



TRANSPORTATION RESEARCH SYNTHESIS

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STATE OF PRACTICE FOR DEFINING, DEMONSTRATING, AND DOCUMENTING TRANSPORTATION EFFICIENCIES

Public transportation agencies often have an interest in demonstrating efficiencies in the capital development, maintenance, and operations of transportation systems. At the federal level, President Obama’s recent transportation budget proposes “increased quality and value in core administrative functions to enhance productivity and achieve cost savings....bringing greater value and efficiency for taxpayer dollars” (Balutis, 2014)

With the increasing challenge of reduced funding, it is not uncommon for a State DOT to have a goal of achieving X% cost savings through efficiencies in their annual capital and/or operations budget (e.g. by implementing innovative approaches or other strategies that reduce the overall needed budget or expanding services.)

While there is growing interest in documenting efficiencies, there is not clear consensus on how efficiencies are defined and/or what elements are included. Further, the issue is complicated by the consideration of efficiencies that reduce “internal” DOT costs (e.g. materials, labor, equipment) as well as efficiencies that reduce “external” costs (e.g. user costs such as traffic delay, mitigated or reduced detours, and traveler safety, but not necessarily a tangible cost expended by the DOT).

This Transportation Research Synthesis (TRS) examines how transportation agencies define, demonstrate, and document efficiencies. The research resulted in a compilation of State DOT survey results, interview summaries for eight featured State DOTs selected by MnDOT, one international transportation agency example, and several appendices that show detailed examples of cost savings achieved from efficiencies in transportation.

This synthesis includes the following sections:

1. [Approach](#) – Summarizes the process used for gathering information via a survey of State DOTs and through interviews with selected agencies.
 2. [Summary of Findings](#) – Results from the State DOT survey, summaries of interviews with selected DOTs, and other notable agency practices.
 3. [Conclusions](#) – Key observations and conclusions
- [Appendix A](#) – Survey issued to State DOTs
- [Appendix B](#) – All survey responses received from State DOTs
- [Appendices C-M](#) - Examples of Cost Savings from Efficiencies from State DOTs

1. Approach

In order to provide MnDOT with a summary of key practices for how other entities define, demonstrate, and document efficiencies, information was gathered from a survey administered to State DOTs. In addition, interviews were conducted with a number of selected agencies, to clarify survey responses and gather additional relevant information.

1.1 State DOT Survey

A survey was developed to gather information from State DOTs on how other State DOTs define, demonstrate, and document efficiencies. The survey was intended for responses from State DOT's Chief Financial Officer, Controller, or Finance Director. The survey focused on collecting information about if they track cost savings through efficiencies, their definition of efficiencies, and examples of how and what type of efficiencies they are calculating and tracking. The survey also queried respondents about any challenges that may influence the limits of efficiencies and any lessons learned that have been valuable.

The following questions were distributed by MnDOT using the American Association of State Highway and Transportation Officials (AASHTO) Research Advisory Committee (RAC) email listserv. The listserv is utilized to solicit information from state DOT representatives regarding various DOT practices. When using the AASHTO RAC listserv, survey results are posted in the RAC Survey Results database and posted online (<http://research.transportation.org/Pages/RACSurveyResults.aspx>) in order to provide information back to those who participated in the survey as well as to other interested parties. The listserv includes state DOT research management professionals who distribute survey questions to the appropriate staff within their agency for response. This survey was targeted to individuals in the following positions within each agency: Chief Financial Officer, Director of Finance, or Controller.

State DOT Survey Questions: Survey of State Transportation Agencies – Defining, Demonstrating, and Documenting Transportation Efficiencies	
1.	Does your agency demonstrate and/or track cost savings through 'efficiencies'? Comments? <ul style="list-style-type: none">• Yes• No
2.	Do you have a prescribed definition for 'efficiencies' within the department? If yes, please provide the definition in the box below and attach any documents describing the definition: <ul style="list-style-type: none">• Yes• No

