

Transportation Capital Infrastructure Program Annual Capital Plan Report



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Prepared by the Office of Engineering

Chief Engineer's Office

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The CTDOT Capital Program

Overview

The mission of the Connecticut Department of Transportation (Department) is to provide a safe and efficient intermodal transportation network that improves the quality of life and promotes economic vitality for the State and the region. In order to achieve this mission, the goal of the CTDOT Capital Program is to gather and spend every available dollar of capital funding to rebuild, replace, or improve the State's transportation infrastructure. Each year, the Department develops a plan to design road, bridge, public transportation and other transportation facilities to acquire the necessary property interests and to construct those projects in a way that uses or leverages all of the available State and Federal funding.

The specific purpose of this report is to inform the Department's stakeholders about the past 2016 Capital Infrastructure Program (for State advertised and administered contracts) and to outline the plan for 2017 and beyond. The report includes historical achievements, trends, major issues, and the Department's plan to address critical transportation needs, as well as address current challenges associated with maintaining our aging transportation infrastructure. The development of the report encompasses a collaborative effort by the Department with various stakeholders, such as Metropolitan Planning Organizations (MPOs) and elected officials. This document is intended to supplement the project and funding information that is provided in the forward-looking *FFY 2017–2021 Capital Plan*. Figure A is the financial summary page from the Plan and a useful reference throughout this document. Reference is also made in this document to the Governor's 2015-2016 Digest of Administrative Reports (<http://das.ct.gov/cr1.aspx?page=17>). Readers are encouraged to review CTDOT's portion of the report for more detailed information regarding CTDOT's 2016 accomplishments.

The *Let's GO CT!* vision, and more specifically, the newly legislated 5 year Ramp-Up toward that vision, is beginning to change the dialogue regarding the future of transportation infrastructure in Connecticut. The Department began the process over this past year of implementing the Governor's *Let's GO CT!* initiative. The 5 year Ramp-Up plan included \$2.8 billion in additional bond authorizations, including an additional \$275 million in Federal Fiscal Year (FFY) 2016 and \$520 million in FFY 2017 (See Figure B). Maintaining a state of good repair of our current assets is our priority for attention and funding. However, the current Ramp-Up funding program, and the potential to expand annual investment levels even beyond the increased Ramp-Up levels, has this agency planning for a very aggressive multi-faceted, multi-modal, system enhancement consistent with the needs of the travelling public. Future capital projects may include extensive capacity improvements on highway and transit systems, depending on the breadth of new state capital funding levels. The magnitude of these capital projects would dwarf historical investment levels. As shown in Figure B, the Department assumes that as the 5 year Ramp-Up ends in FFY 2020, the State's Regular Bond Program will increase by approximately \$700 million in FFY 2021 to reflect the transition to a "ramped-up" regular program.

Utilizing the FFY 2016 *Let's GO CT!* funds, the Department began an engineering review of the I-95 corridor; started the preliminary design process for I-84 Exits 3 through 8 in Danbury; and initiated planning for the replacement of the I-84 / Route 8 interchange in Waterbury. Funding was also made available for Rail and Bus initiatives; such as, funds for the creation of the new rail service running from New Haven to Springfield, MA known as the "Hartford Line"; purchasing new dual mode rail cars to operate throughout the state; the deployment

of a state-wide live real-time bus information system; and improvements to Paratransit Services. More detailed information on *Let's GO CT!* is available at <http://www.transformct.info>.

In the recently concluded FFY 2016, the Department programmed approximately \$2.20 billion for all transportation modes – road and bridge, railroad and bus and other public transit - in the Capital Program for 2016. This included \$1.02 billion for bus and rail, and \$1.16 billion toward the state's highway and bridge infrastructure. There was also roughly \$25.80 million programmed toward the Maritime Capital Program, and \$22.28 million for Facilities. The Department anticipates utilizing approximately \$2.25 billion in total Capital Program funding for all transportation modes in FFY 2017. This includes available funding from *Let's GO CT!* as well as regular and State and Federal funding. This amount includes approximately \$933 million for bus and rail, \$1.29 billion toward the state's highway and bridge infrastructure, and \$24.16 million in support of the Facilities Program (Please refer to Figure A).

The Department strives to improve the efficiency of the development and construction of its projects, called "Project Delivery". Improving Project Delivery requires the Department to appropriately size its staffing for the effort and to expand the revenue sources when possible. Project Delivery improvement includes innovative construction techniques and a variety of process improvement tools (See Section, "Improving Project Delivery" for a more detailed discussion).

The state's commitment to an increased investment level in our multi-modal transportation infrastructure will lead toward improving our highway and transit system, while also supporting the economy and business of Connecticut. Figure D charts the Department's increasing capital outlays that support jobs in the region. These initiatives represent significant investment in Connecticut's infrastructure. It should be noted that while there are increased investment levels in our multi-modal transportation infrastructure, capital project expenditures also continue to rise.

Although the state has significantly increased its investment levels in recent years for all transportation modes, a long term dependable Federal program, and State program beyond 2020, is imperative in our efforts to plan capital transportation investments.

Asset Management

The Department is in the process of developing Transportation Asset Management Plans (TAMP) for highway related transportation assets and public transportation assets. Asset Management is the mechanism by which the Agency strategically invests in its infrastructure to achieve the Long Range Transportation Strategic Plan objectives in a fiscally responsible way that maintains safety, efficiency, and expansion. The TAMP documents will build on and expand current CTDOT initiatives in the area of Asset Management. The development of the TAMP is a critical priority for the Department. It will help CTDOT comply with the federal legislation Moving Ahead for Progress in the 21st Century (MAP-21) and Fixing America's Surface Transportation Act (FAST) legislation; and it also will guide future prioritization of projects, and CTDOT in its endeavor to deliver better asset performance, while also managing risks. The Department has used certain aspects of the Asset Management Program, including performance metrics, for a number of years. However, the expanded federal requirement is intended to provide a more detailed and objective basis for Capital Program development.

Improving Project Delivery

Delivery of completed projects on or before schedule, on or under budget, and of the highest quality is one of the top priorities of the Department. Improving project delivery is an important element of expanding the capacity of the Department's Capital Program. Every improvement in project delivery increases the Department's capacity for more projects (which equates to more jobs).

One tool the Department has used in improving project delivery is the LEAN, or Kaizen process. Some areas that saw improvement in 2016 included improvements to the traffic signal design process, the List Bridge Program process, Rights of Way concurrence and deed writing, Rights of Way closing and condemnation processes, construction time overages, DOT/DEEP Permitting, the management of the Disadvantaged Business Enterprise (DBE) Program. The Department also realized efficiencies through initiatives in e-construction (paperless construction delivery process.)

