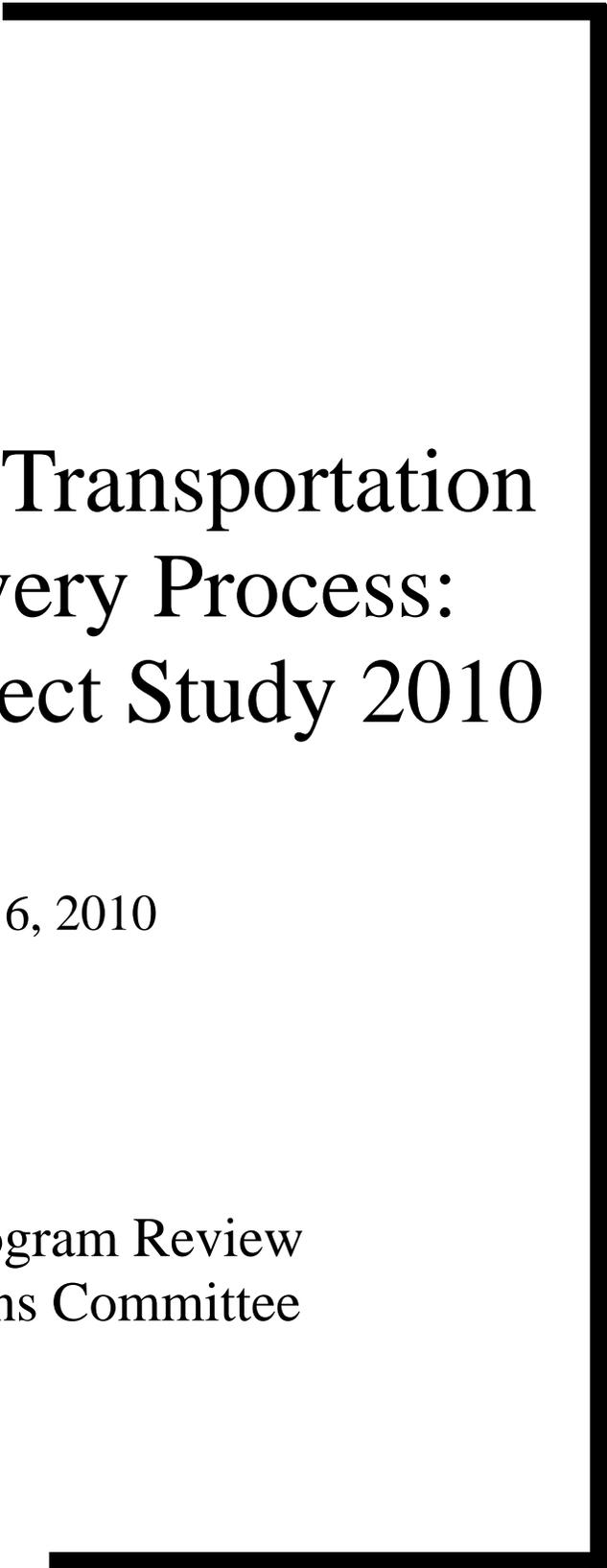


Staff Interim Report



Department of Transportation  
Project Delivery Process:  
RBA Pilot Project Study 2010

October 6, 2010

Legislative Program Review  
& Investigations Committee



## Introduction

---

### DOT PROJECT DELIVERY: RBA PILOT PROJECT STUDY 2010

During 2009, the Legislative Program Review and Investigations Committee (PRI), as required by Public Act 09-166, carried out a pilot project study that assessed selected human services programs using Results Based Accountability (RBA) principles. RBA is a data-driven evaluation tool for improving government performance and community well-being. It is used by cities, counties, and executive branch agencies in over 40 states and by at least seven other countries. In Connecticut, the legislature's Appropriations Committee has been applying the RBA approach to its state budget process since 2005.

PRI issued the final report for its human services RBA study, which focused on family preservation and supports administered by the Department of Children and Families (DCF), to the Appropriations Committee in January 2010. As mandated, that report contained the committee's RBA assessment of the selected DCF programs as well as an evaluation of whether the PRI pilot project should be continued.

Based on the 2009 study, the program review committee found RBA to be a promising practice for legislative oversight work. PRI proposed continuing the committee's pilot project for at least one more year to test the RBA approach in a different agency or budget area, and permit a fuller assessment of its impact on program management and policymaking.

On June 10, 2010, the program review committee authorized its second RBA pilot project, a study focused on the Department of Transportation (DOT) and how to expedite major state transportation system improvement projects. For this study, the RBA approach is being used to try to identify ways to reduce completion times and overall costs for DOT projects, while maintaining compliance with critical standards related to safety, quality, environmental protection, and public accountability.

### Study Scope

Transportation project delivery encompasses project development and project implementation, a long, complex, and multi-faceted process. Due to time and staffing constraints, the committee limited the scope of this study to the latter phase – DOT project implementation, which encompasses the beginning of the formal project design phase through completion of the actual improvement. Therefore, the “front end” of the process – the phase that entails planning, approving, prioritizing, and selecting which projects will be undertaken to improve the state transportation system – is not being examined in detail or evaluated as part of this review.

The study scope includes major improvement projects related to all components of the state transportation infrastructure: highways; bridges; rail and bus (public transit) facilities and systems; airports; ports; ferries; and bikeways, walkways, and trails. Major projects are defined as those involving significant resources or impacts; specific criteria (e.g., dollar value, importance to strategic priorities) are being developed by PRI staff as part of the study research

process. For the most part, the department's major projects are highway, transit, and aviation system improvements; few pedestrian/bicycle or water transportation projects, in relative terms, are very large or complex.

## **RBA Background**

Results Based Accountability is defined under P.A. 09-166 as "... the method of planning, budgeting, and performance measurement of state programs that focuses on the quality of life results the state desires for its citizens...." The RBA approach was developed in the 1990s by a nationally known public policy and administration consultant (Mark Friedman) to help managers and policymakers focus on end results – positive outcomes for clients – of the public programs, agencies, and service systems they oversee.

RBA uses data to measure progress and, most important, to develop the corrective actions needed to improve performance and achieve better results for clients. The goals of data collection and analysis are to: establish a baseline that shows trends in performance; understand the reasons for current results (i.e., the "story behind the data" in RBA terminology); and identify what changes, based on review of results data and relevant research, could improve trends in performance and outcomes ("turn the curve") over time.

Unlike some other evaluation tools, RBA requires examination of two levels of accountability: population and program. Population accountability involves the well-being of whole communities and achieving quality of life results. Responsibility for success is shared by many entities, public and private, and depends on their forming partnerships. Progress is tracked with high-level indicators of the condition of the entire target population.

Program accountability, which is the scope of most traditional PRI work, centers on the well-being of clients served by a program, agency or systems. Primary responsibility for effective performance (achieving intended client outcomes) rests with those managing the program (or agency or system). RBA program performance measures the following three questions: How much did we do? How well do we did it? Is anyone better off?

Typically, the first step of an RBA assessment is to determine why the program or agency under review exists. Specifically, what ultimate state goal, framed as a positive statement about desired quality of life results, is it intended to help achieve? Next, key indicators for tracking progress, the primary strategies for achieving the population-level results, and the main contribution made by the program or department – and all other significant partners – are identified.

Once this overall framework is created, the measures critical for assessing and addressing program-level performance can be determined and evaluated. The information developed through this process then can be used for RBA's main purpose: taking action to improve performance to achieve better results for clients. Following RBA principles, recommended changes should address the following questions: What will happen if we don't do something different? What would it take to achieve success? What do we know works, or could work, to do better? What actions – including low-cost/no-cost ideas – will we take to make a difference (i.e., "turn the curve").

## PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

Information produced through an RBA approach is presented primarily in charts, often in a report card format. Trends in indicator data and program performance measures are identified and explained. The story behind the data – reasons for good or poor performance – is discussed in order to understand the trends and determine how to improve them.

Another essential element of RBA is creating agendas that outline and prioritize development of additional or improved data required to evaluate and improve program or population level outcomes. More details about the concepts and process of Results Based Accountability, and examples of report cards for program, agency, system, and population level performance, can be found in the program review committee's 2009 RBA Pilot Project Study final report to the Appropriations Committee on *Selected Human Services Programs (DCF Family Preservation and Supports)*.<sup>1</sup>

### Interim Report Contents

This interim report summarizes the progress made to date by the program review staff in applying RBA principles to assess the state transportation department's project delivery process. It contains the following sections:

- I. Overview of DOT Project Delivery (p. 5)
  - Agency Mission and Organization
  - Process Description
  
- II. RBA Framework for the Study: Working Draft (p. 27)
  - Quality of Life Results and Indicators
  - Main Strategies and Partners
  - Major Programs and Key Performance Measures
  
- III. Program Accountability: Preliminary Analysis Project Delivery Performance (p.35)
  - How much did we do?
  - How well did we do it?
  - Is anyone better off?

Since June, when this study was authorized, program review staff efforts have centered on: understanding all aspects of the DOT project delivery implementation process; and determining what performance and outcome data are available, and what must be developed. Much of the information presented in this document, therefore, is partial or preliminary.

### Completed and Planned Tasks

PRI staff has met with all top managers and most high level staff of DOT who have key project delivery responsibilities. State Department of Environmental Protection (DEP) personnel involved in reviewing DOT projects, and key personnel from the federal agencies that fund and

---

<sup>1</sup> The Final Report and all related documents from the committee's 2009 RBA Pilot Project Study are available electronically at the PRI committee staff office website: [http://www.cga.ct.gov/pri/2009\\_RBA.asp](http://www.cga.ct.gov/pri/2009_RBA.asp)

## **PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT**

oversee improvements to Connecticut's transportation system, also have been interviewed. Initial contact has been made with several stakeholder groups, such as the construction industry and some regional planning organizations. Also, a recent meeting of the state Transportation Strategy Board was observed.

A variety of local and national experts on transportation matters have been contacted for assistance, particularly regarding project delivery best practices, including the Connecticut Academy of Science and Engineering (CASE), the American Association of State Highway and Transportation Officials (AASHTO), and the national Transportation Research Board (TRB). The numerous plans and reports related to transportation projects that DOT is required by state and federal law to produce are under review. PRI staff also is reviewing all recent federal and state audits, program reviews, and studies concerning DOT project delivery.

Next steps include more in-depth interviews with DOT and federal agency staff directly involved in delivering highway, bridge, public transit, and aviation improvement projects. Additional meetings with representatives of key stakeholder groups and transportation experts are planned. PRI staff will be evaluating some selected DOT projects that can serve as examples of "lessons learned," providing insight into what works and what does not for successful project delivery. Research to identify best practices and determine what has or might be applied to the DOT project delivery process will continue. Some promising areas to be explored are: alternate contracting methods (e.g., design-build); interagency coordination and collaboration (e.g., environmental review "streamlining"); and expanded automation of procedures and information (e.g., electronic bidding, web-based meetings, electronic reporting of strategic performance measures).

## Section I: DOT Project Delivery

---

### Department of Transportation Project Delivery: Overview

#### Agency Role, Organization, and Resources

Prior to a discussion of the project delivery process, it is important to understand the organization of the Department of Transportation and its overall responsibilities. The department's current role, according to its mission, is to ensure *Connecticut has a safe and efficient intermodal transportation network that improves the quality of life and promotes economic vitality for the state and the region.*<sup>2</sup>

The department is organized into six bureaus, as shown in Figure I-1. Each bureau carries out a distinct function to help the department fulfill its mission. The bureaus are:

*Engineering and Construction:* manages the design, engineering, construction, and oversight functions for DOT capital projects across transportation modes. Four district offices throughout state provide construction administration of projects.

*Public Transportation:* manages the development, operation, and maintenance of the state's public transportation system through a network of rail, bus, cycling, and pedestrian services and facilities; also regulates motorbus, taxi, livery, intrastate household goods, and railroad entities.

*Highway Operations:* maintains and preserves safe operation of the state's highway and bridge system, including snow and ice control, equipment repair, and maintenance. The bureau is supported by four district highway maintenance facilities statewide.

*Aviation and Ports:* operates, manages, and develops the state-owned aviation, ferry, and pier facilities; also licenses and regulates private aviation facilities, state harbor and river pilots, and agents of foreign vessels.

*Finance and Administration:* provides fiscal and support services, including personnel development, maximization of fiscal and operational performances, and improvement of the department's business processes using information systems technology.

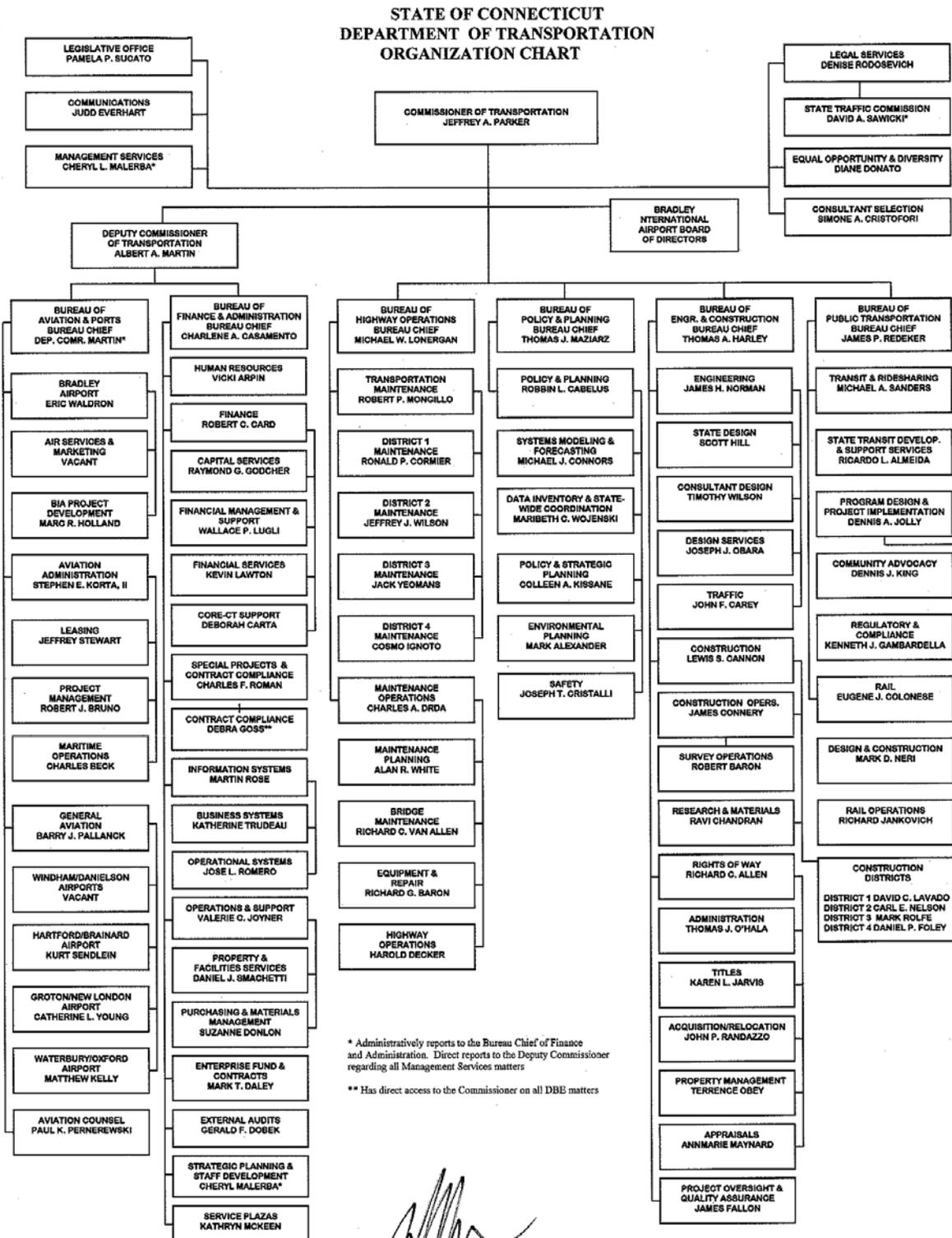
*Policy and Planning:* maintains inventories and data for current transportation systems, forecasts transportation needs, assesses environmental impact of transportation plans, and plans and prioritizes future direction of transportation projects and funding by mode.