3. Indicate whether you have used, considered, or not considered any of the following approaches for demonstrating cost savings through efficiencies:
- Actual costs vs. programmed costs
 - Improved project scoping
 - Reduced materials usage
 - Improved methods (e.g. calculations, processes, construction, capital program implementation)
 - Reduced maintenance costs (e.g. mowing, patching, strategies that extend the life of the system)
 - Reduced system operations costs (e.g. snow and ice control, traffic management, strategies that keep the system functioning)
 - Reduced agency administration costs (e.g. human resources, administrative overhead, IT, financial management and planning)
 - Innovative contracting (e.g. design/build, value engineering)
 - Increased user benefits (e.g. safety improvements, congestion reduction, reduced number of days of detour delay)
 - Innovative approaches that have a higher initial cost but result in cost **savings to the DOT** over time (e.g. longer service life, reduced annual operations costs)
 - Innovative approaches that have a higher initial cost but provide user benefits over time (e.g. safety improvements, congestion reduction, reduced number of days of detour delay)

Please list any other approaches you have considered or completed, to demonstrate cost savings through efficiencies:

4. How does your agency document efficiencies? (select all that apply)
- We produce (formal or informal) documentation that is shared with the public. Please provide the website where this document is posted or attach document to your response:
 - We produce documentation (formal or informal) with stakeholders, such as legislators, governor, chambers, etc.
 - We produce internal documentation for management use
 - We don't document cost savings through efficiencies
 - Other:

5. Can you provide any written examples of how you have calculated and/or demonstrated cost savings through efficiencies?
- We cannot provide any examples
 - We would be willing to discuss this over the phone to describe the examples
 - We have examples that we'd be willing to share (please attach examples to your response)

<p>6. A. Generally speaking, how successful has your agency been in demonstrating efficiencies?</p> <ul style="list-style-type: none"> • Very successful • Moderately successful • Somewhat successful • Unsuccessful
<p>6. B. How do you measure your success, and/or what is your reasoning for your answer above (response above in 6A)?</p>
<p>7. Does your State have legislatively and/or constitutionally designated roadways? (For instance, Minnesota state statutes require that MnDOT operate roads between a number of specific cities. See the following websites for relevant MN State Statutes:</p> <ul style="list-style-type: none"> • www.revisor.mn.gov/statutes/?id=161.114&year=2013&keyword_type=all&keyword=route • www.revisor.mn.gov/statutes/?id=161.115&year=2013&keyword_type=all&keyword=route
<p>8. Does your State have any other rules or challenges that may influence the limits of efficiencies that can be achieved by the agency?</p> <ul style="list-style-type: none"> • Yes • No <p>If yes, please provide a brief description of these challenges:</p>
<p>9. Does your agency have a Department-wide Cost Allocation Plan that you'd be willing to share with MnDOT?</p> <ul style="list-style-type: none"> • Yes (please attach the Cost Allocation Plan) • No
<p>10. As we (MnDOT) are working to increase our efficiency reporting and tracking – both for our own purposes and for our stakeholders; is there any advice you'd offer us that we've not asked about? Perhaps lessons learned that have been valuable to your agency?</p>
<p>11. Are there one or more DOTs that you are aware of, that are out ahead of other DOTs in this area? If so, which ones?</p>

The questions were distributed in two formats: an interactive Microsoft Word document form and as an online survey. The two formats were provided to allow the RAC listserv contacts to review the questions and, as appropriate, request a response from appropriate individuals within their agency. [Appendix A](#) includes the Microsoft Word format of the State DOT survey. [Appendix B](#) includes a summary of all survey responses received. The [Summary of Findings](#) section includes an overview of the results of the survey.

1.2 Selection of Featured Agencies for Interviews

Prior to the start of the project and upon review of responses from the State DOT survey, MnDOT selected a number of agencies, listed below, to participate in interviews to provide information about their practices. Featured agencies were selected based their history and experience with demonstrating efficiencies.

- Arizona DOT
- Colorado DOT
- Florida DOT
- Georgia DOT
- Missouri DOT
- New Jersey DOT
- Utah DOT

2. Summary of Findings

2.1 Results from State DOT Survey

This section provides results from the State DOT survey that was distributed by MnDOT through the AASHTO RAC listserv. [Appendix B](#) provides all survey responses received. The following 12 DOTs responded to the survey.

- Arizona DOT
- Colorado DOT
- Connecticut DOT
- Florida DOT
- Georgia DOT
- Louisiana Department of Transportation and Development (LA DOTD)
- Missouri DOT
- Maine DOT
- New Jersey DOT
- Utah DOT
- Wisconsin DOT
- Wyoming DOT

Of the 12 DOTs that responded, 11 indicated that they demonstrate and/or track cost savings through efficiencies. Maine DOT indicated that they do not currently demonstrate cost savings through efficiencies, but they are developing a process to do so as part of their Strategic Plan capstone measures. The following provides selected information and trends from the 11 DOTs who responded that they demonstrate and/or track cost savings through efficiencies.