The Department continued to advance its ability to utilize alternating contracting methods in 2016. This included establishing an Alternate Contracting unit within the Office of Construction to coordinate Department efforts. The effort was a result of the Department successfully obtaining authority from the Legislature in 2015 to utilize both design-build as well as construction-manager-at-risk contracts for advertising projects.

The following are some examples of project delivery improvements being implemented at the DOT:

- Accelerated Bridge Construction
- Alternative Project Delivery
 - Design Build
 - Construction Manager at Risk (CMR)
 - Construction Manager / General Contractor (CM/GC)
- Local Transportation Capital Improvement Program (LOTICIP)
- Master Municipal Contracts
- 3-D Engineering modeling
- e Construction

The Department's goal is to develop a manageable collection of "shovel ready" projects designed and ready to bid expeditiously when new revenue sources become available or if other project schedules slip.

Financing of the Capital Program

Available Funds

The Capital Program is funded with a mix of State and Federal funding. Historically, Federal monies accounted for 70-80% of the Department's capital program, this changed in recent years with an influx of State bond funding for programs such as the Fix-it-First Road and Fix-it-First Bridge programs, and the Local Transportation Capital Improvement Program (LOTICIP). Further state investment in transportation is occurring as a result of the *Let's GO CT!* Ramp-Up legislation. These additional state investments have increased the state participation percentage to roughly two-thirds of the total Capital Program funding (See Figure C).

Available Capital Program funding includes any carryforward balances, or funds made available in a previous year but not obligated to a specific project. It is common for funding to be made available for use on specific projects that may take multiple years to construct, or for items such as rail cars or busses that may take more than two (2) years to be delivered after a purchase order is issued. That is true for 2017. Therefore, the Department will not spend all currently available capital funds in 2017. As a result, roughly \$190 million is expected to carry over to the next fiscal year cycle (See Figure A). Further details regarding planned expenditures in 2017 follow in the Capital Construction Program discussion.

Available Capital Program funding can also include funds released from previously completed projects, which are available to re-use.

Expenditure of Funds

The Department is often questioned on the appearance that it is not fully utilizing state money that is available to it for its transportation program. Special Tax Obligation (STO) bond authorizations are the main source of state funding for the DOT Capital Program, so in order to understand delay in the spending cycle, it is important to understand the bonding process. It begins when the state Legislature passes bond *Authorizations* that allow the Department to utilize bond funds for transportation purposes. Before the Department can utilize the bond funds, the State Bond Commission (SBC) must *Allocate* the funds at one of its monthly meetings. After the SBC has approved the allocation of funds, the Department can request the funds be *Allotted* to a specific project, through the submission of an allotment request to the Office of Policy and Management (OPM). Once OPM has approved the allotment request and forwarded it to the Office of the State Comptroller, where it is posted in CORE, the funds are available for expenditure.

The Department's practice is to ensure that *Authorization, Allocation and Allotment* have occurred prior to advertising and awarding projects. The Department seeks to have 100% of construction funds approved before advancing into the construction phase. This practice results in the appearance that money is not being spent since the actual draw-down of funds during design or construction will not occur until the work is completed and accepted. Similarly, significant portions of payments for the purchase of rail cars and busses are not made until the vehicle is delivered and accepted. Undertaking large capital projects such as the reconstruction of I-84 in Waterbury at a cost of \$342.8 million, or the replacement of the West River Bridge connecting New Haven and West Haven at a cost of \$182.9 million, can leave the appearance that the Department has large amounts of unspent funds that are not being utilized, when in reality the funds are committed to on-going design work, or soon to be executed capital infrastructure construction projects.

The sale of bonds does not occur until the money is actually required to pay project costs. The amount of bonds sold for the Capital Program is based on the estimated cash flow requirements of current projects, not on the amount of bond authorizations or bond allocations. Bonds are sold to investors and bond proceeds are used to pay for project costs. The cost to the State (the taxpayers) occurs as the State makes principal and interest payments on the bonds that were sold. Bonds sold are typically 20-year bonds, which means that 1/20th of the cost is paid back the first year after the bonds are sold, 1/20th the second year, and so on, for 20 years. The funding required to make the payments is called debt service. The debt service for the Capital Program is paid for with revenue from the Special Transportation Fund (STF). The STF is funded with state gas taxes, motor vehicle license, registration and other fees.

Role of Federal Funds

While State funding has taken on a more prominent role in recent years with the increase in State bonding authorizations, Federal funds still play a critical role in transportation funding in Connecticut. We have four major sources of Federal funding, all of which fall under the umbrella of the US Department of Transportation (USDOT): the Federal Transit Administration (FTA), the Federal Highway Administration (FHWA), the Federal Railroad Administration (FRA) and the National Highway Traffic Safety Administration (NHTSA).

In December 2015, Congress passed the FAST Act. The five (5) year bill provided \$305 billion for surface transportation programs for federal fiscal years 2016 - 2020. The FAST Act provides states with predictable formula funding for five (5) years, and provides an average annual growth of 2.9% in the overall funding levels. The Act's five (5) years of predictable formula funding enables the Department to better manage long-term assets and address the backlog of state of good repair needs.

Total new Federal funding received for FFY 2016 was \$716 million. The Capital Plan is based on the projected FFY 2017 level of Federal funding of \$693 million. This includes anticipated FHWA, FTA, and NHTSA funding. The FFY 2016 funding includes \$45 million of additional funding that was received from FHWA near year-end as part of an annual redistribution of additional funding that the Department successfully applied for and was granted. The FFY 2017 funding level assumes a more typical \$20 million of additional funding at year end as a result of redistribution.

Federal earmarks and discretionary program funding have played a significant role in Connecticut's Capital Program in the past. Examples include: highway funding for the Q Bridge; Intercity and High Speed Rail funding for the New Haven-Hartford-Springfield Rail Program; and Federal Transit's new start funding for CT*fastrak*; as well as funding for the Power Upgrade Project in New Haven Yard; and funding for the WALK Moveable Bridge replacement through FTA's Emergency Relief Program for recovery, relief and resilience efforts in areas affected by Hurricane Sandy. To date the federal TIGER grant program has helped fund local initiatives in Stamford and New Haven. Whether such funding will be a significant source of future federal aid has yet to be determined as the 2017 Congress debates reverting back to utilizing the former programs.

The data presented in this report is based on the FFY cycle (October 1 to September 30) rather than the Calendar Year or the State Fiscal Year (SFY – July 1 to June 30) because of the major role the Federal funds play and the fact that the FHWA funds must be fully utilized each year by the end of the FFY.

Management of FHWA Funding

The FHWA is the largest Federal funding source for the Department's transportation program and is the primary Federal funding source for highways and bridges. With annual funding from FHWA exceeding \$500 million, the strategic management and utilization of FHWA funds is critical to the Department's Capital Program.