---

<sup>2</sup> CT DOT 2009 Master Transportation Plan 2009-2010, January 2009 (p. 2).

PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

Figure I-1.



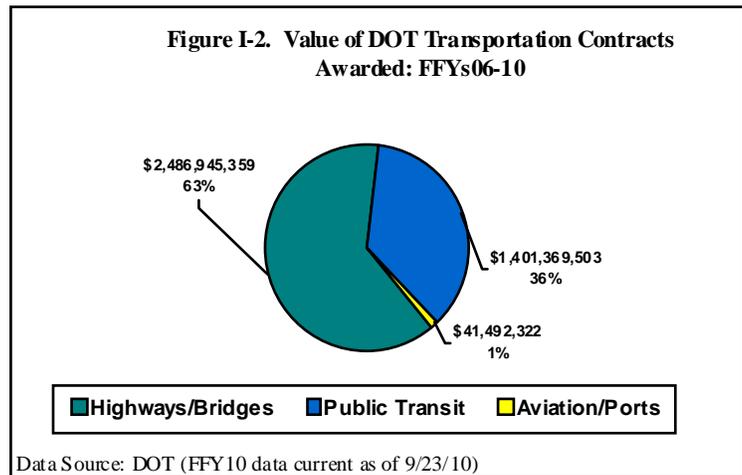
Jeffrey A. Parker, Commissioner  
August 10, 2010

## Responsibilities

The Department of Transportation is responsible for the implementation, maintenance, and preservation of the state’s transportation network. This includes all modes of transportation: public transit, highways and bridges, aviation, maritime, bicycle, and pedestrian.

In terms of transportation project delivery, the department is responsible for coordinating with a variety of stakeholders to identify, fund, design, construct, and maintain projects. The key partners involved in the project delivery process are federal and state agencies, regional planning organizations, municipalities, private sector consultants and contractors, and the general public.

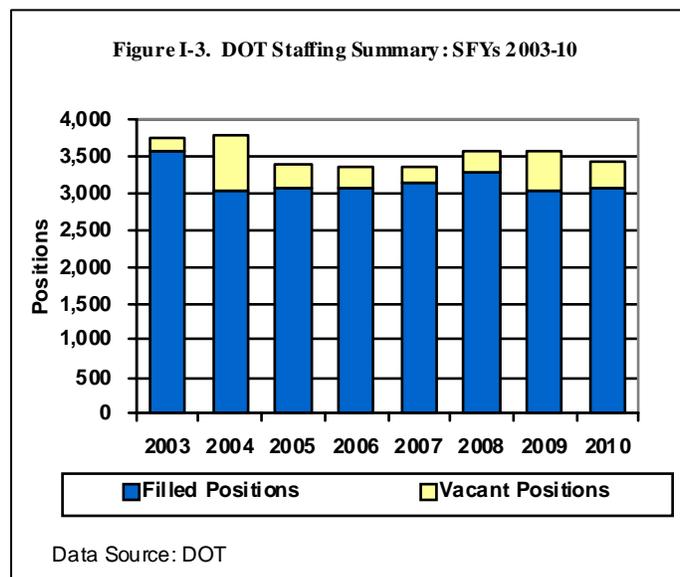
To help highlight the volume of the department’s responsibilities, Figure I-2 shows the total value of contracts awarded for highway, bridge, and public transit projects receiving federal funding for the five year period of FFYs06-10. As the figure shows, \$3.93 billion in transportation project contracts were awarded during this period. The total value of contracts awarded for highways and bridges was almost \$2.5 billion (63 percent), while the value of public transit project contracts was \$1.4 billion, or just over a third of the overall value. Additional information on awarded contracts is presented in Section III of the report.



## Staffing Resources

Figure I-3 shows the department’s level of filled and vacant positions for SFYs 2003-10. Combined, the two categories equal the department’s allocated positions.

The trend in positions is mixed. For the period analyzed, filled positions peaked in FY03, at 3,559. The fewest filled positions (or conversely the largest number of vacant positions) occurred in FY04 (3,028), which is the year immediately following a statewide retirement incentive program for public employees.



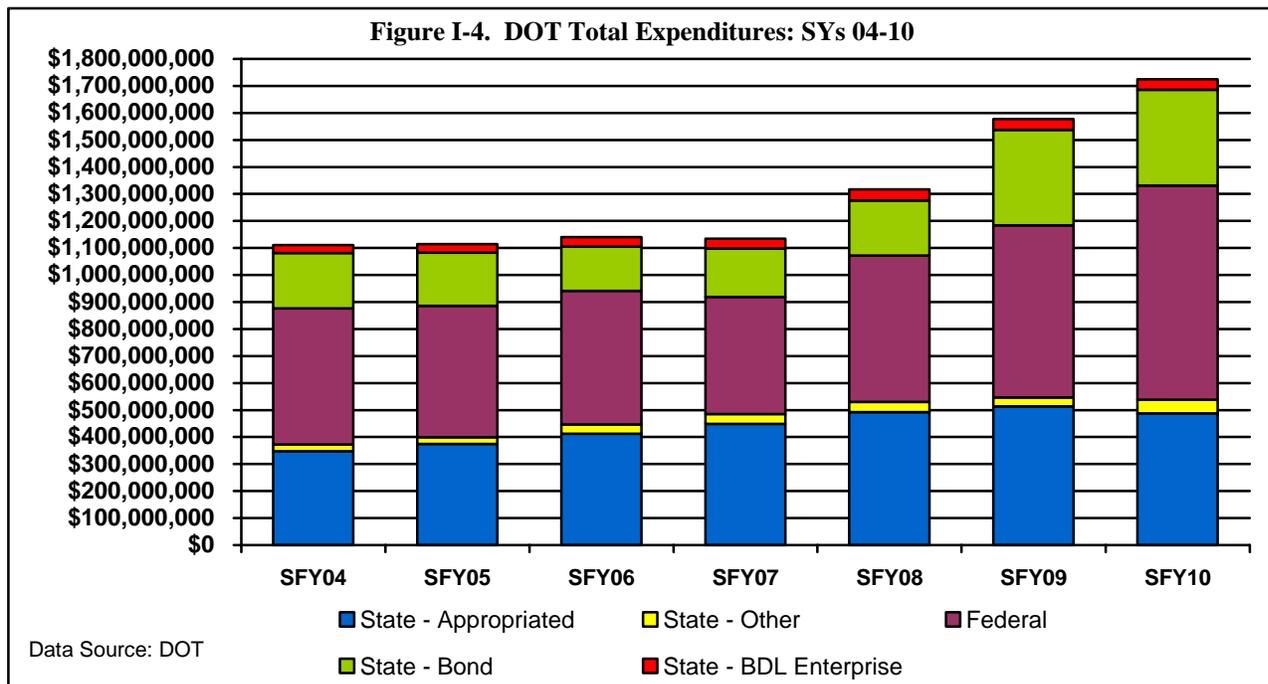
## Expenditures

Connecticut’s transportation network receives funding from various sources. Revenue from federal, state, and municipal levels, help finance the development, implementation, and preservation of the state’s transportation infrastructure.

Federal and state funds are the primary sources of funding for state and local transportation programs. The key source of federal funding is the current federal transportation act, the Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), passed in 2005. SAFETEA-LU reauthorized the federal highway, transit, safety, research, and motor carrier programs for the six-year period of FFY2004 through FFY2009. Funding under SAFETEA-LU expired in September 2009. Since then, transportation programs nationwide have been funded by a series of continuing resolutions.

In Connecticut, the state’s Special Transportation Fund (STF) is the primary source of state funding. The Special Transportation Fund is funded by transportation-related taxes, fees, and revenues, as well as the proceeds of Special Tax Obligation Bonds. The STF pays the debt service cost for state bonds issued as a means of providing funds for the state's share of transportation projects when state matching is required to receive federal funding for projects. In addition, Bradley airport is funded through the self-sustaining Bradley Enterprise Fund.

Figure I-4 shows the trend in budget expenditures for the Department of Transportation for state fiscal years 2004-10. Overall DOT expenditures remained relatively steady between SFYs04-07, at roughly \$1.1 billion. Expenditures increased each year since then, to their current level of approximately \$1.7 billion. The increase can be attributed to additional funding from most sources, including federal stimulus funding beginning in FY 09.

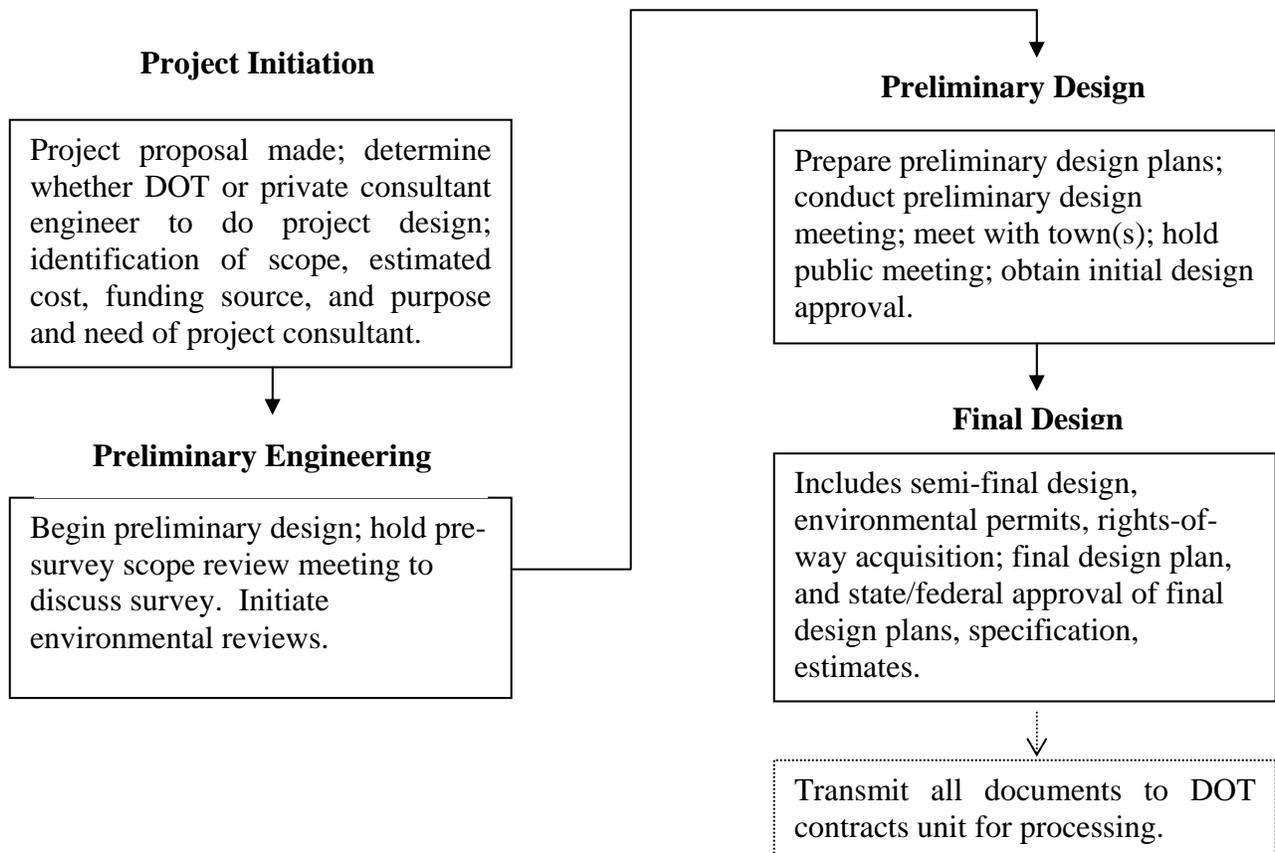


## Phase I: Design Development

The transportation project delivery process within the Department of Transportation can be discussed in three main phases, each with unique components and requirements: 1) planning and design; 2) bidding and awarding; and 3) construction. The summary below presents the state transportation project delivery process from a relatively high level. The full process as described to committee staff by DOT, is too detailed to completely describe in this report, as it includes myriad requirements and internal checks and balances within each phase.

Once a transportation project has been authorized and funding commitment is obtained, the project delivery process moves to the design phase. This phase helps to more accurately define the project scope and cost, and incorporates preliminary engineering studies, preliminary design, and final project design. Various parts of the process occur simultaneously, as discussed below, and the key phases of the process are similar across state transportation projects. Figure I-5 highlights the main components of the transportation project design process.