2.1.1 Definitions of Efficiencies

5 of 11 DOTs indicated that they have a prescribed definition for “efficiencies” within the department. Those who provided definitions are summarized below:

Agency	Definition
Arizona DOT	Professional practices to develop efficiency and effectiveness by identifying processes that deliver quality outcomes to an end-user customer, and using performance measurements and structured problem solving to improve outcomes and reduce waste.
Colorado DOT	CDOT does not have a single definition for efficiencies. Rather, efficiencies are defined on a process by process basis.
New Jersey DOT	Efficiencies are typically defined as initiatives that save NJDOT in operating or capital funds.
Utah DOT	Quality Throughput divided by Operational Expenses (QT/OE)
Wisconsin DOT	<p>Definitions are documented at the WisDOT MAPSS Improvement Program website: www.mapss.wi.gov.</p> <p>Mobility: Delivering transportation choices that result in efficient trips and no unexpected delays.</p> <p>Accountability: The continuous effort to use public dollars in the most efficient and cost-effective way.</p> <p>Preservation: Protecting, maintaining and operating Wisconsin's transportation system efficiently by making sound investments that preserve and extend the life of our infrastructure, while protecting our natural environment.</p> <p>Safety: Moving toward minimizing the number of deaths, injuries and crashes on our roadways.</p> <p>Service: High quality and accurate products and services delivered in a timely fashion by a professional and proactive workforce.</p>

2.1.2 Approaches for Demonstrating Efficiencies

A ranked order of approaches for which State DOTs indicated “we have demonstrated efficiencies” is provided below:

List of Potential Approaches Provided in Survey	Number of DOTs that have demonstrated efficiencies
- Reduced maintenance costs	9
- Increased user benefits	
- Innovative approaches that have a higher initial cost but result in cost savings to the DOT over time	8
- Actual cost vs. programmed costs	
- Improved project scoping	
- Innovative contracting	7
- Innovative approaches that have a higher initial cost but provide user benefits over time	
- Reduced system operations costs	6
- Reduced agency administration costs	
- Reduced materials usage	5
- Improved methods	

2.1.3 Advice and Lessons Learned

When asked if they had any advice or lessons learned to share with MnDOT (beyond the questions asked in the survey) the following responses were received:

Agency	Advice / Lessons Learned
Arizona DOT	Look for opportunities for shared revenue on programs such as "logo sign operations" or with your third party vendors that may have statutory retention fees that could be reinvested in your agency systems through mutual agreements. ADOT has a dedicated position for training agency programs on how to identify and implement efficiencies (e.g. process improvements, IT solutions, statutory or administrative rule changes.)
Georgia DOT	Effectiveness may be a better focus than efficiency.
Louisiana DOTD	We implemented an integrated SAP system that will ultimately allow us to have the data necessary to identify and demonstrate additional efficiency opportunities in the future. We are looking at a comprehensive records management system that once developed and implemented would create efficiencies in our everyday work /processes.
New Jersey DOT	NJDOT's challenge, consistent with many public agencies, is to identify key areas of potential efficiency and to allocate sufficient time and effort to develop them. This requires a willingness to de-emphasize or defer issues that are arguably of less importance but which tend to dominate the daily workload. From a time management perspective, a mechanism needs to be established that raises the importance of efficiency items for agency executives.
Wisconsin DOT	Various approaches are needed to adequately communicate efficiency efforts to stakeholders. Web based reporting, town hall meetings, and incorporating these topics into meetings and presentations with stakeholders are common for us. Ongoing commitment from the WisDOT Secretary's Office has been key to our success.

2.1.4 Documentation of Efficiencies

In response to the question “how does your agency document efficiencies? (select all that apply)”, the following distribution of responses was received:

- 5 of 11 DOTs (45%) produce formal or informal documentation that is shared with the public
- 7 of 11 DOTs (64%) produce formal or informal documentation that is shared with stakeholders such as legislators, governor, chambers, etc.
- 8 of 11 DOTs (73%) produce internal documentation for management use

The table below provides a list of published documentation provided by each of the 5 agencies who responded that they produce formal or informal documentation that is shared with the public.