FHWA regulations require the Department to "obligate" or commit all regular formula funds authorized for use in any given FFY in that specific year. The Department has consistently obligated all of its available Federal funding. This makes the Department eligible to ask for more funds prior to the end of the fiscal year. In fact, over the last five (5) years, the Department received and obligated \$112 million in additional Federal funds that came from other states or unused obligations and Federal holdbacks. In FFY 2016, the Department was extremely successful in its request, receiving and obligating \$45 million over and above its original allocation of Federal monies.

The USDOT requires the recipients of Federal funds to develop a finance plan to complete a project. To achieve this, the Department uses a Federal financial tool called Advance Construction (AC), particularly for large multi-year programs, which essentially provides for a phased approach to project funding. This mechanism allows the state to request and receive approval to construct a Federal-aid project in advance of the availability of authorized Federal funds.

AC is a cash flow tool that amounts to borrowing against future Federal transportation funding. It should be noted that these funds are only guaranteed to the extent of the available future Federal budgets in any given year. The AC mechanism was used aggressively in 2010 to progress work on the important I-95 New Haven Q Bridge Program without affecting funding for the rest of the construction program. The Department has since been able to move back from those higher levels of such "borrowing." However, with the FFY 2015 award of the \$342.8 million I-84 reconstruction project in Waterbury, the Department has placed another large commitment against future Federal funding. Figure E shows the historical and planned levels of AC authorization. Note that the AC levels shown for future years reflect specific projects identified in the Capital Plan and therefore subject to significant change (i.e. additions) as larger projects which need phase financing are committed. For FFY 2018 through FFY 2021, approximately 35 projects will be financed with AC conversions. This represents over 50% of the annual highways funding being used for ongoing construction projects. This in essence presents the real possibility that the Department may be fiscally constrained from maintaining its annual project advertising level, which has averaged 90 projects per year for the last five (5) years.

Management of FTA Funding

The Federal Transit Administration (FTA) is the dominant Federal funding source for the Department's Public Transportation Infrastructure program. With annual funding from FTA exceeding \$170 million, through five (5) annual program apportionments, the strategic management and utilization of FTA funds, paying close attention to funding eligibility requirements, is critical to the Public Transportation Capital Program.

FTA requirements and procedures for the management of all FTA grant programs are governed by FTA's Master Agreement, the official FTA document containing Federal requirements applicable to the FTA recipient and the administration of FTA grants. The Master Agreement is incorporated by reference and made part of each FTA grant.

The Department is the designated recipient for all FTA programs and is responsible for service and planning decisions for rail, fixed-route bus and complementary paratransit service in the urbanized areas of the state.

For most regular formula funds authorized, FTA allows three (3) years for funds to be obligated; therefore the funding may be carried forward. This allows for larger projects to be financed with two (2) or more years of apportionment. Additionally, as the designated recipient, the Department programs and plans the formula funding from Section 5307 (the largest FTA source of funds) and creates a funding pool from which capital projects in regions around the state are funded. The Department does not utilize a formula to reallocate Section 5307 formula funds to the bus operators, rather the funding pool allows for a cooperative, non-discriminatory allocation of funds to different regions based on annual needs. The disbursement of these funds is approved by the MPOs in the Statewide Transportation Improvement Program (STIP). Sub-area split agreements that reflect the annual disbursement of funds by region are created by the Department and executed by the operators from each region. This program allows local transit operators to fund major projects for which they may otherwise have never accumulated adequate funds.

As with FHWA funding, FTA also requires the recipients of Federal funds to develop a finance plan to complete large projects. To achieve this, the Department uses a Federal financial tool called Pre-Award Authority, particularly for large multi-year programs, which essentially provides for a phased approach to project funding. This mechanism allows the state to request and receive approval to construct a Federal-aid project in advance of the availability of authorized Federal funds.

Components of the Capital Program

Public Transportation

The Department manages a multi-modal network that includes rail, bus, and paratransit services through contracts with transit districts, private bus operators, management companies and railroads. It also directly operates two Connecticut River ferry services. The state supplies all or most of the capital assets (rolling stock, maintenance facilities, etc.) required in order to operate these various services. The Bureau of Public Transportation provides oversight for the Department of these operators as well as public transit funding for urban, small urban and rural transit providers. These services are the backbone of the state's economy, transporting 85 million people per year.

Through the *Let's GO CT!* Program, the state is making significant investments in upgrading existing routes and services, while building new infrastructure and introducing new services such as the Hartford Line and a state of the art smart card fare system. These improvements are part of a broader strategy to improve the reliability and capacity of existing services, while building a more flexible and integrated multimodal transportation system, one that will help businesses thrive and improve the quality of life for residents and visitors alike.

The Department prioritizes public transportation investments that ensure public safety, restore the infrastructure to a state of good repair, improve the customer experience, and promote economic development.

Highway and Bridge

In developing the Highway and Bridge Capital Program, the Department strives to create a mix of projects that address the transportation mobility and safety needs of the entire state. We balance priorities using a variety of criteria such as Safety, System Preservation, Mobility Enhancements, Congestion Relief, and Criticality. The Department also strives to maintain a balance between the urban and rural programmed work.

The Department's overriding focus remains on the preservation of the existing infrastructure. This means maintaining the State's road, bridge and transit facilities in a manner that ensures they last beyond their design life. This is known as a "State of Good Repair."

Complete Streets

Every personal trip includes a movement without a motor vehicle – perhaps walking, biking or using a wheelchair. The Department's policy is to enable safe, convenient and comfortable travel for all citizens whether they are on foot, bicycle or other mobility device. The Department is committed to providing the balance of modes that Connecticut's citizens and economy require. This concept of serving all transportation modes in an integrated manner is called "Complete Streets."

The Department is implementing a Complete Streets Policy Department-wide through training, design guidance, funding, data collection, and plans to monitor the output through performance measures. Complete Streets is a means to provide safe access for all users (pedestrians, persons using mobility aids, bicyclists, transit users and vehicle operators) by providing a comprehensive, integrated, and connected multi-modal network of transportation options. It is the policy of the Department to consider the needs of all users, of all abilities and ages, in the planning, programming, design, construction, retrofit and maintenance activities related to all roads

and streets as a means of providing a safe and efficient transportation network that enhances the quality of life and economic vitality.

Connecticut law requires a comprehensive Complete Streets approach to the planning, design, construction and operation of public roads. Also, the law (Public Act No. 09-154) specifically requires that the Department expend at least 1% of the total annual budget for projects that provide facilities for cyclists and pedestrians. The Department has routinely exceeded this spending mandate. 3.0% of the program on average for the last five (5) years has been used to create walkways, bikeways, and various associated amenities.