**Figure I-5. DOT Transportation Project Design Process**



## Project Initiation

### *Summary*

- Refine project scope and preliminary cost
- Determine use of, and select, in-house design engineer or consultant engineer
- Identify funding source
- Assign project number
- Obtain state and/or federal authorization for project
- Obligate funding/establish budget

Transportation projects are initiated through a detailed conceptualization and planning process involving various stakeholders: state and federal agencies, regional planning organizations, environmental entities, and economic development/business groups. Key factors determining the types of projects initiated include preservation and maintenance of existing infrastructure, areas with high accident rates, safety improvements, and road/passenger capacity. Project cost is also a critical factor.

FHWA (highways and bridges), the Federal Transit Authority (public transportation), and the Federal Aviation Administration (airports) are key federal agencies involved in developing the scope of a transportation project. The agencies' involvement early in the process helps maximize their ability to participate in state DOT design decisions when federal funding is involved.

Once the scope of a project is identified, the eligibility for funding is evaluated, as are possible source(s) of funding. There are various federal and state funding sources available for different classifications of projects (e.g., roads, bridges, rail, bus, and air). After DOT estimates the cost of the project and identifies the necessary funding source, a Recommended Project Memorandum (RPM) is created. The RPM contains specific information about the project, including location, a broad scope, estimated cost, and funding source.

For federally-funded highway/bridge projects, FHWA will determine at this point whether it will maintain oversight of the project or if it will delegate those responsibilities to DOT, as permitted by a formal stewardship agreement with FHWA.<sup>3</sup> For public transportation projects, FTA may decide to use a private consultant to perform project management oversight, while FAA uses in-house staff to manage projects. Federal authorization is also required to begin the pre-engineering phase of the project for federally funded projects.

---

<sup>3</sup> Section 106 of Title 23, United States Code, requires the Federal Highway Administration (FHWA) and the state to enter into an agreement documenting the extent to which the state assumes the responsibilities of FHWA for oversight of transportation projects under Title 23. The Stewardship/Oversight Agreement formalizes these delegated responsibilities and agreements to address how the Federal-aid Highway program will be administered in the State.

## PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

The beginning stage of project delivery also includes the decision whether to use DOT engineers or an outside professional consulting firm to design the project. This decision is usually based on the complexity of the project, including the need for staff specializing in certain areas of expertise that the department does not have, as well as the overall level of staff resources necessary to complete the design.

For projects requiring outside design assistance, DOT may select a consultant or may also decide to use on-call consultant engineering firms to do portions of the work. The department estimates consultants design approximately 60 percent of the projects as measured by dollar value, and approximately 50 percent of the projects as measured by number. (Committee staff will try to collect additional information to confirm this ratio as the study continues.)

**Design consultant selection.** If DOT decides to use the professional services of an outside consultant for project design, a specific process to select a consultant must be followed. The process used by the department is in accordance with state and federal laws, regulations, and policies, regarding the advertisement, bid receipt/review, and selection of services. The process is intended to be impartial, equitable, and transparent. The goal is to ensure the consultants selected demonstrate the competence and qualifications necessary to fulfill DOT requirements.

*Consultant prequalification.* State law requires DOT to annually solicit consulting firms to become prequalified in technical categories for which the department anticipates it will need such professional services in the upcoming year. By mid-November, businesses wanting to be prequalified for the following year must submit information regarding their qualifications based on criteria established by the department.

A Technical Qualifications Panel (usually consisting of the department's Chief Engineer, Engineering Administrator, and the Construction Administrator) analyzes the information submitted by the consultants, and then recommends eligible consultants for prequalification to the commissioner by each January. (If a prequalified list contains less than five consultants, any consultant may submit a letter of interest to the department in response to a bid soliciting professional consulting services.) Prequalified consulting firms receive notice each time the department solicits bids for transportation projects that match their prequalification categories.

*Consultant Selection Panel.* Any bureau requesting professional consulting services must first obtain approval from the commissioner. Upon approval, DOT solicits responses (i.e., letter of interest) from prequalified consulting firms.

Once the responses are received, an internal DOT panel evaluates them and selects a consulting firm. The panel consists of three department employees appointed by the commissioner, one person appointed by the bureau chief of the bureau requesting consulting services, and one person appointed by another bureau chief of the bureau administering the specific project, if desired. Members selected by bureau chiefs must be approved by the commissioner, and each panel is a separate entity responsible only to the commissioner.

The selection panel individually rates each consultant using standardized criteria/forms. The panel then puts together a rank-ordered list of consultants based on the panel members' ratings. The list is sent to the consultant selection office for review and approval by the

## PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

commissioner. The selection panel then interviews a short list of the highest ranked firms (typically five) using a uniform format, using a predetermined set of questions. A second rank-ordered list of the firms is assembled based on the interviews. This list and supporting information are sent to the consultant selection office for review. The commissioner has the final selection authority for each consultant hired.<sup>4</sup> As this point, the selection is made public. A report by the commissioner outlining the selection process and how the final decision was made becomes available after a contract is executed between DOT and the consultant.

*Consultant Selection Office.* The Consultant Selection Office (CSO), a unit within the commissioner's office, is responsible for the administration and execution of all the necessary procedures for selecting DOT's professional consultants. The office coordinates information for the consultant selection panels, and ensures the consultant selection process follows all applicable department, state, and federal rules. The office is the liaison between the department and consulting firms.

*Assignment meeting and contract execution.* A meeting between the design consultant and the DOT consultant design unit occurs once the design consultant engineer is chosen. The groups discuss a more detailed scope of work, along with the responsibilities of the consultant and transportation department. The consultant will be given available information already developed for the project, including planning reports, public hearing transcripts, and planning maps. The department also will identify any known unusual design problems that may be encountered.

Following the meeting, the consulting design firm works on a more defined scope of work and the assigned DOT project manager identifies the various disciplines within the department to work on the project; both parties work independently to determine the consultant hours for the approved scope of services. A negotiation committee within DOT then works with the parties to generate a final agreement regarding project details and fees. After the completion of all the work performed by the consulting engineer, a final audit of the consultant agreement is performed by the Bureau of Finance and Administration.

### Preliminary Engineering

#### *Summary*

- Conduct preliminary engineering studies (e.g., hydraulics, structures, and soil)
- Coordinate with DEP, federal agencies
- Determine level of environmental documentation needed
- Identify, refine, analyze alternatives
- Hold preliminary engineering studies review meeting

---

<sup>4</sup> C.G.S. Sec. 13b-20i requires that specific objective criteria guide the department's selection of professional consultants, including the volume of work performed by the firm within the past three years. The commissioner will generally approve the consultant panel's recommended list of consultants unless a firm has over five percent volume of consultant work with the department or has been selected to provide consultant services within the previous six months. The commissioner uses his/her discretion in such cases.

## PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

Once either the department or consultant staff has been chosen, the project delivery process moves into the Preliminary Engineering phase. This is a key part of the early project design process because it entails the development of various preliminary engineering studies, as well as determining the level of environmental documentation needed based on potential environmental impact. These engineering studies run concurrent with the environmental and public input components of the process (discussed later).

The purpose of the preliminary engineering studies is to begin to gauge the level of engineering necessary to properly design the project. Depending on the type of project proposed, the preliminary engineering studies conducted could include evaluations of drainage systems and structures, analyses of intersections and traffic patterns, and an identification of utilities possibly affected by the project. Another possible evaluation at this stage is preliminary analysis of hydraulic crossings for potential impact on floodplain management, again depending on the type of project.

During this phase, the design engineer also will review, identify, verify, and delineate any inland wetlands, tidal wetlands, and watercourses impacted by the project. In addition, for vertical construction evaluations, the overall demand for the facility will be reviewed (e.g., the number of gates needed for an airport terminal or the number of repair bays desired for a maintenance facility).

**Environment.** The DOT Office of Environmental Planning (OEP) conducts an internal environmental review process in the beginning phases of any transportation project. The review helps establish the level of documentation necessary for the project's potential environmental impact.

The OEP review and resulting preparation of environmental documents are intended to aid in determining a preferred alternative to best balance meeting identified needs of a project with minimizing environmental impacts. Documents are prepared for both the public and technical reviews, focusing on key transportation issues and the potential effects of the alternative strategies being considered. Some of the information is preliminary and oftentimes is not finalized until the environmental permit preparation phase near the end of the project design process.

Environmental documents are prepared and processed to satisfy both federal and state requirements. Topics that may be included within an environmental document are:

- project summary and description;
- project purpose and need;
- alternatives considered;
- affected environment and environmental consequences;
- list of agencies, organizations, and persons to whom copies of the document are sent; and
- public involvement, comments, and coordination.

Projects receiving federal funding must follow the environmental documentation requirements specified in the National Environmental Policy Act (NEPA), while state funded-

## PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

only projects are obligated to follow the requirements contained in the Connecticut Environmental Policy Act (CEPA).

At this stage, a public meeting is held to begin to more fully discuss project design, including discussion about either an Environmental Impact Study (federal) or Environmental Impact Evaluation (state), if necessary, and potential rights-of-way (ROW) considerations. If ROW issues are discussed at the meeting, no final decisions are made at this point, and additional work to verify property ownership and conduct title searches is done later in the design process. The process provides the public with an opportunity to comment before the project design is approved.

*National Environmental Policy Act.* Requirements specified in the National Environmental Policy Act are intended to determine the level of potential environmental impact of proposed transportation projects and allow for public input into the project development process. The NEPA process consists of an evaluation of the environmental effects of initiatives (e.g., transportation projects) involving federal funding, including identifying alternatives to such initiatives. Appendix A provides a diagram of the NEPA process.

For projects involving federal funding, the DOT Office of Environmental Planning determines the type of documentation required for the environmental component of the project. Three levels of environmental impact determine what environmental documentation must be prepared under NEPA:

- 1) Categorical Exclusion (CE) – any project/actions determined not to have a significant impact on the quality of the human environment, resulting in neither an environmental assessment or an environmental impact statement;
- 2) Environmental Assessment (EA) – a decision-making tool when a project is not considered a “categorical exclusion” yet the significance of the environmental impacts of the project are not fully understood, possibly warranting additional study and analysis; determines whether sufficient evidence exists requiring the agency to prepare an environmental impact statement or if a finding of no significant impact (FONSI) is appropriate; and
- 3) Environmental Impact Statement (EIS) – a detailed evaluation of the environmental impacts in comparison to the Environmental Assessment.

Federal regulations detail the process for developing an Environmental Impact Statement. The key steps of the process are:

1. **Scoping:** Initial meetings are held among stakeholders to discuss various factors of the project, including existing laws, project information, and any research needed.
2. **Notice:** Public notice is made that the agency is preparing an EIS. Information about the project and how the public can become involved in the process must be provided.

## PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

3. **Draft EIS:** A draft EIS is prepared, providing a full description of the affected environment, a reasonable range of alternatives, and an analysis of the impacts of each alternative.
4. **Comment:** Additional public input is received through written comments and public hearing statements.
5. **Final EIS and Proposed Action:** A final EIS is drafted along with the agency's proposed action. The document is made public, and additional comments may be received within a 30-day period.
6. **Record of Decision:** Once any outstanding issues are resolved, the agency prepares a Record of Decision, which details the agency's final decision regarding the environmental impact of the project. If members of the public are still dissatisfied with the outcome, they may sue the agency in Federal court. (A supplemental EIS may be prepared if new environmental impacts are discovered requiring re-evaluation of the proposed action in the final EIS.)

Depending on the type of project, the Federal Highway Administration, Federal Transit Administration, or Federal Aviation Administration makes the decision regarding environmental impact and level of environmental documentation necessary. If an EIS is required, each of those agencies has final approval authority based on the type of project.

*Connecticut Environmental Policy Act.* The requirements under the Connecticut Environmental Policy Act and the National Environmental Policy Act are similar. CEPA, like NEPA, establishes a process to ensure state agencies, such as DOT, consider environmental factors when proposing *state funded* projects that could significantly impact the environment.

CEPA requires state agencies proposing projects (e.g., DOT) to adopt an "environmental classification document" (ECD). The ECD is a tool used to help determine whether an environmental study is needed and, if so, the type of study necessary for a proposed project. The Office of Policy and Management must approve all ECDs, which document:

1. typical agency actions that may have significant impacts and will thus require Environmental Impact Evaluations (EIEs);
2. joint federal/state actions for which environmental impact statements are prepared pursuant to the National Environmental Policy Act; and
3. typical agency actions whose degree of impact is indeterminate, which may require EIEs but will at least require a Finding of No Significant Impact (FONSI).

Similar to NEPA, after the concept of a transportation project is made available, DOT must hold a public scoping meeting to receive feedback about the proposed project. Details of the proposed action are presented at the meeting, including a description of the project, its purpose and need, potential sites, and any potential alternatives to the project. If the scoping process determines the project could result in significant environmental impact, DOT must develop an Environmental Impact Evaluation (EIE). The EIE is a detailed report describing the

## PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

project, any major environmental impact the project may pose, comments received during the scoping meeting, additional comments received, and measures aimed at mitigating any negative environmental impact.<sup>5</sup>

The EIE is submitted to the public and other state agencies (e.g., Department of Environmental Protection and the Office of Policy and Management) for inspection and comment. DOT is required to hold a public hearing on the EIE if a certain number of people request such a hearing. Upon conclusion of the public comment period, the transportation department reviews any pertinent information received. Responses to any substantive issues raised must be prepared by the agency. A public record of decision is also prepared. The record of decision is to consider the findings of the EIE process and outline whether the agency intends to proceed with the project and/or make any changes to the project to avoid or minimize negative environmental impact.

The EIE record of decision is sent to the Office of Policy and Management for evaluation. Upon review and evaluation of the EIE, OPM prepares a written statement as to whether the EIE complies with applicable state law. The statement is sent to DOT and made available to the public. The agency must consider all feedback received during the process and decide whether to proceed with the proposed project. Environmental impact evaluations are not required for projects for which such statements have previously been prepared according to state or federal law.

### Preliminary Design

#### *Summary*

- More fully analyze preliminary engineering studies, including hydraulics, intersection capacity, alignment, lane arrangement, drainage design, and sedimentation/erosion control
- Request rights-of-way preliminary cost estimate for affected properties and/or acreage
- Develop preliminary project cost estimate
- Develop preliminary design statement, including rights-of-way requirements, for review by DOT

Following the Preliminary Engineering phase, transportation projects move into the Preliminary Design phase. A more formal analysis is undertaken of existing structures and intersection and traffic patterns. Initial contact with utility companies is also made.