Agency	Published Documentation (as provided by each agency)
Colorado DOT	<ul style="list-style-type: none"> • Summary of results from CDOT process improvement efforts (November 1, 2013): www.coloradodot.info/business/process-improvement/summary-of-results-from-cdot-improvements/summary-of-results-from-improvement-efforts-11-1-2013/view (See Appendix C for the full document.) • Summary of results from CDOT process improvement efforts (July 22, 2013): http://www.coloradodot.info/business/process-improvement/summary-of-results-from-cdot-improvements/summary-of-results-from-improvement-efforts-7-22.pdf/view (See Appendix D for the full document)
Connecticut DOT	<ul style="list-style-type: none"> • CT-DOT “On the Move” Performance Measures Report: http://www.ct.gov/dot/cwp/view.asp?a=3815&q=448402 (No cost savings examples found in this report.)
Missouri DOT	<ul style="list-style-type: none"> • Missouri DOT Performance Measures “Tracker”: http://www.modot.org/about/documents/April2014TrackerReduced.pdf (See Appendix G for examples of cost savings from this document)
Utah DOT	<ul style="list-style-type: none"> • UDOT 2013 Annual Efficiencies Report: https://www.udot.utah.gov/main/uconowner.gf?n=14393526959106954 (See Appendix J for a summary of cost savings from this document) • UDOT 2012 Annual Efficiencies Report: http://www.udot.utah.gov/main/uconowner.gf?n=2744130635144498 (See Appendix K for a summary of cost savings from this document) • UDOT Annual Efficiencies Reports for 2006-2012: https://www.udot.utah.gov/main/f?p=100:pg:0:::1:T,V:3136
Wisconsin DOT	<ul style="list-style-type: none"> • Wisconsin DOT April 2014 MAPSS Performance Improvement Report: www.dot.wisconsin.gov/about/performance/docs/perf-report.pdf (See Appendix L for examples of cost savings from this document) • Wisconsin “Lean Government” Initiative: http://www.dot.wisconsin.gov/about/performance/docs/leangovernmentinitiative-annualrpt2013-v2.pdf (See Appendix L for examples of cost savings from this document)

The table below provides a list of unpublished documentation (e.g. reports and/or summaries) provided by State DOTs, which provide relevant examples of cost savings achieved from efficiencies.

Agency	Documentation
Florida DOT	Appendix F contains a document describing Florida DOT’s strategies (implemented and pursuing) for cost savings from efficiencies as of May 2014.
Wyoming DOT	Appendix M contains examples of cost savings strategies from Wyoming DOT’s report “Efficiencies, Saved Resources and Reduced Expenditures”, amended November 2013.

Note: Though Arizona DOT, New Jersey DOT, and Georgia DOT did not provide written documentation of cost savings achieved through efficiencies, these agencies did provide relevant examples via phone interviews. These examples can be found in the interview summaries in [Section 2.2 Synthesis of Practices](#).

2.2 Synthesis of Practices

2.2.1 State DOT Interview Summaries

The following seven agencies were selected by MnDOT to participate in interviews to provide information about their practices in defining, demonstrating, and documenting cost savings through efficiencies.

- Arizona DOT
- Colorado DOT
- Florida DOT
- Georgia DOT
- Missouri DOT
- New Jersey DOT
- Utah DOT

Interview Summary #1: Arizona Department of Transportation (ADOT)

Information for this summary was gathered from the following sources:

- Survey response (see [Appendix B](#) for the full response)
- Interview with John Nichols, Deputy Director for Business Operation, Arizona DOT

Defining Efficiencies

- ADOT's Process Improvement Manager uses the following definition when working with ADOT Programs: Professional practices to develop efficiency and effectiveness by identifying processes that deliver quality outcomes to an end-user customer, and using performance measurements and structured problem solving to improve outcomes and reduce waste.

