep. Tom O’Dea (Ranking Member of the General Assembly’s Transportation Committee); Panel discussion on the next meeting’s public forum in New Haven.

June – Presentation by Samara Barend (AECOM) on P3s, the different P3 models that exist, and important P3 considerations; presentation by Michael Likosky (32 Advisors) on P3 considerations for government, financial institutions, and design-construction firms; presentation by Senator Martin Looney suggesting areas of interest and other recommendations for the Panel’s discussions; presentation by Mark Morehouse (William Blair & Company) on important aspects of P3s, successful P3s in neighboring states, and the keys to their successes; presentation by Professor Jonathan Peters (The College of Staten Island) on the importance of proper financing and reviewing the collection cost of any new revenue source; presentation by Joseph Seliga (Mayer Brown) on the importance of having a proper legal framework in place when engaging in P3s and knowing when a project is right for a P3; the meeting was then opened for public comments, and seven citizens, who signed-up, testified on issues of importance to them and/or the industries they represented; the Panel then reintroduced invited speakers and engaged them in a Q&A session on the various aspects of P3s.

July – Presentation by Pat Jones (IBTTA) on tolling as a possible source of infrastructure funding; presentation by Ananth Prasad and Kevin Hoeflich (HNTB) on transportation funding options, an overview of tolling as one of those options, and the importance of maximizing revenue from non-toll and non-tax revenue sources; presentation by Jack Basso on a variety of transportation revenue options, including VMT fees; presentation by Eric Weinstein (Department of Revenue Services), Tim Sullivan (DECD), and Tony Roberto (Connecticut Innovations) on Tax Increment Financing.

September – Chairman Staples opened the meeting by announcing that Governor Malloy extended the Panel’s deadline until the end of the year; presentation by Tom Maziarz (CTDOT) and Glen Weisbrod (Economic Development Research Group) and discussion on the Economic Impact Analysis of select *Let’s Go CT!* projects and corridors (the widening of I-95 and the widening of I-84); presentation by Brian

Tassinari (OPM) on the updated STF revenue estimates, as a result of oil prices and market conditions; the presentations were followed by general discussion regarding the Panel's next steps.

November – Presentation by Tom Maziarz and Rich Armstrong (CTDOT) and discussion of select *Let's Go CT!* capital projects (reconstruction or rehabilitation of the Hartford Viaduct and reconstruction of the Waterbury Mix-Master) and possible construction strategies; presentation by Tom Maziarz (CTDOT) and Steve Fitzroy (Economic Development Research Group) and discussion on the Economic Impact Analyses complete for these same *Let's Go CT!* projects (the Hartford Viaduct and the Waterbury Mix-Master), as well as the enhancements proposed for the New Haven Line.

Attachment B

Ten Year Historical Amounts for Major Revenue Sources of the Special Transportation Fund as of FY2014

History of the Motor Vehicle Fuels Tax Collection

<u>Fiscal</u> <u>Year</u>	<u>Gasoline</u> <u>Rate(¢)</u>	<u>Diesel</u> <u>Rate(¢)</u>	<u>Collection</u>	<u>Growth</u>
2005	25.0	26.0	\$483,797,382	4.2%
2006	25.0	26.0	\$480,867,798	-0.6%
2007	25.0	26.0	\$478,250,020	-0.5%
2008	25.0	37.0	\$495,122,768	3.5%
2009	25.0	43.4	\$495,024,644	0.0%
2010	25.0	45.1	\$503,635,414	1.7%
2011	25.0	39.6	\$483,526,139	-4.0%
2012	25.0	46.2	\$492,794,802	1.9%
2013	25.0	51.2	\$501,269,424	1.7%
2014	25.0	54.9	\$508,057,833	1.4%

The Motor Vehicle Fuels tax (MFT) was first established as a Special Transportation fund revenue source in fiscal year 1985 and is the largest revenue source for the fund. The tax is levied on all motor fuel sold in Connecticut, with separate tax per gallon rates for both diesel fuel and gasoline. As has been shown in Table 3, the gasoline portion of the MFT has remained flat at 25 cents per gallon for over a decade. Diesel, the major driver of revenue growth over the last 10 years, is set annually by the Department of Revenue Services based on the sum of (C.G.S. 12-458h):

1. A base rate of 29 cents per gallon
2. Calculation of the average wholesale price for the Hartford/Rocky Hill and New Haven areas as reported by the Oil Price Information Service from April 1st to March 31st of the prior year multiplied by the Oil Companies tax rate (currently 8.1%)

History of the Oil Companies Tax Collection

Fiscal		Gross	STF	STF
<u>Year</u>	<u>Rate</u>	<u>Collections</u>	<u>Deposit</u>	<u>Growth</u>
2005	5.0%	\$179,047,466	\$13,000,000	23.8%
2006	5.8%	\$279,590,420	\$43,500,000	234.6%
2007	6.3%	\$309,403,945	\$141,000,000	224.1%
2008	7.0%	\$367,783,240	\$127,800,000	-9.4%
2009	7.0%	\$267,813,157	\$141,900,000	11.0%
2010	7.0%	\$264,917,723	\$141,900,000	0.0%
2011	7.0%	\$334,462,843	\$165,300,000	16.5%
2012	7.0%	\$372,966,634	\$226,900,000	37.3%
2013	7.0%	\$374,925,895	\$199,400,000	-12.1%
2014	8.1%	\$416,109,657	\$380,700,000	90.9%