The Department awarded 55 projects in SFY 2016 that included elements for pedestrians or bicyclists, such as sidewalks, ramps, pedestrian signals, push-buttons, signs, and pedestrian/bicycle trails. The total dollars expended for these items was approximately \$19.4 million, which was about 5.8% of the total funds awarded for the construction, restoration, rehabilitation, or relocation of roads in the state.

Safety

The Department has continued its efforts to drive down the number of fatalities and serious injuries of all users of Connecticut's highways. These efforts are directed by a Strategic Highway Safety Plan (SHSP) for Connecticut. The SHSP is a plan developed by all safety stakeholders, who collaborate on safety efforts and leverage resources. A new draft SHSP is under review by stakeholders; the Executive Committee is to approve it in 2017.

To further help reduce roadway fatalities and serious injuries on the local system; in 2017 the Department will work with two regional planning organizations to pilot a rural and an urban regional SHSP. The two initial regional SHSPs are expected to be finalized in 2018. Over the following few years, funding will be proposed for the remaining regional safety plans. These regional safety plans will provide the means to identify capital safety infrastructure improvements.

The Department has established a dedicated staff to run a highway safety program focused on implementing systematic transportation safety improvements. These types of projects focus on providing safety improvements over the entire transportation network and provide the highest safety benefit for each dollar spent. While improving the safety of the transportation network is part of every capital investment, the agency is striving to dedicate approximately \$8 million annually to this specific systematic approach. The work includes:

- **Rumble Strip Projects.** These are grooves in pavement that produce noise and vibration when tires make contact. They are a proven safety countermeasure to reduce lane departure crashes. 200 miles of centerline rumble strips on both local and state routes were installed in 2016. Another 160 miles of rumble strips (both centerline and shoulder) will be constructed in 2017 and a rumble strip project for 2018 construction is currently under design.
- **Statewide Pedestrian Warning Sign Project.** Pedestrian warning signs and associated plaques are being upgraded with a fluorescent yellow background and post delineator to enhance visibility, especially during dawn and dusk periods. A systematic initiative to replace these signs on state routes in Districts 3 and 4 began in 2016 and will continue into 2017. The design for Districts 1 and 2 will be completed in 2016 and constructed in 2017.

- Statewide Traffic Signal Clearance Interval Retiming Project. All state owned and maintained signals are being revised using current engineering methods for the yellow and red clearance intervals. The timings are being calculated and the signal plans are being revised.
- Statewide Horizontal Curve Project for Local Rural Roads. As documented in FHWA’s “Promoting the Implementation of Proven Safety Countermeasures”, improved horizontal curve delineation is proven to be a cost-effective approach to reducing roadway departures. The locations are being designed in a consistent approach, in accordance with national standards for the use of signs and pavement markings. The design for Districts 2 and 3 will be completed in 2016 and constructed in 2017. Districts 1 and 4 will complete design in 2017 with construction in 2018.

The Capital Construction Program

The Department's Capital *Construction* Program is a subset of the overall capital funding program. The Capital Construction Program is multimodal, with highway and bridge construction constituting the majority of the program. It does not include equipment procurement, such as the new M8 rail cars, or replacement buses. Nor does it include operating expenses or the costs of railroad support of projects. It does, however, include projects such as the catenary replacement program and rail station construction.

Connecticut's many infrastructure needs far exceed the financial resources to address them all. As a result, the first priority of the Capital Construction Program is preservation of our multimodal assets; maintaining them in a state of good repair. A formal Asset Management Program, currently under development, will assist in the decision making process for project selection going forward, as required by the USDOT.

For planning purposes, roughly 25% of the Capital Construction Program funding is utilized for preliminary engineering and the purchase of property rights for projects. The rest is planned for use in the construction phase. During FFY 2016, the Department bid 105 projects at roughly \$475 million in contract value. Contract value is equal to the actual bid amount of the approved low bidder, also referred to as contract bid amount. The \$475 million in contract value equates to nearly \$592 million in total construction costs the Department delivered last year, which includes inspection and other support services, as well as a contingency budget. During the FFY 2017, the Department anticipates bidding 87 projects at roughly \$570 million in contract value, or nearly \$710 million in total construction costs. The attached five (5) year Capital Plan contains information on specific projects, as does the documents, *Projects Scheduled for Advertising*, found on the Department's website: <http://www.ct.gov/dot/cwp/view.asp?a=1399&q=260048>

Figure F presents the historical project production levels, as well as the total construction cost for each year. The program has been expanding over the years, consistent with the increased transportation investment levels. While the Department has been benefiting from these increased investment levels, the full benefit of this increase has been offset by the increased cost of capital projects.

Mode Specific Accomplishments and Plans for the Future

Public Transportation Capital Program

Bus

The Bus Capital Program supports transit services around the state including state-owned *CTtransit* operations in eight urban areas, transit district-owned services in seven other urban areas, rural services in five areas around the state, and para-transit operations in 14 transit districts.

The *CTfastrak* system reached a milestone in 2016, carrying its four (4) millionth customers since opening day and routinely transporting more than 20,000 customers daily. Planning is underway to extend *CTfastrak* service from Hartford to Storrs, CT with upgraded park & rides along I-84 and new vehicles.

The New Fare Technology System project for *CTtransit* and the *CTfastrak* service continued in 2016 with the installation of new fareboxes at Hartford Garage. Testing and commissioning of the system continues with expected introduction of smartcards and payment by mobile phone in early 2017.

The Intelligent Transportation Systems (ITS) program that has been so successful for *CTfastrak*, will be extended to the entire *CTtransit* fleet statewide in 2017. This system enables vehicle location, real-time bus arrival prediction, variable message signage at stops/stations, and on-board automated bus announcements.

Contract awards were made for a major bus procurement that will replace about 40 percent of the *CTtransit* bus fleet over the next four years. During the course of 2017, 130 new buses will be delivered, mostly for use in the Hartford and New Haven Divisions.

Finally, construction of the new Waterbury *CTtransit* bus maintenance facility continued in 2016 and it is on schedule to be completed in 2017. The facility will accommodate the storage and maintenance of a mixed fleet of 40 buses and 39 smaller vehicles.

Rail

The Rail Capital Program includes capital projects necessary to support two existing commuter railroads, the New Haven Line (NHL) and Shore Line East (SLE) and the Hartford Line which will introduce new *CTrail* service in 2018. The overall program is intended to bolster service reliability and operational efficiency, replace outdated and undersized facilities and provide the capacity for growth in rail service.