Demonstrating Cost Savings Through Efficiencies

- ADOT approaches efficiencies in two ways: 1) Identify a problem and create an efficiency/solution; and 2) Identify the highest amount of potential cost savings by focusing on the highest expenditures (e.g. fuel, utilities, equipment.)
- Cost savings are tracked for major efficiencies at the division level. When a problem is identified, a multi-functional “efficiency team” is formed, to work together to identify a solution. For example the ADOT Motor Vehicle Division has a formal efficiency team that quantifies and tracks implemented efficiencies. Efficiency teams are comprised of a project manager and other individuals who are familiar with the problem. Creativity is encouraged when considering solutions, rather than going into it with a preconceived idea of what the solution is. This process has created a “mindset” of achieving efficiencies across the department, and staff resources are dedicated to the efficiency teams.
- A process improvement manager works with each ADOT division to identify processes that are in need of streamlining; these tend to be focused on administrative processes such as procurement. This is a separate process from the efficiency teams, but related because of the common goal of achieving efficiencies.
- Examples of cost efficiencies achieved by ADOT include:
 - **Innovative Solution to Boot-Truck Cleaning:** An environmental issue emerged when boot trucks that spray asphalt emulsion needed to be cleaned in an environmentally conscious way. Cleaning either involved diesel fuel or another solvent, and disposal of those solvents was an issue. The multi-functional team that addressed the problem invented a shielding system to reduce the spray that ended up on the truck rather than coming up with a way to clean the truck and re-use solvent material. This resulted in reduction of staff hours for clean-up and mitigated environmental impact.

- **Fuel Consumption Reduction:** Fuel is one of the largest costs to ADOT and was therefore a focus of an efficiency initiative. ADOT equipped 117 vehicles with a device that connected to the onboard computers to collect data such as vehicle location, start/stop time, and idle times. The instrumented vehicles were selected from all areas of the department (e.g. maintenance, construction, administrative, enforcement, etc.) to obtain a balanced data set. After reviewing the data, it was discovered that vehicle idle time was on the order of 60%. Most road crews indicated that vehicles were left idling in order to run the warning light, which is a required safety practice. ADOT worked with a manufacturer to implement solar-powered, LED lights that didn't need the vehicle to be running to operate. This solution resulted in significant savings, primarily through reduced fuel consumption, but also a reduction in time and effort to install the lights.
- **Automated Motor Pool (AMP)** – ADOT implemented an automated motor pool, where employees reserve vehicles online, on an as-needed basis as opposed to having assigned vehicles. This change reduced size of the capital fleet to 40% of its original size, resulting in cost savings from vehicle replacements.
- **IT Projects and High Cost Projects:** For IT projects, there is well established process and formal "business case" that has to be written and approved for any project that requires more than 60 man-hours. Additionally, projects with higher dollar costs are subject to review by various entities under Arizona law, based on the dollar amount of the project.

Documentation of Efficiencies

- The project manager of each efficiency team is responsible for tracking and calculating cost savings at the project level, for each implemented strategy. Implementation costs are included in calculations.
- There are currently no formal targets in place for achieving a certain amount or percentage of cost savings through efficiencies. A previous ADOT administration did impose clear goals, reporting, and accountability for efficiencies.
- ADOT indicated that they are very successful in demonstrating efficiencies. At the division level, implementation costs are estimated and compared to hard and soft dollar savings, including reduction in workload or process time. Any efficiency that generates over \$100,000 per year in savings is considered a significant or major efficiency.
- ADOT produces internal documentation for management use. Major efficiency projects are reported out to ADOT leadership.

Interview Summary #2: Colorado Department of Transportation (CDOT)

Information for this summary was gathered from the following sources:

- Survey response (see [Appendix B](#) for the full response)
- Interview with Gary Vansuch, Director of Process Improvement, Colorado DOT

Defining Efficiencies

- Colorado DOT (CDOT) indicated that there is not a single definition for efficiencies used within the organization, but rather efficiencies are defined on a process by process basis.
- When asked whether cost savings from efficiencies are “counted” as one-time savings to the department and become standard practice in subsequent years, CDOT indicated that they would only realize these cost savings as efficiencies in the initial year after they were developed. Beyond that year, they would define them as standard practice.