For a new alignment project (i.e., new road), the design engineer will develop a “scaled graphical baselines” document for the project. The baselines reflect the project description and applicable design standards. Some of the items considered when establishing the baselines

---

<sup>5</sup> If the project is only funded with state money, criteria set forth in the department’s Environmental Classification Document (ECD) will determine whether or not a state Environmental Impact Evaluation is required under CEPA. For projects funded with both federal and state funds, a single environmental document (e.g., EIS/EIE or EA/EIE) is prepared that addresses both NEPA and CEPA requirements.

## PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

include: 1) protected resources (e.g., historic, archeological, water supply resources, and species); 2) existing and proposed utilities; 3) other proposed state/town projects; 4) locally sensitive areas; 5) zoning/future development; 6) open space; 7) wetlands and floodplains; and 8) property impacts (including commercial usage such as parking and access).<sup>6</sup>

The department/consultant engineer also holds meetings with the municipalities potentially affected by the proposed transportation project. Conceptual project plans are presented to the municipalities, which may give feedback, including any concerns with the proposed project.

Additional technical studies are conducted by the design engineer, as necessary, such as the type and location of any substructure or superstructure elements associated with a project. Sufficient pilot borings and other subsurface investigations necessary to develop a satisfactory design may also be obtained; if required, a detailed soils program is addressed.

The design engineer will also start addressing anticipated work zone safety concerns as part of the Preliminary Design effort. If the project is determined to have significant concerns, the design engineer, in consultation with DOT project engineers, will develop a preliminary Transportation Management Plan. The plan is to include temporary traffic control plans (e.g., staging, and maintenance and protection of traffic plans), a transportation operations plan, and a public outreach/involvement plan.

Meetings between DOT and the consultant engineer occur throughout the Preliminary Design phase to discuss the project design, with the goal of identifying a selected course of action. As the project design becomes more finalized, the design engineer will submit to DOT various documents at the end of the Preliminary Design phase. Prints of all plans are submitted along with a Preliminary Design Statement. The design engineer, through the project engineer, must also meet with a DEP fish biologist to review all streams and determine which crossings and channels will be designed for fish passage. This meeting will be held prior to the Preliminary Design Statement submission.

The Preliminary Design Statement includes a summary of studies undertaken, relevant sketches, the advantages/disadvantages of various alternatives considered, the narrative of the transportation management plan, and a preliminary estimate of construction costs. This estimate is the first attempt to detail such costs and becomes the benchmark upon which future project cost measurements will be based.

After the Preliminary Design Statement is assessed by the department, a meeting is held with the design engineer to review the project design to date. The preliminary design phase culminates with state and/or federal approval of the selected course of action, and then the final design phase begins. At the conclusion of the Preliminary Design phase, the overall project design is roughly 35 percent complete.

**Public involvement.** Each transportation project requires public outreach at various level of planning and design. Outreach includes public informational meetings, public hearings,

---

<sup>6</sup> DOT Consultant Administration and Project Development Manual, September 2008, p.22.

## PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

receiving comments outside of the public hearing process including those from affected stakeholders, and making transportation documents available to the public.<sup>7</sup>

Once the project design is roughly 30 percent complete, a public informational meeting on the proposed project occurs (in addition to a public hearing required under NEPA or CEPA). Although the project is not fully designed at this stage, the department views the elements of project design completed at that time provide enough information for the public to gain a general understanding of the project.

The purpose of the informational meeting is to provide the public with general information about the project and for DOT to receive feedback about the project. An explanation of the project is provided at the meeting, including: project purpose, need, and consistency with federal/state goals and objectives; local urban planning; major design features of the project and alternatives; the social, economic, and environmental impacts of the project; and the department's procedures for receiving oral and written comments from the public. A presentation on the rights-of-way process is made at the public information meetings, although there is typically no formal discussion with potentially affected property owners about ROW issues until later in the design process.

Feedback from the public is analyzed by the department and design engineer, and used to make design adjustments to the project, if considered prudent and feasible. The intent is to help ensure any concerns among the public are addressed before the project design becomes finalized.

Federal regulation requires DOT to hold at least one public hearing for any project receiving federal funds, if the project: 1) requires significant amounts of right-of-way; 2) substantially changes the layout or functions of connecting roadways or of the facility being improved; 3) has a substantial adverse impact on abutting property; 4) has a significant social, economic, environmental, or other effect; or 5) requires a hearing after the Federal Highway Administration determines a public hearing is in the public interest.<sup>8</sup>

**Context Sensitive Solutions.** Context Sensitive Solutions (CSS) is a practice that considers the total context within which transportation project decisions are made. CSS is a requirement of SAFETEA-LU<sup>9</sup> and an approach DOT supports; Connecticut was a pilot state developing it. Some of the key components of CSS are: 1) a collaborative, interdisciplinary approach to project planning, design, and implementation; 2) involvement of all stakeholders; 3) the final project preserves scenic, aesthetic, historic, and environmental resources; and 4) the project maintains public safety and mobility.

The department has noted to committee staff it recognizes the importance of involving the various stakeholders affected by transportation projects in the project planning, designing, and implementation processes. The department further notes that public and stakeholder buy-in from project onset helps create much more effective projects than simply implementing a top-down approach.

---

<sup>7</sup> DOT has developed a "Public Involvement Manual" outlining policies and procedures it must follow.

<sup>8</sup> 23 CFR 771.111(h)(2)(iii)

<sup>9</sup> SAFETEA-LU is the acronym for the current primary federal transportation funding legislation. It stands for Safe, Accountable, Flexible, Efficient Transportation Equity Act- Legacy for Users.

## Final Design

### *Summary*

- Approve semi-final design plan
- Finalize various plans, such as drainage, hydraulics, floodways, erosion control; for vertical construction plans, include architectural, civil mechanical and electrical systems
- Coordinate with utilities
- Obtain necessary environmental permits
- Acquire rights-of-way
- Authorize consultant to proceed with final design
- Developed finalized project cost estimate
- Submit final approved design plans, specifications, and estimate documents to contracts unit

Upon DOT approval of the preliminary design, transportation projects move into the final design phase. Within this phase, projects move through semi-final design and then final design. At the conclusion of semi-final design, transportation projects are roughly 60 percent designed. With the approval of final design plans, project design is considered 90 percent complete.

The semi-final design phase contains multiple components, including: utility coordination meetings and plans; subsurface exploration analysis; scour analysis; hydraulic analysis; soils and foundation analysis; floodway/floodplain analysis; and value engineering.<sup>10</sup> Throughout the design process and culminating in the final design plan, project design engineers are continuing to conduct surveys and refine plans for various project facets, such as topography, elevations, drainage, property lines, and utilities. This work culminates during the final design phase.

Although multiple design events, reports, and analyses occur during the final design phase, two central events are required: 1) obtaining any necessary environmental permits, and 2) acquiring any necessary rights-of-way. Each of these steps involves interaction and coordination between DOT and outside entities. Discussions between DOT and state and/or federal environmental agencies must occur during the environmental permitting process, while interaction between DOT and property owners occurs if property acquisition is required.

In the final design phase, the design engineer prepares and submits for review by DOT (and the applicable federal agency) a design statement consisting of a proposed final design plan. The statement is a written narrative of the details of the project design, including public utilities affected, reimbursable funds, and environmental permit information. Upon federal and state

---

<sup>10</sup> A *scour analysis* is a review of the erosion or removal of stream bed or bank material from bridge foundations due to flowing water. *Value Engineering* is a federal requirement (23 CFR Part 627) that states must follow for federal-aid highway projects on the National Highway System estimated at \$25 million or more, and for bridge projects estimated at \$20 million or more. It is a systematic process of project review and analysis conducted during project design using a multi-discipline team approach not associated with the project. The purpose of the review is to provide the needed function safely, reliably, and at the lowest cost possible, including improving project value and reducing project completion time.

approval of all plans, specifications, and estimates associated with the project design, the relevant documents are forwarded to the department's contracts unit for processing.

## **Phase II: Construction Contractor Bid and Award Process**

Once a transportation project is designed, and approval and funding are available to begin implementation of the project, DOT selects construction contractors. The state uses a prescribed competitive process to bid and award construction contracts to the lowest responsible bidders. The department's Bureau of Finance and Administration coordinates the bidding and award processes.

### **Bidder Prequalification**

#### *Summary*

- Construction contractors must be prequalified by DOT to bid on projects
- Contractors apply for prequalification under specific project classifications
- Prequalification is based on several factors, including a contractor's previous experience for a particular type of classification and financial capacity requirements

Construction contractors must be prequalified by DOT before they are permitted to bid on projects. The department has an established process whereby contractors submit qualification information for review by DOT prior to bidding on any contract. Prequalifying contractors through formal review and evaluation prior to the bidding process helps ensure the department has an adequate supply of qualified, responsible contractors when transportation projects are put to bid. Process efficiency is gained by prequalifying contractors rather than taking time to screen contractors after project bids are received.

Prospective contractors are required to submit specific types of information to DOT as part of the prequalification process. The information, submitted on a prescribed form, primarily gives the department a summary of a contractor's previous construction experience and financial condition. Contractors are also required to provide information about organization, plant and equipment, financial interests of the company and its individual principal employees, and a statement describing any type of adverse circumstances (i.e., legal issues, criminal convictions, and/or previous inability to act responsibly as low bidder).

The prequalification process also allows DOT to determine the specific type of work a contractor is qualified to perform. Detailed information must be presented as to the contractor's previous relevant experience in performing the specific classification of work for which the contractor is seeking prequalification. Information about the adequacy of the contractor's plant and equipment is also required. Examples of contractor classifications include road construction, bridge construction, demolition, and supply of transportation-related materials.

Contractors classified for a particular type of work may be limited by the department to bid only on projects up to a certain value. DOT determines limits on contractors based on the complexity and value of projects a contractor previously performed, along with any other factors

deemed relevant by the department, including financial capacity. The department establishes a contractor's maximum bidding capacity using information supplied by the contractor's bonding company.<sup>11</sup> The information identifies the maximum value of construction work the applicant is capable of performing as determined by the bonding company. In addition, DOT may reduce or revoke a prequalified contractor's maximum bidding limit based on the overall performance record of the contractor, including quality and timeliness of work.

Once a contractor's prequalification application is reviewed by DOT, and a classification and bidding level are established, a contractor is considered prequalified for 16 months beginning with the close-of-business date for the contractor's most recent fiscal year. Contractors applying for renewed prequalification must submit the required information at least 30 days prior to the expiration of their current prequalification period. DOT may grant extensions at its discretion based on the reasons for the extension submitted by the contractor.

Any contractor's prequalification information deemed false, deceptive, or fraudulent by DOT may be rejected. If this happens, contractors are classified as nonresponsible and disqualified from bidding on any transportation projects for up to two years at the discretion of DOT.

### **Bid Solicitation and Opening**

#### *Summary*

- Bid solicitations for construction projects are advertised upon approval of project design
- Bids must be received using standardized format established by DOT
- Specific checks and balances exist in bidding process to ensure integrity of process

Bid solicitations for construction projects are advertised upon approval of project design and confirmation of available funding. Any necessary federal approval is also obtained before DOT puts a project to bid. Once a project is advertised, interested contractors request a bid proposal form from the department on a specific request form, which must include information about the contractor.<sup>12</sup> The bid proposal form includes bid opening information, as well as project location, a description of the work to be performed, materials required, and project completion date. DOT also makes design plans and specifications available to interested parties for a fee.

In cases where response to a bidder's question after bids have been advertised may provide information not available in public documents, DOT will issue a notice or addendum to all bidders clarifying or resolving any related issue. Addenda to bids may also be made if an error is found in any of the bid documents, including the design plans. Bidders are required to notify DOT within two business days of finding any error. Further, by signing a bid, contractors

---

<sup>11</sup> Bond companies must appear on the U.S. Department of Treasury's listing of certified companies approved to issue bonds for transportation construction projects.

<sup>12</sup> Bid proposal forms are not transferable; the contractor making the initial request for a bid proposal form must be the contractor that actually submits the bid. Sanctions exist when this policy is not followed.

are attesting to certain conditions (e.g., no pending legal actions or not excluded from bidding on other state or federal contracts.)

### **Bid Review, Award, Post-Bid**

#### *Summary*

- All opened bids checked for responsiveness
- Bidders must attest to non-collusion
- No proposal accepted without appropriate surety bond equal to one-third amount of bid
- Projects may be withdrawn

After bids are opened, proposals are reviewed for “responsiveness” to determine if the bids comply with all applicable requirements. Each bidder must at least include in its bid the following information: 1) completed bid proposal; 2) required bid bond for specific project (or annual bid bond where contractor may be low bidder for DOT projects awarded during the year covered by the bond); 3) a non-collusion affidavit; and 4) any other information deemed necessary by DOT. DOT reserves the right to reject bids, advertise for new bids, or cancel an award or contract execution prior to the contractor proceeding with the work. Bids with any errors, including missing relevant information, are rejected.

DOT may decide to withdraw a project prior to issuing an award with no plans for re-advertising the project. Reasons for withdrawing a project include: loss of funding; failure to obtain any necessary permits prior to project bids or awards; mistakes in bid quantities; errors in project design; pre-bid, pre-award design changes significantly changing the project; or failure to receive a bid price within available funding limits.

### **Phase III: Construction Process**

#### *Summary*

- Pre-construction meeting with key project construction personnel
- Daily project monitoring occurs on-site
- Construction materials tested
- Change orders reviewed
- Project closed out

The final phase of the transportation project delivery process is construction. The contractor selected through the bidding process begins work on the project once the “notice to proceed” has been given. Until that time, contractors are not permitted to begin work on the project and are liable if such work does begin.

The transportation department’s process for administering its construction contracts is outlined in Figure I-6. The process begins when a construction contract is advertised. Once the

## **PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT**

contract is awarded, the DOT engineering and construction bureau's construction office assumes responsibility for seeing the project is completed on time, within budget, and in compliance with all contract provisions.