Among the major priorities, the Department continues to work with Metro-North Railroad to implement the requirements of the Railroad Safety Improvement Act of 2008 (RSIA), principally installation of Positive Train Control (PTC) systems on the New Haven Line. The system is designed to monitor train activity, prevent collisions, and convey and enforce speed restrictions. Some features of the new PTC system, such as civil speed enforcement, will be introduced on New Haven Line trains in 2017.

The New Haven Rail Yard (NHRY) capital investment program continues with the opening of the Component Change-Out (CCO) Facility in 2016. This new facility is designed to maintain the fleet of M8 rail cars,

minimizing the time required to inspect and maintain the rail cars. In 2017, the Central Distribution Warehouse now under construction will automate parts distribution and inventory control.

In 2016, the Department awarded contracts to overhauled P40 and GP40 diesel locomotives, and worked with Metro-North Railroad to procure an additional 60 M8s for the New Haven Line. The Department also began work on a long term fleet strategy for the branch lines, Shore Line East and Hartford Line. The initial focus of the fleet plan will be the replacement of aging push-pull type equipment followed by the purchase of new dual-mode and electric locomotives.

In 2016, the first four (4) phases of the catenary replacement program, which includes installation of a new “constant tension” system, was substantially completed. The final phase of construction for the remaining section is underway with completion in 2018. This will complete the entire catenary replacement from the New York State line to New Haven.

Walk Bridge is the oldest movable bridge along the New Haven Line and Northeast Corridor in Connecticut, the busiest commuter rail line in the nation. In 2016, the Department with Metro-North Railroad completed shorter term repairs to Walk Bridge including upgrades to the drive system to open and close the movable pieces of rail that lock the bridge into place and other gear. The CTDOT continued to advance the design and engineering of a new Walk Bridge. The Walk Bridge Program now includes a new interlocking at CP 243 and improvements at Danbury Dock Yard.

Hartford Line is on schedule to start service in 2018. The ongoing capital project will increase top train speeds from 80 mph to 110 mph, and increase rail service to 17 round trips per day. It requires a substantial rebuilding of the rail bed including new culverts and bridges to support an additional railroad track.

Maritime

In 2016, the responsibilities of the Maritime Office transitioned to the new Connecticut Port Authority. Their capital funding passes through this Agency and on to the Port Authority for their use.

The Department continues to operate the two Connecticut River ferries as well as the State Pier in New London. The Department continues to make routine repairs to vessels and replace the pilings at Rocky Hill ferry. In 2016, public restrooms were built at the Rocky Hill ferry.

Highway and Bridge Capital Program

Highway and Bridge

The Capital Construction Program's emphasis is toward preservation of the Department's multimodal assets. The financial summary page of the *FFY 2017–2021 Capital Plan* is presented as Figure A, and is a useful reference for this discussion. The full document, however, presents specific projects and activities and the funding planned for those activities over the next five (5) year period.

The Highway and Bridge Construction Program is always the largest modal component of the Capital Construction Program. As noted earlier in this report, Connecticut is heavily dependent on Federal funding for all modes. The 2017 Capital Construction Program funding plan includes a variety of types of projects, from small local bridges and intersection improvements to the continuation of major projects. The Department works to develop a mix of projects that address the transportation mobility and safety needs of the entire state. This also produces a program that can be designed and constructed by firms of various sizes and specialties.

A sizeable portion of the money available for the 2016 Capital Construction Program was used on several major initiatives such as the completion of the replacement of the I-95 Pearl Harbor Memorial (Q) Bridge Project in New Haven; the ongoing construction and anticipated completion of the Moses Wheeler Bridge, located on I-95 in Stratford; the ongoing construction of a segment of the Merritt Parkway Corridor Improvement Project between Stamford and New Canaan; and the ongoing construction of the new I-95 bridge over West River in West Haven. Other Department major accomplishments for 2016 include the completion of the construction of the widening of I-95 from the Operational Improvement Project in Norwalk and the completion of construction of several projects in the Innovative Bridge Program, such as the Route 8 Design-Build Bridge Project (the first by CTDOT), located in Bridgeport, and various Accelerated Bridge Construction (ABC) Projects throughout Connecticut.

Looking ahead towards 2017, major new initiatives planned for this next year include repairs to the southbound Gold Star Bridge in New London; painting and structural repairs to the Commodore Hull Bridge in Shelton; rehabilitation of eight bridges within the I-84 Viaduct and surrounding area in Hartford; and the start of the next phase of the Merritt Parkway rehabilitation program in the Westport area. The Department will continue with planning for the replacement of the I-84 Hartford Viaduct; the Relocation and Reconfiguration of the I-91/Route 15 Interchange in Hartford; and the Reconfiguration of the I-91/I-691/Route 15 Interchange in Meriden. The Department will also continue to advance the ongoing corridor study for I-95. Design will continue on the Traffic Signal Removal on Route 9 in Middletown; the last remaining segment of the Merritt Parkway Corridor Improvement Project in Norwalk; and tunnel improvements to the Heroes Tunnel, located along Route 15 in Woodbridge and New Haven.

Construction will continue in 2017 on Phase 1 of the replacement of the railroad bridge over Atlantic Street in Stamford; reconstruction of I-84 in Waterbury; and the replacement of the West River Bridge in New Haven and West Haven. Construction will begin on the Merritt Parkway corridor improvement project that runs from Fairfield to Westport; rehabilitation of the northbound Gold Star Memorial Bridge on I-95 in Groton/New London; rehabilitation of the I-84/Route 8 Interchange in Waterbury; Phase 2 of the Atlantic Street railroad bridge project in Stamford; bridge rehabilitation work on the I-84 Hartford Viaduct in Hartford; and other various Innovative Bridge Program Projects throughout the state.

The Department's projected outlook for construction commitments in 2018 through 2021 are the Tunnel Improvements to the Heroes Tunnel on Route 15 in Woodbridge/New Haven; I-91 Resurfacing, Bridge, and Safety Improvements in Wethersfield; I-84 Resurfacing, Bridge, and Safety Improvements in Newtown; and superstructure replacement of the Rochambeau Bridge on I-84 in Newtown.

A more detailed discussion can be found in the Department of Transportation section of the Governor's 2015-2016 Digest of Administrative Reports (<http://das.ct.gov/cr1.aspx?page=17>).

Complete Streets

In 2016, some of the Department's major accomplishments were the ongoing construction of the Farmington segment from the Farmington Canal Heritage Trail Project; the ongoing construction of the Safety and Traffic Improvements on Route 4 in Farmington; the construction completion of the Cheshire segments from the Farmington Canal Heritage Trail Project; the construction completion of Mid-Block Crosswalks and Pedestrian Signals/Detectors on Route 137 in Stamford; the construction completion of the Hop River Trail / Airline Trail Extension, located in Windham; the ongoing construction of the Upgrade of Sidewalk Ramps on Route 847 in Wallingford; and the construction completion of the East Hartford Multi-Use Trail, in East Hartford. Looking ahead in 2017, major construction initiatives include the Charter Oak Greenway in Bolton/Manchester; the Park Street Streetscape Enhancements in Hartford; and the Farmington Canal Greenway in New Haven.