Demonstrating Cost Savings Through Efficiencies

- CDOT indicated that they do not have a statewide effort to document efficiencies except for the Lean Process Improvement Program: <http://www.coloradodot.info/business/process-improvement>. They also indicated that the Lean Process Program is not only focused on efficiencies, there are several other aspects as well.
- CDOT described 3 “E’s” that they focus on in the Lean Process:
 - Effective;
 - Efficient; and
 - Elegant (i.e. better customer service)
- They gave the example that the Lean Process Improvement Group meets with the Executive team and asks “what keeps you up at night?” to help understand concerns, issues, or areas that executives feel the organization could improve. Based on the feedback received, they select to pursue initiatives to address these areas.
- One example of an efficiency cited was a maintenance crew innovation that allowed a maintenance crew to clean guard rails as much as 6 times faster than before. While this does not necessarily mean they have reduced costs, the guard rail cleaning and maintenance has improved with the same budget of funds.
- Another example of an efficiency cited was the reduction in the number of days it takes to complete the hiring process. They feel this helps them hire and retain more qualified employees, and therefore achieve long-term benefits.
- CDOT indicated that they are moderately successful in demonstrating efficiencies.

Documentation of Efficiencies

- Results from the CDOT Lean Process Improvement Program, including examples of cost savings from efficiencies, can be found at:
 - Summary of results from CDOT Lean Process Improvement efforts (November 1, 2013): www.coloradodot.info/business/process-improvement/summary-of-results-from-cdot-improvements/summary-of-results-from-improvement-efforts-11-1-2013/view (See [Appendix C](#) for the full document.)
 - Summary of results from CDOT Lean Process Improvement efforts (July 22, 2013): <http://www.coloradodot.info/business/process-improvement/summary-of-results-from-cdot-improvements/summary-of-results-from-improvement-efforts-7-22.pdf/view> (See [Appendix D](#) for the full document.)

- The Colorado legislature created the Standing Efficiency and Accountability Committee in 2009 to assist CDOT in finding ways “to maximize efficiency of the Department and to allow for increased investment in the transportation system over the short, medium, and long term.” A copy of the CDOT 2012 Efficiency and Accountability Annual Report is available on-line at: <http://www.coloradodot.info/library/AnnualReports/2012-efficiency-accountability-annual-report/view>. This report documents the committee’s work, recommendations, and progress but does not provide detailed examples of cost savings achieved from implemented efficiencies.

Interview Summary #3: Florida Department of Transportation (FDOT)

Information for this summary was gathered from the following sources:

- Survey response (see [Appendix B](#) for the full response)
- Interview with Brian Blanchard, Assistant Secretary, and Marsha Johnson, Senior Fiscal Advisor in the Strategic Initiatives Office (Florida DOT)

Defining Efficiencies

- The Florida DOT (FDOT) does not have a formal definition for “efficiencies” in the department. However, the following informal definition was communicated by FDOT leaders interviewed: “Cost savings in which equal or better quality is obtained.”
- When asked whether cost savings from efficiencies are “counted” as one-time savings to the department and become standard practice in subsequent years, FDOT noted that they see these cost savings as being realized not only in the year of implementation but also in future years, as these efficiencies could result in even more cost savings in the future.

Demonstrating Cost Savings Through Efficiencies

- The “Innovators!” initiative, set forth by the FDOT Secretary, challenges staff at all levels of the department to submit bold, innovative ideas for efficiencies and improvements. Ideas are solicited electronically from FDOT staff. A subset of leaders reviews and selects ideas to be investigated and implemented by Expert Task Teams. When selecting ideas to implement, considerations include return on investment (costs vs. benefits) and ease of implementation. Ideas that require statute changes are typically not pursued. Expert Task Teams are typically given 30 days to investigate a selected idea and calculate potential cost savings.
- FDOT focuses on implementing changes that result in definitive, objective cost savings to the department, rather than attempting to measure and quantify cost savings to users of the transportation system.
- Examples of cost efficiencies achieved by FDOT include:
 - **Design and Construction Engineering Inspection Contracts:** A one-time cost savings initiative identified opportunities for consultant fee savings for a select group of Design and Construction Engineering Inspection (CEI) contracts. Design and CEI consultants were invited to submit ideas to FDOT with ideas to reduce fees on their existing contracts; submitted ideas could not reduce quality or change the final product. The long term aim of this effort was to incorporate cost saving ideas gained from this exercise into ongoing and future design and CEI contracts. Examples of fee reductions in design included elimination of “phase 1” plan submittals and change in plan type for traffic control plans. For each idea submitted and approved, FDOT shared 25% of cost savings achieved with the consultant. This one-time effort resulted in nearly \$3 million to FDOT and approximately \$900,000 distributed to consultants. FDOT paid the consultant return share with state funds because FHWA was unable to approve use of federal funds for this purpose. [Appendix E](#) contains a document FDOT prepared summarizing the program that resulted in these efficiencies, titled “Methodology for Cost Savings Implementation – CEI & Design Contracts.”
 - **Outsource Maintenance Activities:** FDOT reviewed maintenance activities to identify and implement outsourcing opportunities that resulted in cost savings through fleet reduction and staff/operating cost reductions.
 - **Barrier Walls and Bridge Piers:** FDOT has significantly reduced their use of coating/paint on bridge barrier walls, bridge piers, retaining walls, etc. Previous standard practice had been to coat all of these structural elements throughout the state. The coating, which deteriorated over time, resulted in an unappealing look, so FDOT changed its practice to rarely apply this coating.