The Oil Companies tax, also known as the Petroleum Products Gross Receipts Tax, is levied on the gross earnings from the first sale of petroleum products by distributors in the state of Connecticut. Up until June 30, 2015, the total amount of oil companies revenue collected was deposited into the state's General Fund and a set amount, determined by state statute, was transferred to the Special Transportation fund. Starting on July 1, 2015, all of the Oil Companies revenue will be deposited into the Special Transportation Fund.

History of Motor Vehicle Receipts Revenue

Fiscal		
<u>Year</u>	<u>Collection</u>	<u>Growth</u>
2005	\$233,851,818	6.7%
2006	\$227,261,155	-2.8%
2007	\$224,677,566	-1.1%
2008	\$225,524,482	0.4%
2009	\$220,780,735	-2.1%
2010	\$220,703,173	0.0%
2011	\$220,144,426	-0.3%
2012	\$235,446,219	7.0%
2013	\$234,483,769	-0.4%
2014	\$236,063,131	0.7%

Motor Vehicle Receipts (MVR) contains revenue collected from the issuing of motor vehicle licenses, motor vehicle registrations and other motor vehicle related fees/licenses. MVR were established as a revenue source for the Special Transportation fund in fiscal year 1985.

History of Licenses, Permits and Fees Revenue

Fiscal <u>Year</u>	<u>Collection</u>	<u>Growth</u>
2005	\$155,083,239	0.0%
2006	\$160,441,942	3.5%
2007	\$170,460,043	6.2%
2008	\$153,761,952	-9.8%
2009	\$142,430,802	-7.4%
2010	\$135,003,639	-5.2%
2011	\$135,453,360	0.3%
2012	\$135,974,435	0.4%
2013	\$137,283,583	1.0%
2014	\$138,390,185	0.8%

Licenses, permits and fees contains various revenue accounts not associated with the registration or operation of motor vehicles. This revenue source was established as a revenue source for the Special Transportation fund in fiscal year 1985.

Attachment C

Let's Go CT! Estimated Debt Issuance

Fiscal Year	Total Project Cash Flow Needs ¹	Less: Estimated Federal Funds ²	Less: Surplus Cap ³	Total Debt Issuance ⁴
2016	\$ 1,401,958,333	\$ 676,221,589	\$ -	\$ 725,736,744
2017	\$ 1,599,158,333	\$ 689,448,001	\$ -	\$ 909,710,332
2018	\$ 1,692,675,000	\$ 703,403,254	\$ -	\$ 989,271,746
2019	\$ 1,785,025,000	\$ 718,766,014	\$ 529,657,992	\$ 536,600,994
2020	\$ 1,833,208,333	\$ 734,756,621	\$ 521,178,484	\$ 577,273,229
2021	\$ 1,835,630,575	\$ 734,756,621	\$ 521,295,941	\$ 579,578,013
2022	\$ 2,333,640,956	\$ 734,756,621	\$ 503,730,890	\$ 1,095,153,445
2023	\$ 2,861,685,002	\$ 734,756,621	\$ 1,207,564,123	\$ 919,364,258
2024	\$ 3,446,859,851	\$ 734,756,621	\$ 1,233,441,596	\$ 1,478,661,634
2025	\$ 4,341,243,126	\$ 734,756,621	\$ 1,308,799,274	\$ 2,297,687,232
2026	\$ 4,534,320,010	\$ 734,756,621	\$ 1,103,034,546	\$ 2,696,528,843
2027	\$ 5,517,186,775	\$ 734,756,621	\$ 956,386,660	\$ 3,826,043,494
2028	\$ 5,707,119,401	\$ 734,756,621	\$ 676,208,850	\$ 4,296,153,930
2029	\$ 6,477,882,436	\$ 734,756,621	\$ 412,844,070	\$ 5,330,281,745
2030	\$ 4,937,395,435	\$ 734,756,621	\$ 16,675,528	\$ 4,185,963,286
Total	\$50,304,988,567	\$10,870,161,689	\$ 8,990,817,955	\$ 30,444,008,924

Notes:

- ¹ The cash flow needs of both *Let's Go CT!* and on-going transportation capital projects.
- ² Estimated federal match on certain projects. Please refer to Assumptions in Section III of this report.
- ³ Excess surplus, Line 8 in Table 14 of this report, as a result of the Surplus Cap (please refer to "Surplus Cap" in Section VIII of this report) which will be used to offset cash flow needs in the ensuing fiscal year.
- ⁴ Total Debt Issuance was used to calculate debt service for the *Let's Go CT!* forecast.