The projected outlook for construction commitments in 2018 through 2021 include the Farmington Canal Heritage Trail in Southington; the Hop River Trail Bridge Rehabilitation in Windham; the Putnam Bridge Walkway connecting Wethersfield and Glastonbury; the Hop River State Park Trail in Coventry and Columbia; the Moosup Valley State Park Trail in Plainfield and Sterling; and various projects that include elements for pedestrians or bicyclists, such as sidewalks, ramps, pedestrian signals, push-buttons, and signs.

Conclusion

The Department continues to develop its Capital Program consistent with sound fiscal planning. The Federal component of the transportation Capital Program has been stable for many years, and fortunately we now have a new long term commitment for FFY 2017 through FFY 2020 during the Ramp-Up, with hopes of maintaining the new funding levels in 2021 and beyond. The State capital funding stream is anticipated to stay strong and reliable as the Governor and legislature make infrastructure spending a priority for economic growth and job creation.

The Department of Transportation's goal is to optimize the capital funding for all its transportation modes and to improve continuously its ability to deliver maximum infrastructure improvements for each dollar expended. The Department achieves this in the following ways:

- The Department obtains and uses all of the Federal funds allocated to the state.
- FHWA has awarded Connecticut tens of millions of dollars of funds other states could not obligate on schedule.
- The Department attempts to use all of the State funds appropriated to its use as soon as practical.
- The Department works with the Governor's Office, the Legislature and other State and Federal agencies to identify and/or create additional sources of funding.
- Advance Construction is used to advance major projects while managing financial risk and deploying a mixture of projects to meet the many needs of the state.
- The Department manages the Capital Program by managing its resources in a manner that optimizes output. At the same time, the Program creates a variety of jobs and economic benefits: engineering, legal, public safety, materials production and sale, etc.
- Continuously improving Project Delivery increases the Department's capacity to provide the state with higher quality transportation improvements that maximize the state's return on its investment.

The Department will continue to balance the priorities for the Capital Program using a variety of criteria starting with an asset management approach to achieving a state of good repair. Beyond those financial demands, a significant portion of the Capital Program funding supports a few mega-projects, which can cost many hundreds of millions of dollars and last many years. These large investments can be critical to the state's economic survival; however, they put a strain on the Capital Program. Therefore, the Department must plan carefully to make the most of its financial resources.

Let's GO CT! allows for an expansion of the Department's program to address our infrastructure and the needs of the travelling public beyond a state of good repair. The influx of capital associated with the 5 year Ramp-Up through 2020 allows the Department to begin to prepare for an expanded Capital Program and provides necessary funding for public transportation expansion to include the purchase of new rail cars and busses. However, the Department's ability to move beyond the planning and design stage will continue to be limited until the financial plan to support the vision is more clearly defined by the state legislature.

Figures

Figure A

Department of Transportation FFY 2017 - 2021 Capital Plan

	FFY 2017	FFY 2018	FFY 2019	FFY 2020	FFY 2021
Highway and Bridge					
Available Funding:					
Federal Funding	\$ 645,306,382	\$ 631,828,727	\$ 614,211,291	\$ 606,367,144	\$ 605,942,144
State Funding (other than Ramp Up)	\$ 588,175,549	\$ 533,075,233	\$ 475,052,522	\$ 490,936,012	\$ 877,773,072
Ramp Up State Funding	\$ 273,204,985	\$ 178,360,000	\$ 334,194,715	\$ 274,789,715	\$ -
Total Funding	\$ 1,506,686,916	\$ 1,343,263,960	\$ 1,423,458,528	\$ 1,372,092,871	\$ 1,483,715,216
Less Funding for Programs not in Capital Plan	\$ (136,690,884)	\$ (99,155,167)	\$ (86,155,167)	\$ (86,155,167)	\$ (86,155,167)
Less Anticipated Carryforward to next year	\$ (76,309,918)	\$ (58,467,858)	\$ (158,386,045)	\$ (39,382,230)	\$ (13,486,580)
Total Funding Anticipate Utilizing	\$ 1,293,686,114	\$ 1,185,640,935	\$ 1,178,917,316	\$ 1,246,555,474	\$ 1,384,073,469
Programmed Amount (In Capital Plan)	\$ 1,293,686,114	\$ 1,185,640,935	\$ 1,178,917,316	\$ 1,246,555,474	\$ 1,384,073,469
Public Transportation					
Available Funding:					
Federal Funding	\$ 310,701,946	\$ 364,390,458	\$ 178,282,747	\$ 181,313,553	\$ 181,313,553
State Funding (other than Ramp Up)	\$ 317,810,382	\$ 284,996,851	\$ 239,122,500	\$ 239,659,001	\$ 569,536,671
Ramp Up State Funding	\$ 421,000,000	\$ 224,600,000	\$ 410,000,000	\$ 534,000,000	\$ -
Total Funding	\$ 1,049,512,328	\$ 873,987,309	\$ 827,405,247	\$ 954,972,553	\$ 750,850,224
Less Funding for Programs not in Capital Plan	\$ (2,702,044)	\$ (2,745,277)	\$ (2,799,084)	\$ (2,846,669)	\$ (2,846,669)
Less Anticipated Carryforward to next year	\$ (113,308,036)	\$ 0	\$ (0)	\$ (7,004,171)	\$ (21,841)
Total Funding Anticipate Utilizing	\$ 933,502,248	\$ 871,242,032	\$ 824,606,162	\$ 945,121,714	\$ 747,981,714
Programmed Amount (In Capital Plan)	\$ 933,502,248	\$ 871,242,031	\$ 824,606,162	\$ 945,121,714	\$ 747,981,714
Facilities					
Available Funding:					
State Funding	\$ 24,163,909	\$ 63,132,500	\$ 44,247,000	\$ 59,112,500	\$ 55,100,000
Less Anticipated Carryforward to next year	\$ -	\$ -	\$ -	\$ -	\$ -
Total Funding Anticipate Utilizing	\$ 24,163,909	\$ 63,132,500	\$ 44,247,000	\$ 59,112,500	\$ 55,100,000
Programmed Amount (In Capital Plan)	\$ 24,163,909	\$ 63,132,500	\$ 44,247,000	\$ 59,112,500	\$ 55,100,000
Total All Modes					
Available Funding:					
Federal Funding [1]	\$ 956,008,328	\$ 996,219,185	\$ 792,494,038	\$ 787,680,697	\$ 787,255,697
State Funding (other than Ramp Up) [2] [3]	\$ 930,149,840	\$ 881,204,584	\$ 758,422,022	\$ 789,707,513	\$ 1,502,409,743
Ramp Up State Funding [2]	\$ 694,204,985	\$ 402,960,000	\$ 744,194,715	\$ 808,789,715	\$ -
Total Funding	\$ 2,580,363,153	\$ 2,280,383,769	\$ 2,295,110,775	\$ 2,386,177,924	\$ 2,289,665,440
Less Funding for Programs not in Capital Plan [4]	\$ (139,392,928)	\$ (101,900,444)	\$ (88,954,251)	\$ (89,001,836)	\$ (89,001,836)
Less Anticipated Carryforward to next year [5]	\$ (189,617,954)	\$ (58,467,858)	\$ (158,386,045)	\$ (46,386,401)	\$ (13,508,421)
Total Funding (Federal and State) Anticipate Utilizing	\$ 2,251,352,271	\$ 2,120,015,467	\$ 2,047,770,478	\$ 2,250,789,688	\$ 2,187,155,183
Programmed Amount (In Capital Plan)	\$ 2,251,352,271	\$ 2,120,015,466	\$ 2,047,770,478	\$ 2,250,789,688	\$ 2,187,155,183