- **Overhead Signs:** FDOT no longer provides lighting on overhead signs on the interstates. They now use poly-reflective sheeting, which has resulted in cost savings to the department.
- **Value Engineering:** Value engineering is used to achieve efficiencies through contractor-driven changes during construction.
- FDOT indicated that they are moderately successful in demonstrating efficiencies.

Documentation of Efficiencies

- While the Governor's office periodically asks FDOT to show how it is achieving efficiencies, the department does not receive directives or set specific targets for achieve a certain amount of savings from efficiencies.
- The "Innovators!" initiative is a high priority for the Secretary, which elevates its priority in the department. Lots of internal recognition and exposure is given to efficiency achievements within FDOT, and the Governor's office also recognizes state agencies for their cost saving successes.
- FDOT does not produce formal documentation of its efficiencies. Rather, they maintain a tracking sheet with a running list of cost savings, efficiencies, and revenue generation ideas.
- [Appendix F](#) includes a report provided by FDOT describing their calculated cost savings through efficiencies as of May 2014.

Interview Summary #4: Georgia Department of Transportation (GDOT)

Information for this summary was gathered from the following sources:

- Survey response (see [Appendix B](#) for the full response)
- Interview with Russell McMurry, Chief Engineer, Georgia DOT
- Email and related materials from Brian Robinson, Employee Management Relations Specialist, GDOT

Defining Efficiencies

- Georgia DOT (GDOT) does not have a prescribed definition for “efficiencies” within the department.

Demonstrating Cost Savings Through Efficiencies

- The primary area where GDOT is achieving efficiencies is in the area of workforce planning and efficiency (as described in the first example, below.) GDOT does not formally quantify efficiencies in terms of cost savings. For example, two facilities were recently closed, and they haven’t yet realized or calculated the related savings.
- Examples of cost efficiencies achieved (or in process) by GDOT include:
 - **Workforce Planning and Efficiency:** A process was conducted to systematically assess staffing levels, projected retirements, and staffing needs. A structured approach initiated by Human Resources was used with managers to conduct staffing assessments at the office level. An efficiency plan for staffing levels was created, including “minimum staffing organizational charts.” In the engineering area, the goal is to recruit, train, educate, and retain, in order to efficiently fill upcoming gaps caused by retirements. The process also included looking at various functions that should be outsourced. For example, GDOT now outsources 100% of operations for striping of long stripes; staff who were previously performing that job were strategically moved to other maintenance positions where staffing needs had been identified.
 - **Equipment:** GDOT is now looking at the size and composition of their fleet vehicles now, including the potential of leasing cars, trucks, and heavy construction equipment in the future.
 - **Other Examples:** Other areas of efficiencies noted by GDOT include value engineering, design and constructability Reviews, and cost sharing.
- Due to continuous funding shortfalls, savings from efficiencies are typically consumed immediately, usually within the same functional or operational area. For instance, in the maintenance area, any savings on equipment would be re-invested in other things such as patching materials.
- GDOT indicated that they are somewhat successful in demonstrating efficiencies.

Documentation of Efficiencies

- Cost savings due to the efficiency efforts at GDOT have not been documented systematically. GDOT leaders interviewed noted that because the efforts have been worthwhile, it would have been beneficial to have tracked and documented cost savings information.
- The efficient workforce planning effort was driven by a resolution passed by the Georgia legislature which stated that GDOT should have no more than 4300 employees. This prompted a strong push to become smaller and more efficient. As staffing levels decreased, GDOT found it difficult to function and discovered a need to align staff in the right jobs.
- GDOT is not currently marketing a message that conveys the efficiencies they are achieving, but they have worked with state and local officials, especially with closing facilities or re-purposing staff positions, to communicate the resulting changes.