### **Contract Award**

As Figure I-6 shows, many aspects of the DOT contract management process are automated. As soon as a construction contract is awarded, it is added to the department's computerized Site Manager system. The Site Manager system is the agency's primary tool for managing its construction contracts. It tracks payment, testing, contractor, and subcontractor information for all active projects. Detailed information is maintained for both tasks and materials, in terms of quantity, unit price, and total cost. Itemized accounts of any contract changes occurring during construction, such as new or additional work, decreased quantities or detailed tasks, and time extensions, are also maintained. Information is updated daily and available on-line to agency managers and staff. The Site Manager system is also linked to the department's automated financial management system (CORE-CT).<sup>13</sup>

### **Preconstruction Meeting**

Soon after a contract is awarded, a preconstruction meeting attended by the contractor's representatives, DOT district personnel who will oversee the project and other key department staff, local officials, and representatives from affected utility companies, is held to discuss, among other matters, inspection procedures and general contract management issues. Department staff also holds a separate conference to go over equal employment opportunity and affirmative action issues with contractors before construction starts.

### **On-Site Monitoring**

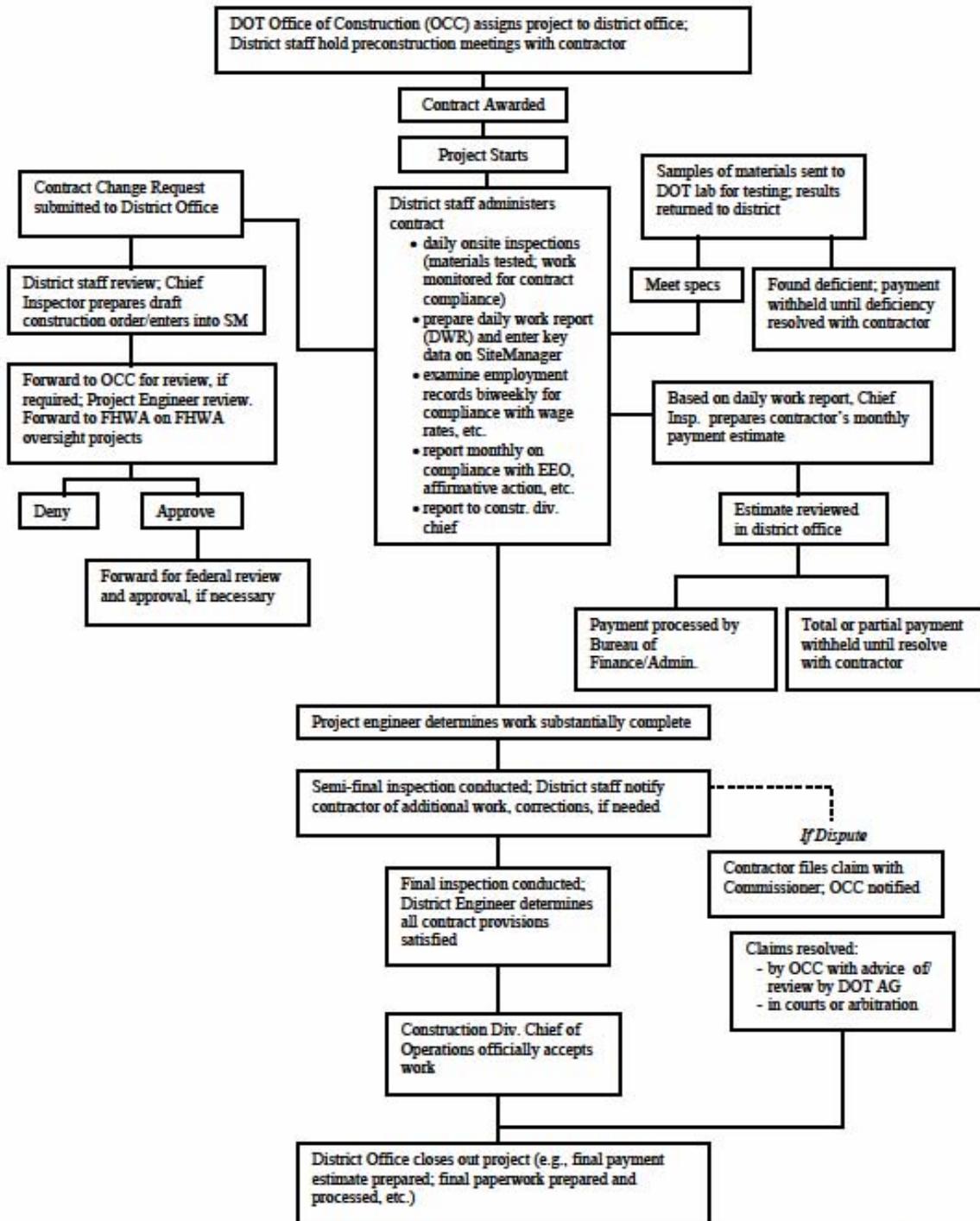
Once work begins, district office staff monitors each project in its entirety on a daily basis. A chief inspector, working under the direction of a project engineer, is assigned to each project and carries out all daily construction administration functions, such as ensuring work is in conformance with contract plans and specifications, materials testing, reporting on work status, initially reviewing requests for contract changes, and meeting with the contractor to discuss progress as well as problems. The project engineer provides technical assistance when needed, interpreting plans or specifications if a dispute arises, and oversees inspection records for accuracy and completeness, attends progress meetings, and reviews and recommends approval of construction orders and progress payments.

Detailed construction engineering and inspection work at the job site may be carried out by DOT employees or, for some projects, contracted out to private engineering firms. In either case, a DOT project engineer oversees the project and all staff, whether state or consultant employees, with the intent to ensure all construction and related engineering is performed in accordance with department policies and procedures.

---

<sup>13</sup> Core-CT is the state's central financial and administrative computer system. The system encompasses central and agency accounting functions (e.g., purchasing, accounts payable, accounts receivable, billing, assets, inventory, project costing and customer contracts) and human resource function (e.g., payroll, time and labor, human resources, and benefits). DOT began using CORE in 2008 for financial management purposes.

Figure I-6. DOT Construction Contract Management Process



## **PRI RESULTS-BASED ACCOUNTABILITY PROJECT 2010 : STAFF INTERIM REPORT**

On-site DOT inspection staff prepares daily work reports and enters key work progress data for the project on the department's Site Manager system. The inspection report provides an itemized listing, by type, quantity, and unit price, of all work tasks performed on a particular workday, as well as information about site conditions, and the contractor's performance. Minority and disadvantaged firms' participation through set-aside or goal programs is also recorded during daily inspection. The daily work report, which is subject to review and approval by the DOT district chief inspector or project engineer, is the basis for the monthly, or in some cases bimonthly, payments made to the contractor.

Using the daily work reports, the district chief inspector prepares the periodic payment estimates, which are reviewed by the project engineer, the supervising engineer, and the assistant district engineer for accuracy and completeness before being forwarded to the department's accounts payable staff for processing. In addition, available project funds are regularly monitored to ensure additional funds are obtained in a timely manner, if necessary.

District inspectors periodically review contractor biweekly employment records to check for compliance with various wage, hour, affirmative action, and preferential hiring requirements. The district staff also monitors and reports periodically on contractor progress toward achieving set-aside program goals. As specified points in a project, district staff prepares reports for the Construction Office on the contractor's affirmative action accomplishments.

### **Materials Testing**

Materials provided by construction contractors are tested for compliance with specifications at the department's laboratory. A prescribed schedule of minimum testing requirements applies to all projects although the frequency and scope of materials testing varies, depending on the type of materials involved and any special issues that may arise. The district chief inspector is responsible for ensuring adequate and sufficient testing occurs on all projects.

District inspectors forward samples of all testable items to the lab for testing. Testing requests are entered and results are received on-line through the Site Manager system. If items are found deficient, district staff seeks corrective action and, if necessary, can withhold payment until compliance is achieved through supplying adequate materials.

### **Time Extensions and Construction Orders**

Requests from contractors for time extensions or changes to contract items are handled initially by district staff. Any change to a contract, whether to increase or decrease work or materials, add new work, or extend the project schedule, is processed by the department as a construction change order. Authorized construction orders are officially incorporated into a project's contract document and enforced like the original provisions.

By department policy, only changes deemed essential to the successful completion of a project should be authorized. After determining a proposed change is essential and not covered by existing contract provisions, district staff can initiate a construction order by completing the required information on the Site Manager system. The chief inspector prepares the final draft of the construction change order, which is subject to review and approval by the project engineer

## **PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT**

and supervisory engineering personnel in the district office. In some instances, construction orders need approval by the Office of Construction.

A contractor is given an opportunity to review and comment on the draft construction order before final processing. If a project receives federal funding, review and approval by the appropriate federal agency may also be required before a construction change order can be executed. In addition, if it appears a proposed change will require design revisions, the construction staff will ask the engineering office of the department's Engineering and Construction bureau to review it.

When the project engineer determines a project is substantially complete, the assistant district engineer will be notified and a semifinal inspection will be scheduled. The inspecting party, which generally consists of the district construction staff, contractor, staff from other DOT units (e.g., traffic or maintenance), and federal officials for federal projects, review all work details to determine if all contract obligations have been fulfilled. The contractor is notified in writing of inspection findings, unsatisfactory work items (if any), and expected corrections. A contract is not considered complete until all items noted in the inspection reports are finished to the satisfaction of department staff.

When the contractor notifies the district office all corrective work is completed, a completion notice is prepared and sent to the Office of Construction. A final inspection by the district engineer is conducted to determine whether the project has been satisfactorily completed; if so, a written certification of completion is issued to the contractor.

Following a final inspection, the district engineer prepares the necessary paperwork to officially accept the work and project, and forwards the information to the Office of Construction's Construction Division Chief for approval. The district engineer must also close out the contract, including processing the final payment estimates. Final payments are adjusted to include: 1) any incentive payment a contractor may have earned for completing a project ahead of schedule; or 2) liquidated damages the contractor may owe the state for failing to meet a project's completion deadline.

The department will not completely close out a contract if litigation related to the project is pending or outstanding disputes remain. Disputes with contractors over contract provisions are initially handled at the district office level. Matters not settled informally by district staff, or formal claims, are forwarded to the Office of Construction for evaluation and potential resolution. When notified of a formal claim, the office will consult with the assistant attorney general assigned to DOT, and then direct the district on how to proceed with the contractor. By law, contractor claims can be pursued in the courts or through arbitration.

## Section II: RBA Framework

---

### WORKING DRAFT RBA FRAMEWORK: DOT PROJECT DELIVERY

Results Based Accountability, in essence, is a way of assessing the effectiveness of agencies, systems, and programs by asking three main questions about performance – how much did we do, how well did we do it, and is anyone served better off – within a larger context of the “quality of life results” desired for a target population. Under the RBA approach, an accountability framework can be developed for a program, agency, or system subject to evaluation that outlines:

- desired quality of life results, in the form of a population-level outcome statement, to which the program/agency/system is intended to make a major contribution;
- key population-level indicators for tracking progress toward those results;
- the main public strategies for achieving them;
- all the partners, public and private, with major roles in implementing those strategies;
- the major activities and programs undertaken to carry out those roles; and
- the primary measures for assessing program performance in terms of outcomes (end results) for the clients a program, agency or systems serves.

Once an RBA framework is developed, it can be used to guide data collection and analysis for two essential purposes. The first is to try to understand the “story behind the data,” or the reasons for current performance and what the trends will be if nothing changes. The second purpose is to determine what can be done to “turn the curve,” or improve performance, in measurable ways, at the program and population levels of accountability.

Figure II-1 at the end of this section presents the working draft of the RBA framework for DOT project delivery prepared by PRI staff. (Acronyms used in the framework are listed in a table that follows the figure.) It is important to remember that DOT project delivery, for the purpose of this study and framework, is the department’s process for implementing major improvements to the state transportation system. The project development or planning and prioritizing phase, while crucial to successful delivery, is not reflected directly in the framework or related analysis.

The working draft was developed with assistance from DOT policy and planning bureau staff. It is based primarily on the PRI staff’s literature review of model transportation agency policies and practices. Further refinement of the framework is expected as PRI staff research, and consultation with all significant stakeholders, continues. The main elements of the draft framework are summarized below.

**Quality of Life Results Statement.** The RBA approach begins with a positive statement about ultimate desired end results to which an agency, program, or system under review makes a major contribution. As this study is examining DOT project delivery, the agency’s current

## PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

mission can serve as a relevant population-level results statement: “*Connecticut has a safe and efficient intermodal transportation network that improves the quality of life and promotes economic vitality for the state and the region.*” (shown at the top of Figure II-1).

**Indicators.** Under the RBA approach, progress toward quality of life results should be tracked by key indicators that capture critical, measurable aspects of the desired conditions of well-being for the target population (population-level outcomes). Six potential primary indicators, sometimes called “headline” indicators, are listed below the results statement in the figure. Trend data and analysis for these, and possibly other primary as well as secondary key indicators, will be presented in the next committee staff report.

PRI staff is working with DOT and others to develop the information needed to adequately measure progress on each element of the results statement. As the following summary illustrates, most data currently available for potential headline indicators have a number of limitations:

- ***Safety: transportation fatality/injury rates***

At present, annual rates on a population and a vehicle-miles-traveled basis are readily available for the highway system. Some rail and aviation safety data also are gathered regularly by the department. However, no general indicator of incidents or risk has been developed for all modes by Connecticut DOT or other state or federal transportation agencies.

- ***Efficiency: congestion (i.e., travel demand exceeds system capacity)***

Congestion measures are one common way to examine the operating efficiency of transportation systems. Currently, DOT reports annually on state roadway congestion, calculated as the percent of highway network miles with traffic volumes approaching or above capacity.

Other ways of measuring congestion under consideration by the department are travel time, delay, speed, and level of services. Operating efficiency of other modes is tracked by DOT in several additional ways including on-time performance percentages for rail and bus services and for flights at state and municipal airports.

- ***Intermodal: mobility options (rail and bus use)***

DOT collects and reviews extensive ridership data from Connecticut’s rail and bus systems for state and federal reporting purposes. Use of public transit reflects, to some extent, the mobility options available within transportation network.

The department is working on other indicators for capturing the state’s progress on creating an intermodal network. For example, data related to the public’s access to various mobility options (e.g., percentages of the Connecticut population with walking distance to rail or bus services and how

available options are connected (e.g., bus/rail services link to airports, bike storage is available on trains and buses, parking is provided at train it stations) is being developed.

- ***Quality of Life: air quality (transportation-related emissions)***

Measures of the condition of the environment, particularly air quality, often are used to represent overall quality of life for a population. At present, DOT puts together and reviews data on transportation-related air pollution as part of its federal air quality compliance efforts.