- [1] Includes current year federal funding, earmarked funds, as well as prior year carryforwards and funds released from completed projects that are available for reobligation. Earmarked funds are not shown as carryforward, but rather included in the year in which they are anticipated to be obligated. Federal levels are based on planned increases under FAST Act.
- [2] It is assumed that as the five-year ramp up ends in FFY 2020, the State's Regular Bond Program will increase by approximately \$700 million FFY 2021 to reflect the transition to a "ramped-up" regular program.
- [3] State funding amounts do not include Cost of Issuance, Aviations, Maritime, Town Aid Road or Highway and Bridge Renewal Equipment.
- [4] Programming for Federal Transit Sec. 5305 MPO Planning funds and Sec. 5337 funds for Hartford is not included in the Capital Plan. Programming for National Highway Traffic Safety Administration (NHTSA) funding is not included in the Capital Plan. Programming for LOTCIP and Local Bridge programs is not included in the Capital Plan as they are administered as grant programs.
- [5] Carryforward funds do not include earmarked funding as they are not available for general use.

Figure B

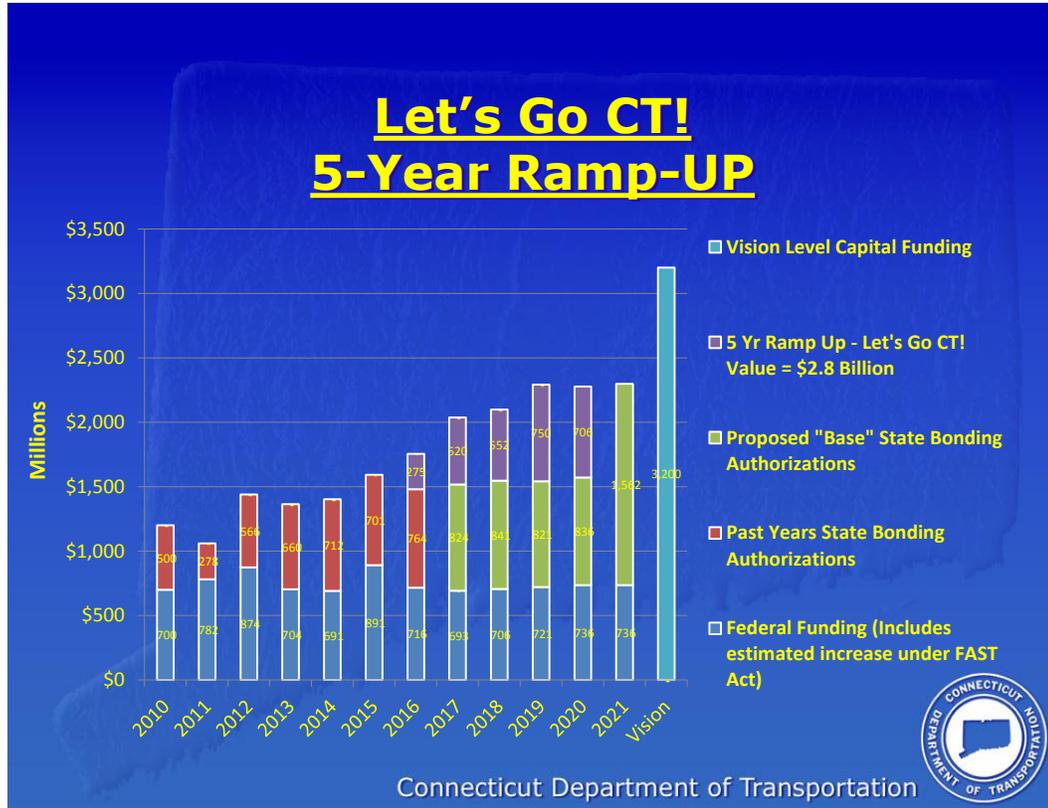


Figure C

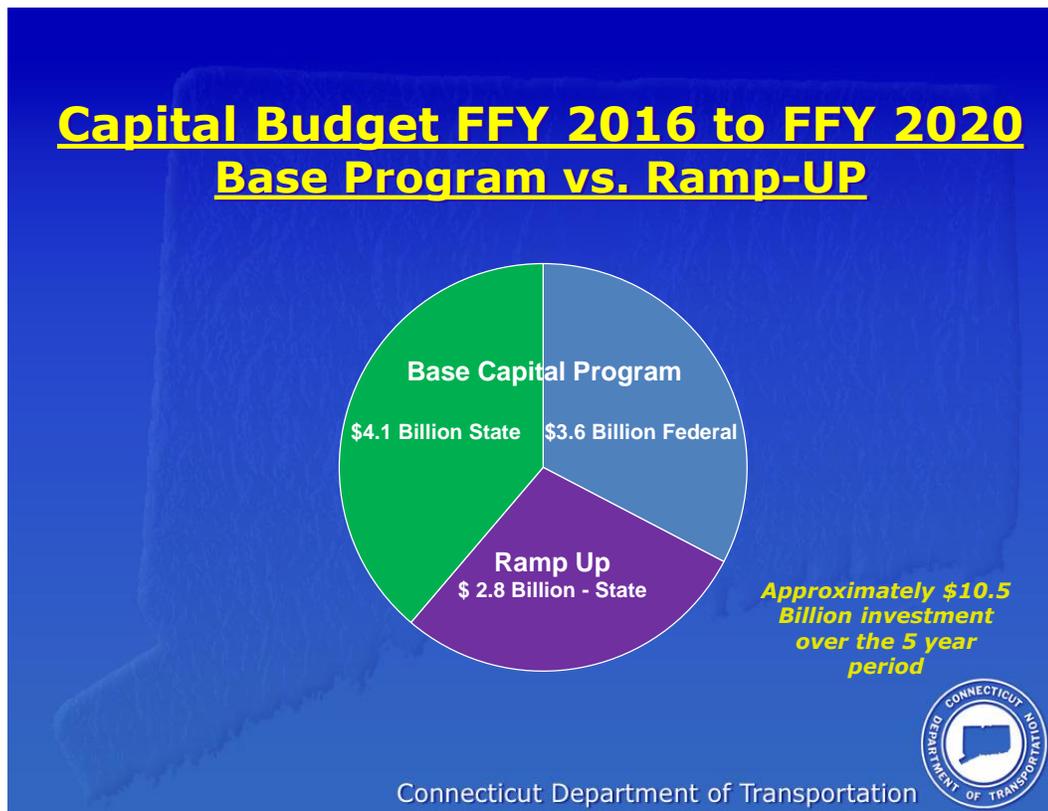


Figure D

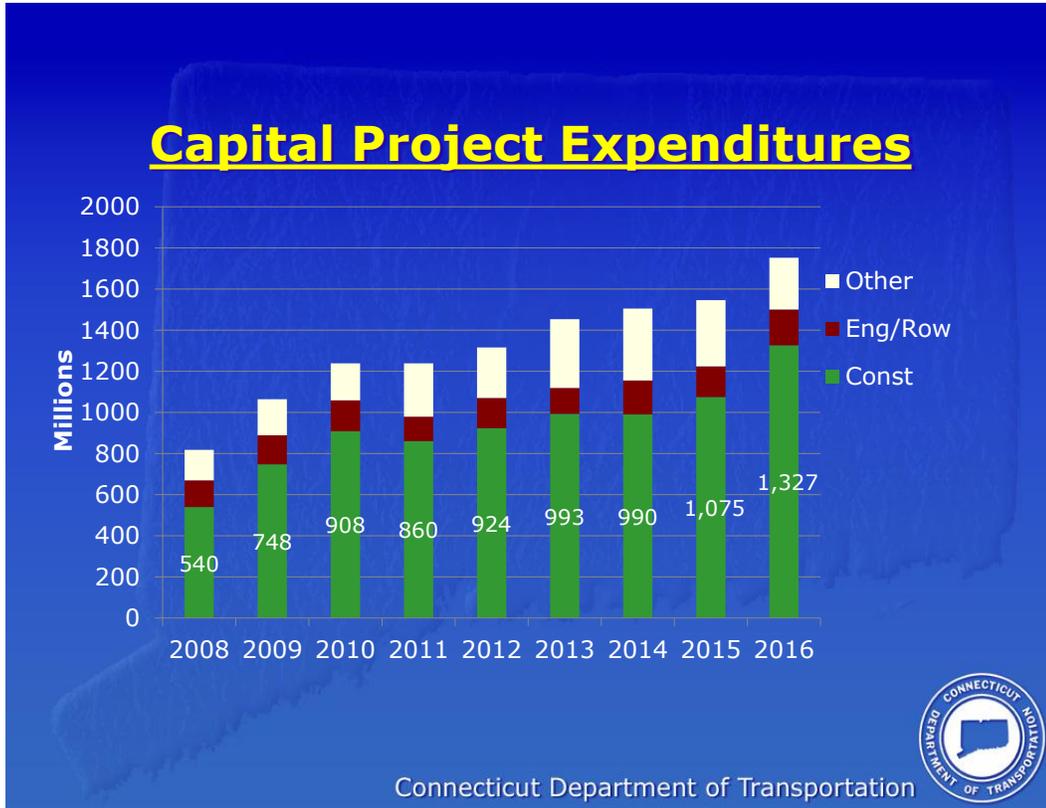


Figure E

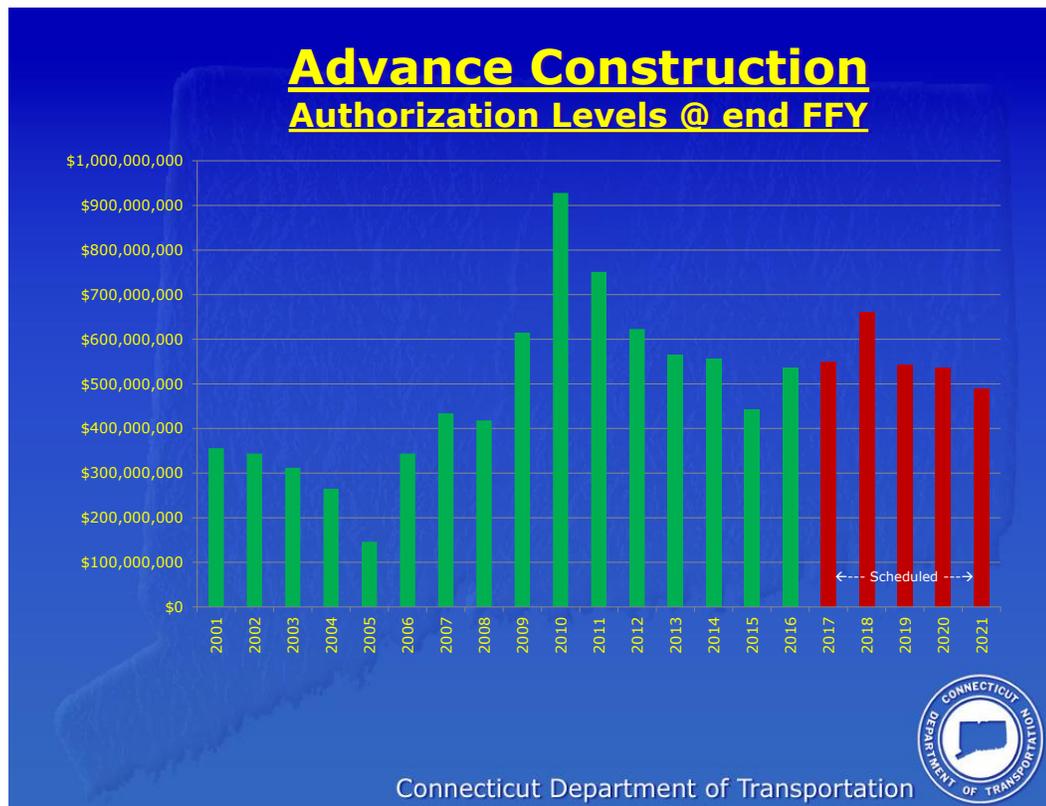


Figure F