Many federal and state policies now emphasize objectives related to broader aspects of quality of life, such as sustainable and livable communities and better public health. However, indicators and the related data needed to measure these types of results are not well developed and, in most cases, are a matter for further research.

- ***Economic Vitality: job creation (from transportation investments)***

Measures of economic condition within a state, region, or other area, often focus on employment. The primary indicator used to judge a transportation project's economic impact is how many jobs is creates or sustains. Data on job creation is gathered by DOT for many of its major projects and is required for projects funded with federal stimulus (ARRA) monies.

Transportation projects often produce other important economic benefits related to business growth, increased property values, or more efficient travel times for people and goods. However, the full economic impact of investments in transportation system improvements is difficult to capture, and, at present, is the subject of much research.

- ***Network Health: "state of good repair" status***

Preserving existing infrastructure is one of the top priorities of state and federal transportation agencies. DOT believes keeping Connecticut's transportation system in a state of good repair is critical to its mission. Progress toward this desired result, however, is difficult to track at present.

Data about the condition and quality of the state's transportation network are available only by mode and just for certain components (e.g., highway pavement condition, structural status of bridges, age of bus fleet, etc.). The department is considering better ways to assess the status of the overall system. In addition, a federal effort to develop a composite index for the health of the nation's transportation infrastructure and services is currently underway.

## PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

**Partners.** DOT has a central role in achieving the results statement shown in Figure II-1. However, it is only one of many partners that contribute to a safe, efficient, and effective intermodal transportation network in Connecticut. The various state and federal agencies and organizations, as well as municipal and regional entities and private sector groups, that share accountability for progress toward the results statement are listed upper half of the figure (under the heading *Partners Contributing to Results Statement*). Among DOT's partners with significant roles in project delivery are:

***Federal Highway Administration (FHWA):*** the agency within the U.S. Department of Transportation (U.S. DOT) that provides federal financial resources and technical assistance to state and local governments for constructing, preserving, and improving the National Highway System, and for urban and rural roads that are not part of the highway system but are eligible for federal aid.

***Federal Rail Administration (FRA):*** the modal administration of the U.S. transportation department responsible for promulgating and enforcing national rail safety regulations, administering railroad assistance programs, and consolidating federal government support of rail transportation activities.

***Federal Transit Administration (FTA):*** the U.S. DOT agency that administers federal funding to support a variety of locally planned, constructed, and operated public transportation systems throughout the nation, including buses, subways, light rail, commuter rail, streetcars, monorail, passenger ferry boats, inclined railways, and people movers.

***Federal Aviation Administration (FAA):*** the agency within U.S. DOT responsible for the safety of nation's civil aviation system, including developing and operating a national system of air traffic control and navigation, and for ensuring airport sponsors that accept federal grant funds or the transfer of federal property for airport purposes comply with applicable federal laws and FAA rules and policies.

***Regional Planning Organizations (RPOs):*** regional entities in Connecticut responsible for conducting transportation and other types of planning activities for specific geographic areas. Under federal law, depending on their population, RPOS are designated as Metropolitan (over 50,000) or Rural (under 50,000). Metropolitan and Rural Regional Planning Organizations (MPOs and RRPOs, respectively) have different roles and authority in state transportation planning, programming, and project selection processes.

Regional Planning Organizations also are grouped into three federal Transportation Management Areas (TMAs) for Connecticut, again based on population (over 200,000). In addition to consulting with DOT in planning transportation system improvements and selecting projects for federal funding,

## PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

TMAAs must have lead roles on state projects eligible for federal Congestion Mitigation and Air Quality Improvement (CMAQ) funds.

**Strategies.** As the draft RBA framework shows, state government employs a number of strategies that are intended to make progress toward the results statement. These range from statewide efforts to promote a safe transportation network to the main activities for preserving, maximizing and expanding system capacity in sustainable and accountable ways. All of the public and private partners identified in the figure, to varying degrees, have responsibility for some or all of these strategies and their success in achieving the desired population-level outcomes.

**DOT roles and major programs.** The main roles and many programs DOT carries out as the state's multi-modal transportation planning and implementation agency are summarized in the lower part of Figure II-1. Agency leadership and department program managers are accountable for results at this level, which are measured by how much is done, how well it is done, and whether anyone is better off because of these functions and programs.

Project delivery is most directly part of the agency's role in expanding and improving transportation system capacity (see the third column in the lower half of the figure, *Agency and Program Level Accountability*). However, efficient and effective implementation of DOT projects is important to the success of many department efforts across its wide range of roles.

**Program performance measures.** Four key measures of DOT project delivery performance identified by PRI staff are highlighted at the bottom of the RBA Framework. They include the two generally accepted basic performance measures for any type of building project: on-budget and on-schedule. The following definitions developed by AASHTO for its comparative analysis of state DOT cost and schedule performance data<sup>14</sup> are used for this program review committee study:

***On-budget*** - actual reported final cost is equal to or less than the original contract award amount (strict measure) or within 10 percent of that amount (lenient measure)

***On-schedule*** - actual reported completion date or number of working days charged is equal to or less than the originally scheduled completion date or amount of originally authorized working days (strict measure) or (lenient measure) the updated completion date or amount of working days

The two additional key performance measures for assessing effective DOT project delivery address: whether the department complies with relevant regulatory, financial or other requirements during project delivery implementation; and whether, once the project is delivered, its intended benefits are achieved. Neither has a standard definition. The approaches and types of data PRI are considering and developing for these and other measures of DOT project delivery performance are described in the next section (Section III: Program Accountability).

---

<sup>14</sup> *Comparing State DOTs' Construction Project Cost and Schedule Performance: 28 Practices from Nine States*, AASHTO, May 2007.

Figure II-1. Working Draft RBA Framework: DOT Project Delivery

<b>POPULATION LEVEL ACCOUNTABILITY</b>					
<b>QUALITY OF LIFE RESULTS STATEMENT:</b>					
<i>"Connecticut has a safe and efficient intermodal transportation network that improves the quality of life and promotes economic vitality for the state and the region."</i>					
<b>RESULTS STATEMENT INDICATORS OF PROGRESS ( POPULATION LEVEL)</b>					
Indicator 1: Safety <i>Trans. Fatality/ Injury Rates</i>	Indicator 2: Efficiency <i>Congestion (Over Capacity)</i>	Indicator 3: Intermodal <i>Mobility Options (Rail &amp; Bus Use)</i>	Indicator 4: Quality of Life <i>Air Quality (Trans.-Related Emissions)</i>	Indicator 5: Economic Vitality <i>Jobs Created (by Trans. System Investments)</i>	Indicator 6 Overall Network Health <i>State of Good Repair</i>
<b>PARTNERS CONTRIBUTING TO RESULTS STATEMENT</b>					
Connecticut General Assembly Congress Other States in Region RPOs and Municipalities (Local Officials) Transit Operators Advisory Groups (TSB, BBD, BICAB, SIMTF, CPTC, CRCC, CMC)		Governor State Agencies: DOT; DAS, DEP; DECD; DMV; DPS; OPM Federal Agencies: US DOT (FAA, FHWA, FRA, FTA, NHTSA); US EPA Agency Employees (and Unions)		Construction Industry Design/Engineering Industry Business Community Airlines and Rail Providers Freight Providers and Users Port Operators and Users Traveling Public	
<b>MAIN STATE STRATEGIES FOR ACHIEVING RESULTS STATEMENT</b>					
<b>Establish and Enforce Safety Standards</b>	<b>Preserve Existing Infrastructure &amp; Capacity</b>	<b>Maximize Operating Efficiency</b>	<b>Reduce Congestion/ Increase Choices &amp; Connections</b>	<b>Follow Sustainable Practices &amp; Increase Livability</b>	<b>Promote Public Participation &amp; Accountability</b>
<b>AGENCY AND PROGRAM LEVEL ACCOUNTABILITY</b>					
<b>DOT'S CONTRIBUTION TO DESIRED RESULTS : MAIN ROLES AND RELATED MAJOR PROGRAMS</b>					
<b>Reduce injuries, fatalities, safety risks</b>	<b>Maintain current infrastructure &amp; service levels</b>	<b>Develop &amp; implement new/ improved capacity</b>	<b>Operate &amp; oversee facilities and services</b>	<b>Plan and manage assets to meet needs and goals</b>	<b>Ensure public accountability and transparency</b>
<ul style="list-style-type: none"> <li>- National design standards for highways bridges, rail, airport safety</li> <li>- Injury/fatality data research to inform safety efforts</li> <li>- Eliminate hazards, snow and ice removal</li> <li>- Motorist assistance</li> <li>- Airport &amp; port security</li> <li>- Various targeted efforts such as:                             <ul style="list-style-type: none"> <li>o work zone safety</li> <li>o seat belt use</li> <li>o impaired/distracted driving</li> <li>o rail crossings</li> <li>o motorcycle safety</li> <li>o local enforcement support</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Inspections, preventive maintenance, routine repairs:                             <ul style="list-style-type: none"> <li>o Highways</li> <li>o Bridges</li> <li>o Rail system</li> <li>o Bus system</li> <li>o Airports</li> <li>o Ports &amp; Ferries</li> <li>o Bikeways/ walkways</li> </ul> </li> <li>- Hiring of outside vendors, when needed (e.g., paving, snow removal)</li> </ul>	<ul style="list-style-type: none"> <li>- System/service expansion, major rehabilitation/ renewal efforts (all modes)                             <ul style="list-style-type: none"> <li>o Project design/ engineering</li> <li>o Construction</li> <li>o Project management and delivery</li> <li>o Hiring of outside design and other consultants, contractors, when needed</li> <li>o Acquisition of property, equipment</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- State and municipal airports</li> <li>- Rail system</li> <li>- Bus system</li> <li>- Taxi services</li> <li>- Ridesharing</li> <li>- Bikeways/ walkways</li> <li>- Motorist assistance programs</li> </ul>	<ul style="list-style-type: none"> <li>- Inventory, track, evaluate system conditions</li> <li>- Master/long-range plans, STIP, SIP, other statewide planning efforts</li> <li>- Context Sensitive Solution (CSS) practices</li> <li>- Environmental assessments, mitigations/ accommodations</li> <li>- Asset management/life cycle costing</li> </ul>	<ul style="list-style-type: none"> <li>- Agencywide quality assurance/control (QA)/QC efforts</li> <li>- Communication and outreach                             <ul style="list-style-type: none"> <li>o Public participation process</li> <li>o Stakeholders meetings</li> </ul> </li> <li>- Publications (plans, reports, website)</li> <li>- Information technology</li> <li>- Centralized business processes (e.g., contracting, budgeting, funding accounting and fiscal reporting)</li> </ul>
<b>DOT Project Delivery : Implementation Phase (from formal design through completion of improvement)</b>					
<b>Key Program Performance Measures</b>					
<ul style="list-style-type: none"> <li>• On schedule</li> <li>• In compliance with appropriate standards and requirements (e.g., work quality, environmental, financial)</li> </ul>			<ul style="list-style-type: none"> <li>• On budget</li> <li>• Intended project benefits achieved (e.g., improved safety, increased mobility, reduced pollution, sustainable growth)</li> </ul>		

**PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT**

<b>ACRONYMS USED IN FIGURE II-1. RBA FRAMEWORK WORKING DRAFT</b>	
RPOs	Regional Planning Organizations
<b><i>State Agencies</i></b>	
DAS	Dept. of Administrative Services
DEP	Dept. of Environmental Protection
DECD	Dept. of Economic and Community Development
DMV	Dept. of Motor Vehicles
DPS	Dept. of Public Safety
OPM	Office of Policy and Management
<b><i>Federal Agencies</i></b>	
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FRA	Federal Rail Administration
FTA	Federal Transit Administration
NHTSA	National Highway Traffic Safety Administration
U.S. EPA	U.S. Environmental Protection Agency
<b><i>Advisory Groups</i></b>	
TSB	Transportation Strategy Board
BBD	Bradley (International Airport) Board of Directors
BICAB	Bradley International Community Advisory Board
SIMFT	Statewide Incident Management Task Force
CPTC	Connecticut Public Transportation Commission
CRCC	Connecticut Rail Commuter Council
CMC	Connecticut Maritime Commission

**PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT**

This Page is Intentionally Blank

## Section III: Program Accountability

---

### DOT PROJECT DELIVERY PROCESS PRELIMINARY “REPORT CARD”

Using the RBA approach, three main types of data are collected and analyzed to assess program-level accountability or how well the program is working. They include:

- 1) Outputs on quantity of effort (*how much did we do?*)
- 2) Outcomes about quality of effort (*how well did we do it?*)
- 3) Outcomes for customers, those served by the program (*is anyone better off?*)

An RBA evaluation of agency, system, or program effectiveness seeks to use data to: determine trends in performance; understand the “story behind the data” (reasons for the trends); and find ways to improve program performance (turn the curve), especially the end results for clients (program outcomes).

Preliminary information developed by PRI staff about how DOT is delivering its program of transportation system improvement projects is presented in this section. As described earlier in Section I, DOT project delivery is a complex process carried out by the agency’s four operating bureaus, with support from its centralized finance and planning bureaus. The procedures and policies related to project delivery vary by transportation mode (e.g., highways, public transit, aviation) and funding source. It is necessary, therefore, to identify and review a wide array of measures that can reflect the full range of the department’s project delivery “program.”

PRI staff is in the process of compiling and analyzing program performance data available from the department and determining what needs to be developed. A primary source of quantitative information on project delivery is the department’s “On the Move” performance measurement effort, initiated in January 2009.

At present, the DOT Bureau of Policy and Planning is tracking 31 performance measures developed to address results related to five core policy objectives: safety and security; preservation; efficiency and effectiveness; quality of life; and accountability and transparency. Progress is updated quarterly and reported on the agency website. A copy of the latest available DOT quarterly performance measures summary report, released in July 2010 (for the first quarter of calendar year 2010, January 1 through March 31) is presented in Appendix B.

Several federal sources of DOT project delivery performance data also are being examined by PRI staff. These include various project status reports the federal funding agencies require and the U.S. DOT annual “Condition and Performance” report on highways, bridges, and transit nationwide. One new FHWA initiative, “Every Day Counts,” is aimed directly at measuring and improving transportation project delivery results.

The following “report card” style chart presents some preliminary information about DOT project delivery performance, primarily in terms of how much is done. As the chart

## PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

indicates, much information remains to be gathered. In summary, three main categories of data, described briefly below, will be examined:

- **How much did we do?** Measures of the size and scope (quantity) of the department's project delivery effort that include: the number, size, and type of projects undertaken or completed each year; and the amount of resources, in terms of funding and staffing, used to deliver DOT projects.
- **How well did we do it?** Measures of the quality of DOT project delivery performance, such as the percentage of projects that are: on-schedule; on-budget; implemented with a minimum of changes; and in conformance with required standards and best practices; also, under RBA, one of most important effectiveness measures, whether customers are satisfied with agency or program performance.
- **Is anyone better off?** Direct outcomes for clients from project delivery are captured by measures of whether the DOT's process results in timely and cost-effective transportation system improvements; successful DOT project delivery also means the public benefits of the improvements themselves – such as enhanced safety, increased mobility, economic growth, sustainable development, protection of the environment and more livable communities – can be achieved sooner and more fully.

Client outcome measures usually are the most challenging RBA data to obtain, as few programs or agencies gather or maintain any information on what difference the functions they carry out and services they provide make to the people who receive them. Further, it can be difficult to isolate results due to a particular state program or function, especially over the long term, from intervening, externally driven factors (e.g., economic conditions, weather, changes in federal law). PRI staff is working with transportation department staff and other stakeholders and experts to identify and compile, when available, the best data on end results for DOT project delivery for presentation in this study's final report.

## DOT PROJECT DELIVERY: RBA PROGRAM PERFORMANCE ASSESSMENT

- Delivery of DOT transportation system improvement projects involves both project development and project implementation. This study, and the following performance assessment, however, focuses on the implementation phase of major state transportation projects.
- The Department of Transportation project delivery implementation is aimed at carrying out physical and operational improvements to the state system of transportation:
  - on time ;
  - within budget; and
  - in compliance with appropriate standards and requirements.Efficient and effective project delivery also helps achieve the safety, mobility, environmental, economic, and other public benefits desired from an implemented improvement sooner and more fully.
- The wide array of highway, bridge, public transit, aviation, and maritime improvement projects delivered by DOT are administered by four separate bureaus – Engineering and Construction, Highway Operations, Public Transit, and Aviation and Ports. The Bureaus of Finance and Administration and Policy and Planning provide critical support functions for effective project delivery, such as budgeting, accounting, contracting, and performance measurement. (The agency structure and overall project delivery process are described in detail in Section I of this document.)
- Four federal agencies – Federal Highway Administration, Federal Transit Administration, Federal Rail Administration and Federal Aviation Administration – have significant roles in Connecticut’s transportation project delivery implementation.
- The state’s 15 Regional Planning Organizations and 169 municipalities also are main DOT partners in implementing state transportation system improvement projects.

### CONTRIBUTES TO THE QUALITY OF LIFE RESULTS STATEMENT:

*“Connecticut has a safe and efficient intermodal transportation network that improve the quality of life and promotes economic vitality for the state and the region.”*

**Main Role of DOT Project Delivery:** help maintain Connecticut’s transportation infrastructure in a state of good repair, expand system capacity, and increase travel options in compliance with environmental, work quality and other standards, which is central to public safety, mobility, economic growth, and sustainable and livable communities.

## I. How Much Did We Do?

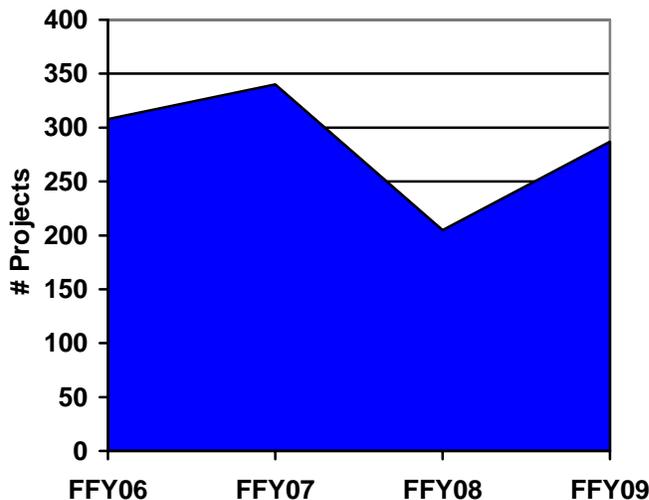
*NOTE: Data for Performance Measures 1, 2, and 3 below are for highway, bridge, and public transit projects in the state that received federal funding (aviation and ports projects are not included). Projects receiving federal funding often require matching dollars from the state; other projects are carried out solely with state funds. Information is still being collected for DOT projects solely funded by the state, aviation and ports projects, and federally funded municipal projects overseen by DOT.*

*Data for Performance Measure 4, construction contracts awarded, captures another aspect of how much the department does related to project delivery. Highway, bridge, public transit, and aviation/ports system improvement projects are reflected in this measure.*

*Performance Measure 5 provides information regarding closed out projects for highways and bridges. These projects have met all federal requirements for completion and final payments have been made.*

*Performance Measure 6 includes data for project agreements. In addition to contracts for project construction, DOT executes a variety of agreements for project design. Agreements may include consultants for architectural, engineering, and surveying.*

### 1) Number of Transportation Projects Authorized (FFYs 2006-09)\*



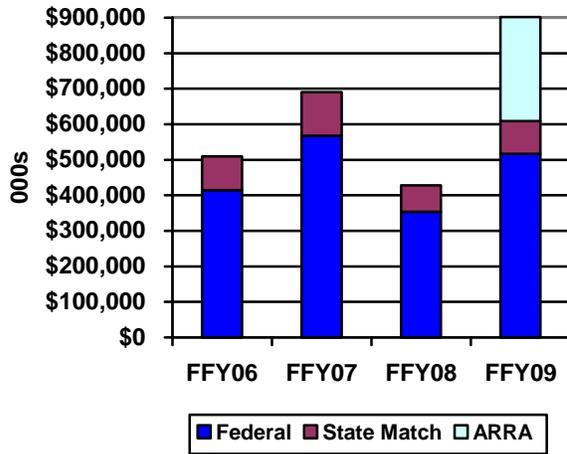
Source: Obligated and Granted Projects Reports (DOT)

Data

- 308 highway, bridge, and public transit projects received federal funding authorization in FFY06. Projects increased about 10% to 340 in FFY07. The number of projects then decreased almost 40% to 205 in FFY08. Total projects increased 40% again in FFY09 to 287.
- States began receiving federal stimulus funding under the American Recovery and Reinvestment Act (ARRA) for transportation projects in FFY09; 52 projects in Connecticut were funded through ARRA that fiscal year.

\*Includes all projects at different stages of implementation – preliminary engineering, to rights-of-way, or in some phase of construction – with federal funds authorized (i.e., obligated) in a given fiscal year. Within the construction phase, projects may be awaiting bids, awaiting awards, or under construction.

**2) Total Dollar Amounts for Federally-Funded Projects Implemented in FFYs 2006-09\***

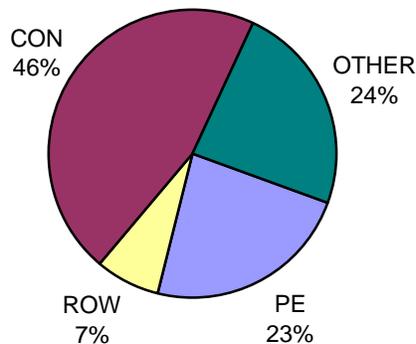


- In recent years, total funding authorized (i.e., obligated) by the federal government combined with Connecticut DOT matching state funds for projects ranged from a low of \$428 million in FFY08, to a high of just over \$902 million in FFY09.
- The increase in FFY09 is in large part attributable to the almost \$294 million in federal stimulus funding committed to Connecticut for transportation projects that year.

Data Source: Obligated and Granted Projects Reports (DOT)

\*Transportation projects receiving federal funding generally require matching dollars from the state. Typically, the funding ratio is 80% federal, 20% state, although it may differ depending on factors such as type of project and federal funding source.

**3) Types of Authorized Projects by Project Delivery Phase (FFY09)**



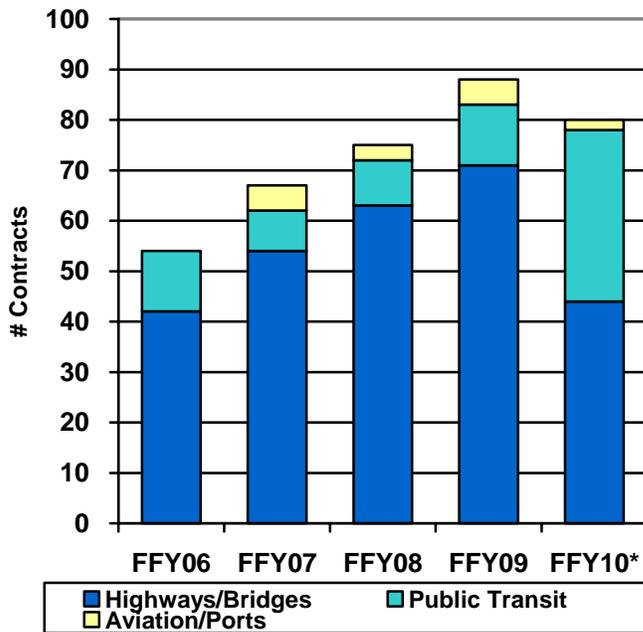
N=287

Data Source: Obligated and Granted Projects Reports (DOT)

- 76% of the nearly 300 federally authorized projects in FFY09 were in some phase of design (preliminary engineering or rights-of-way) (30%) or construction (46%). Almost a quarter (24%) of projects were in another delivery phase which encompasses all parts of implementation are not formally classified as one of the other three project delivery phases, such as capital acquisition for public transit.

PE (Preliminary Engineering); ROW (Rights-of-Way); CON (Construction); OTHER (covers various project delivery components for public transit projects.)

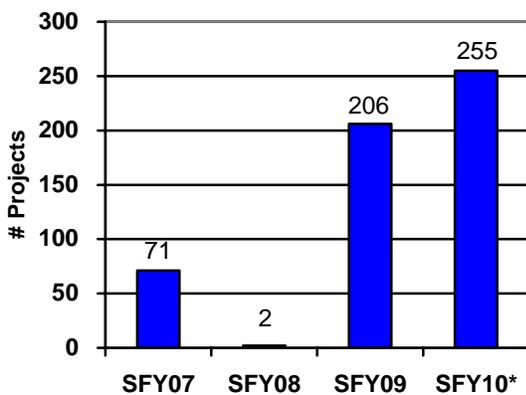
**4) DOT Projects: Number of Contracts Awarded by Mode (FFYs 2006-10)**



\*As of 9/23/10  
Data Source: DOT

- The total number of transportation project contracts awarded by mode for FFYs06-10 was: Highway/Bridges (274), Public Transit (75), and Aviation/Ports (15)
- Since FFY06, the highest volume of contractor contract awards has been for highway and bridge projects, which averaged roughly 80% of all awarded contracts, followed by public transit and aviation/ports.
- The number of contracts awarded for public transit projects in FFY10 more than doubled from previous years, due to an increase in awards under ARRA, state-only funded projects, and projects with special authorizations.

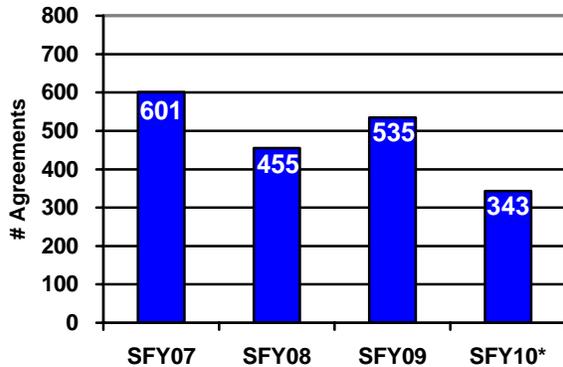
**5) Number of DOT Projects Closed Out: SFYs 2007-10 (FHWA-Funded Projects Only)**



\*As of March 2010  
Data Source: Summary of DOT Performance Measures, (rev. 8/10)

- Close out is a financial process that indicates the completion of final project payment and “paperwork.”
- The total number of FHWA projects closed out by the department has increased more than three-fold between SFY07 and the third quarter of SFY10.
- Poor close out performance in SFY08 is related in part to the department’s transition to the CORE-CT financial management system. Efforts are continuing between DOT and FHWA to lessen the current backlog of approximately 800 projects.

**6) Number of DOT Project Agreements (SFYs 2007-10)**



As of 3/10  
Data Source: DOT

- In addition to construction contracts, DOT executes a variety of agreements for project design. Agreements may include consultants for architectural, engineering, and surveying.
- The average number of agreements entered into by DOT per year since SFY07 is 483. Efficient administration of such agreements is important to the overall timeliness of the DOT project delivery process.

**II. How Well Did We Do It?**

**A. Projects are completed on schedule.**

1. Projects meet established timeframes
  - a. Percent of projects completed on schedule
    - i. By or before original date/number working days
    - ii. By updated date/number working days

- Overall schedule performance unknown because data availability varies by bureau, type of project, and funding source
- Timeliness of individual projects monitored by DOT staff
- Best currently available data tracked by the DOT Office of Construction for FHWA, FTA, and FFA projects and under review by PRI staff
- DOT recently developed an on-schedule performance measure for most of its construction projects and will be reporting quarterly progress on the agency website

2. Administrative procedures related to projects are implemented efficiently:
  - a. Percent of contracts awarded on time
  - b. Percent of agreements executed on time
  - c. Percent of projects closed out on target

- In response to FHWA concerns, DOT undertaken several efforts to improve administrative efficiency in processing contracts and agreements such as better interagency communication, better interagency coordination, standardized legal documents (e.g., Master Municipal Agreement)
- PRI staff reviewing relevant performance data; considerable improvement indicated by currently reported measures – for example:
  - Percent of projects awarded within 60 days of bid opening increased from 30% in July 2008 to 92% by 2010 (Q1)
  - Percent of agreements executed in under 60 days increased from 28% in July 2008 to 59% by 2010 (Q1)

**PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT**

<b>B. Projects are completed within budget.</b>	
<p>3. Projects meet established cost estimates</p> <ul style="list-style-type: none"> <li>a. Percent of projects completed on budget                             <ul style="list-style-type: none"> <li>i. At or below original cost</li> <li>ii. Within 10% of original cost</li> </ul> </li> <li>b. Cost overruns as percent of project budget</li> <li>c. Change orders as percent of project budget</li> </ul> <p>4. Project costs reasonable</p>	<ul style="list-style-type: none"> <li>• Overall on-budget performance unknown because data availability varies by bureau, type of project, and funding source</li> <li>• Budgets of individual projects monitored by DOT staff</li> <li>• Best currently available data tracked by the DOT Office of Construction for FHWA, FTA, and FFA projects and under review by PRI staff</li> <li>• DOT recently developed an on-budget performance measure for most of its construction projects and will be reporting quarterly progress on the agency website</li> <li>• Comparative cost measures for projects to be developed with assistance of DOT staff and experts; for example, applicable “unit costs” such as dollars-per-mile-paved, and major expenditure categories (design fees, equipment, etc.) could be compared to among similar projects, to industry averages</li> </ul>
<b>C. Projects are actively managed by using data, monitoring, and evaluation to ensure work quality, compliance with environmental and other standards, and good outcomes for clients.</b>	
<p>5. Project implementation performance is evaluated</p> <ul style="list-style-type: none"> <li>a. Number of project outcome reports issued</li> <li>b. Number of project “lessons learned” meetings held</li> </ul>	<ul style="list-style-type: none"> <li>• Information about project follow-up efforts not compiled at present</li> <li>• Appears evaluations of final project success rare</li> <li>• Agency staff resources for project evaluation function limited; also, timeframe required for assessment of long-term results challenging</li> </ul>
<p>6. Compliance with contract/agreement standards monitored</p> <ul style="list-style-type: none"> <li>a. Number of contracts cancelled for noncompliance</li> <li>b. Liquidated damages collected</li> </ul>	<ul style="list-style-type: none"> <li>• PRI staff developing measures for final report</li> <li>• Current procedures appear to vary by bureau and district office</li> <li>• Central office contract management capacity limited; fiscal division staff seem to focus on monitoring expenditures</li> </ul>
<p>7. Coordinate with other agencies on financial compliance, environmental compliance, economic growth goals</p> <ul style="list-style-type: none"> <li>a. Federal audit/annual review findings</li> <li>b. Project environmental permits denied</li> <li>c. Projects with environmental violations</li> </ul>	<ul style="list-style-type: none"> <li>• PRI staff developing measures for final report</li> </ul>
<b>D. Stakeholders, including those directly served by transportation improvement projects, are satisfied that project delivery implementation is efficient and effective</b>	
<p>8. Seek and use feedback about project delivery performance from</p>	<ul style="list-style-type: none"> <li>• Appears little collected formally; periodic public transportation customer surveys conducted and Bureau of Finance and Administration recently</li> </ul>

**PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT**

customers and stakeholders - Public - Outside Contractors/Consultants - Municipal/regional officials - DOT staff	created an on-line survey for contractor feedback <ul style="list-style-type: none"> <li>• Regular meetings held with RPOs</li> </ul>
--	--

**III. Is Anyone Better Off ?**

*NOTE: Available client outcome data generally reflect the impact of all agency efforts to improve the state transportation system. Positive results associated with successful project delivery, therefore, cannot easily be isolated from the public benefits achieved from the implemented improvements.*

**A. Project delivery process is successful.**

9. Project benefits achieved on time or sooner than scheduled	<ul style="list-style-type: none"> <li>• PRI staff developing measures for final report</li> </ul>
10. Improvements achieved are cost-effective	

**B. Project benefits are achieved from implemented improvements.**

11. Evidence that delivered projects: - make travel safer - reduce travel time - increase access - maintain the network in a state of good repair - promote livability, sustainability and economic vitality - improve environmental quality	<ul style="list-style-type: none"> <li>• PRI staff developing measures for final report</li> </ul>
--	--

**Story Behind Program Performance Data**

PRI staff are in the process of gathering and analyzing data related to the measures outlined above, as well as developing additional measures. This information will be used to determine: the most important reasons for current project delivery performance levels; and how DOT compares to other state transportation agencies and nationally established benchmarks. This pilot project’s six-month timeframe will not permit PRI staff sufficient time to evaluate the entire project delivery process in depth or to examine in detail a representative sample of DOT projects.

However, PRI staff are working to identify generally accepted best practices for implementing major transportation system improvements. These will be used as the backdrop for assessing the department’s

## **PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT**

overall project delivery performance. Staff also will examine several agency projects in-depth, like case studies (although not in a strict research methods sense), for better insight into the procedures and policies DOT actually uses for project delivery. The specific case reviews also will be used to discover any broadly applicable “lessons learned” about successful (or unsuccessful) project delivery implementation.

### **Actions to Turn the Curve:**

#### **Information on DOT efforts underway; PRI staff recommendations**

PRI staff recommendations for achieving better results from DOT project delivery will be developed during the next phase of this pilot project study. A discussion of current agency efforts to improve its performance and a proposed data development and research agenda also will be included in the final report for the project.

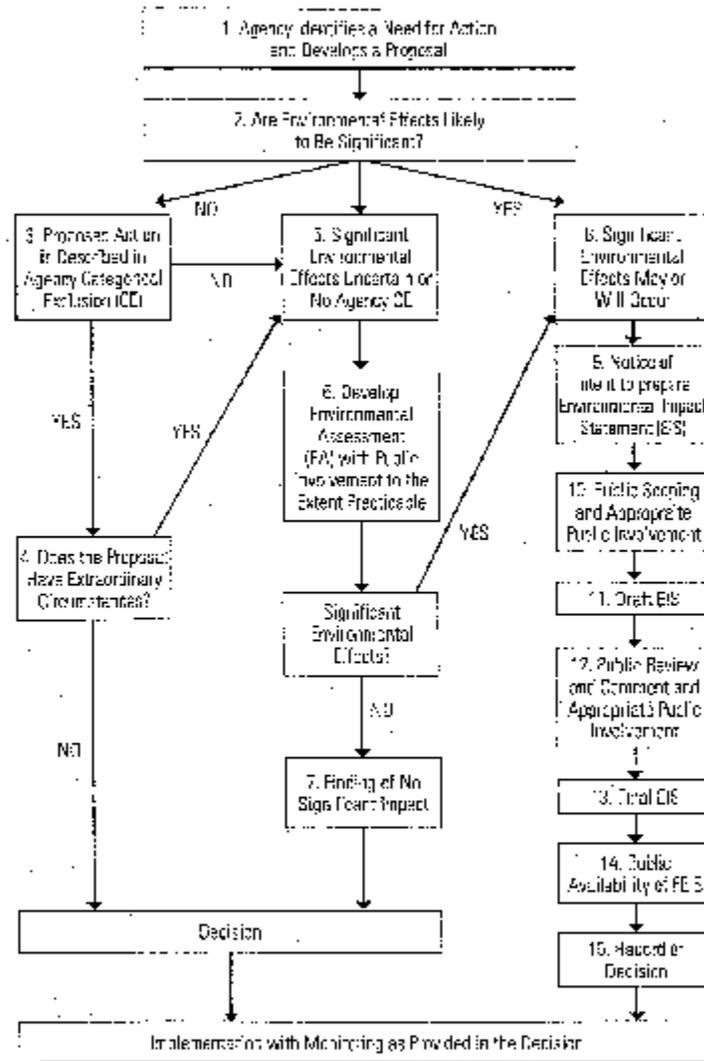
## **APPENDICES**

**PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT**

This Page is Intentionally Blank

APPENDIX A

The NEPA Process



Significant new circumstances or information relevant to environmental concerns or substantial changes in the proposed action that are relevant to environmental concerns may necessitate preparation of a supplemental EIS following either the draft or final EIS or the Record of Decision (RC) (NEPA Regulations, 40 C.F.R. § 1502.91(c))

Source: Council on Environmental Quality: A Citizen's Guide to NEPA., December 2008.

**PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT**

This Page is Intentionally Blank

PRI RESULTS BASED ACCOUNTABILITY PROJECT 2010: STAFF INTERIM REPORT

APPENDIX B.

SUMMARY OF CT DOT PERFORMANCE MEASURES						
2010 QUARTER 1 (JANUARY 1 TO MARCH 31)						
Revised: 06/06/2010						
ID	Status	Measure	Current Value (January 1, 2010 to March 31, 2010)	Target Value	Trend	Target Met
<b>Safety &amp; Security (SS)</b>						
SS-01	▲	Rate of Annual Highway Fatalities	0.83 fatalities per 100 million vehicle miles traveled (VMT) 7.5 fatalities per 100,000 population	Less than or equal to 1.0 per 100 million vehicle miles traveled (VMT) Less than or equal to 7.7 per 100,000 population	↗	✓
SS-02		Percent of Seat Belt Usage	86% Seat Belt Usage	90% Seat Belt Usage	↘	
SS-03	●	Number of Motorcycle Riders Trained	n/a			
SS-04	▲	Number of CHAMP Motorist Assistants	4,516 Assistants	Maintain ability to assist at least 20,000 motorists per year	→	
<b>Preservation (PR)</b>						
PR-01	▲	Percent of Roads with Good Ride Quality	44% of NHS made with Good Ride Quality	Increase percentage of roads with Good Ride Quality	↗	✓
PR-02	▲	Number of Bridge Work Items Completed	Facilitated=332 Completed=266 Backlog=666 \$M's=1246	Maximize completion of work items and reduce the backlog	↗	
PR-03	▲	Percent of CT DOT Roadway Bridges in Good Condition	34% of Bridges in Good Condition	Increase Percentage of Bridges in Good Condition.	↘	
PR-04	▲	Mean Distance Between Failures (Rail)	Locomotive—29,674 mi; Coach—281,140 mi; M2 EMU—122,964 mi; M4 EMU—87,972 mi; M6 EMU—71,166 mi	Locomotive—35,000 mi; Coach—260,000 mi; EMU M2—80,000 mi.; M4—65,000mi; M6—60,000mi.	↗	✓
PR-05	▲	Mean Distance Between Transit Failure (Buses)	4,782 mi. — 2010 Q1	5000 Miles Mean Distance Between Failure	→	
PR-06		Average Age of Bus Fleet	State 7.6 yrs. Transit District 5.8 yrs.	Average Fleet Age of 6.0 years	↘	
PR-07		Percent of Airport Pavement Rated Good or Excellent	Gen. Aviation=90% Good or Excellent Bradley Int.=100% Good or Excellent	100% Good or Excellent	↗	✓ 10
<b>Efficiency &amp; Effectiveness (EE)</b>						
EE-01	▲	Number of Rail Passengers	8,630,501 - NH 134,451 - SLE	8,287,234—NH 137,200—SLE	↘	✓ 10
EE-02	▲	Percent of Rail On-Time Performance	97.2% - NH 97.4% - SLE	97.0% - NH 95.0% - SLE	↗	✓
EE-03	▲	Number of Bradley International Airport Passengers	1,179,055	Maintain or Exceed 2009 Q1 Values 1,260,473	↘	
EE-04	▲	Revenue Generated from Bradley International Airport Parking	\$4,655,910	Maintain or Exceed 2009 Q1 Values \$4,930,000	↘	
EE-05	▲	Cost Savings from Photolog Usage	\$324,165	\$500,000 per quarter (\$2,000,000 per year)	↘	
EE-06	●	Percent of Statewide Roadway Network Digitized	n/a			
EE-07		Percent of Rights-of-Way Purchases Attained by Agreement	91 Percent for SPY 2009	Greater than 90 percent per year	↘	✓
EE-08	▲	Number of CT Transit Passenger Trips	6,086,375 passenger trips	6,250,000 passenger trips per quarter	↗	
<b>Quality of Life (QL)</b>						
QL-01		Amount of Recycled Material Used in Projects	Demolition Debris 462,730 Tons Wood 591 tons Steel 1,140 Tons	Maximize Recycling and Reuse of Materials	↗	✓
QL-02		Percent of Road Network with Traffic Volumes Greater than Capacity	8.79% miles over capacity	Reduce congestion throughout the state	↗	✓
QL-03	▲	Average Highway Incident Duration Time	Car: 48 minutes Jackknifed Tractor Trailers: 84 min Overturned Tractor Trailers: 9hr 3min	Car: <45 minutes Jackknifed Tractor Trailers: < 180 min Overturned Tractor Trailers: <5 hours	↘	✓ 10
QL-04	▲	Average Highway Incident Response Time	2 minutes, 17 seconds	3 minutes (or less)	↗	✓
QL-05		Percent of Funds Expended for Bicycle/ Pedestrian Access	1.9 Percent Expended for Pedestrian and Bicycle Access in SPY 2009	Expend at Least One Percent of Total Funds Received, on Facilities that Improve Bicycle and Pedestrian Access	↗	✓
<b>Accountability &amp; Transparency (AT)</b>						
AT-01	▲	Percent of Agreements Executed in Under 60 Days	59% — SPY 2010 Q3 (CY 2010 Q1)	Increase % of Agreements Executed in Under 60 Days	↗	✓
AT-02	▲	Percent of Construction Contracts Awarded within 60 Days of Bid Opening	92% — SPY 2010 Q3 (CY 2010 Q1)	100% awarded within 60 days	↗	
AT-03	▲	Number of Project Closeouts	56 — SPY 2010 Q3 (CY 2010 Q1) 255 - SPY 2010 YTD	250 projects closed in SPY 2010	↗	✓
AT-04		CT RECOVERY Percent Funds Obligated	Highways 100% 03/02/10 Transit 100% 03/05/10	Highways 50% by 7/1/09, 100% by 3/2/10 Transit 50% by 5/1/09, 100% by 3/5/10	↗	✓
AT-05	▲	CT RECOVERY Percent Dollars Expended	21.2 % (\$96,908,582)	100 % (\$425 million)	↗	
AT-06	▲	CT RECOVERY Number of Jobs Created/Sustained	10,848 Jobs Created/Sustained	Increase Jobs Created/Sustained	↗	✓
AT-07	▲	CT RECOVERY Percent of Stimulus Projects Completed On-Time	90 Percent Completed On-Time (Ten Projects Completed by May 31, 2010)	Maximize % of Stimulus Proj. Completed On-Time	↘	

Source: Connecticut DOT website (<http://www.ct.gov/dot/cwp/view.asp?a=3815&q=448402>)