Interview Summary #5: Missouri Department of Transportation (MoDOT)

Information for this summary was gathered from the following sources:

- Survey response (see [Appendix B](#) for the full response)
- Interview with Bill Stone, Research Administrator and Karen Miller, Organizational Performance Specialist, Missouri DOT

Defining Efficiencies

- Missouri DOT (MoDOT) uses the term performance measures and efficiencies interchangeably.
- When asked whether cost savings from efficiencies are “counted” as one-time savings to the department and become standard practice in subsequent years, MoDOT described their concept of ‘practical design’. They described that it is likely they would gather information about the success of a new initiative over a period of 3-4 years. After that time, it would become a ‘practical design’ practice and not be considered cost savings or process improvement.

Demonstrating Cost Savings Through Efficiencies

- The statewide ‘Tracker’ document describes several examples of performance measures, where cost savings have been achieved. One performance measure tracked is “Use Resources Wisely”. The April, 2014 ‘Tracker’ document is on-line and provides details of several specific performance measures: <http://www.modot.org/about/documents/April2014TrackerReduced.pdf>. Examples of cost savings cited in the ‘Tracker’ report include:
 - In 2013, 26 percent of the 3.3 million tons of new asphalt constructed came from recycled components, saving MoDOT about \$11 per ton, or \$30 million overall.
 - As of March 31, 2014, 294 projects had been completed in fiscal year 2014 at a cost of \$719 million, \$91 million less than the programmed cost of \$810 million.
 - 17 Value Engineering proposals were approved resulting in MoDOT savings of \$555,000.

See [Appendix G](#) for these examples of cost savings from the April, 2014 MoDOT Tracker.

- MoDOT described their approach to performance monitoring based on the idea that “you can’t improve what you don’t measure”. This has led to the formal tracking of measures through the quarterly ‘Tracker’ document.
- MoDOT also described a philosophy that often tracking measure is something that evolves over the initial quarters it is tracked. They don’t hesitate to try to track measures, recognizing that the definitions and calculations might change during the initial quarters.
- MoDOT indicated that they have been very successful in demonstrating efficiencies.

Documentation of Efficiencies

- MoDOT produces the “Tracker” document quarterly that tracks performance measures and successes.
- MoDOT also produces D-Tracker, which performance measures at Divisional Levels. This report is not available to the public.

Interview Summary #6: New Jersey Department of Transportation (NJDOT)

Information for this summary was gathered from the following sources:

- Survey response (see [Appendix B](#) for the full response)
- Interview with Gary Brune, Chief Financial Officer, New Jersey DOT

Defining Efficiencies

- Efficiencies are typically defined as initiatives that save NJDOT in operating or capital funds.
- NJDOT measures their success in demonstrating efficiencies through reduced project costs, savings ideas implemented in the State Budget, and cost avoidance realized.

Demonstrating Cost Savings Through Efficiencies

- There is no formal target in place for the level of cost savings that needs to be achieved in a specified time period. Though the NJ Department of Treasury has periodically asked for documentation of efficiencies, the driving force behind creating efficiencies is the reality of deteriorating infrastructure (e.g. inadequate bridges, failing pavements) and the need for additional funds for improvements.
- A "Continuous Improvement" process, implemented in the Office of the Chief Financial Officer (CFO) formally asks staff in accounting, budgeting, procurement and IT to identify initiatives that could yield cost savings, cost avoidance, or service improvements to stakeholders. The goals of the "Continuous Improvement" process are to identify and foster ideas that provide relief in the budget and to improve service.
- NJDOT has initiated and achieved cost efficiencies in areas that include corporate sponsorship, accounting, cost sharing agreements, auditing, procurement, contract management, maintenance, crash records, in-house versus contractor cost analysis, and cash flow. A few specific examples are summarized below:
 - **Corporate Sponsorship** – This arrangement allows a corporation to fund a particular service in exchange for product/company recognition. For example, State Farm Insurance currently sponsors the Safety Service Patrol; these vehicles have the sponsor's corporate information visible to the public. NJDOT is currently working with the legislature to obtain approval to expand this strategy to litter crews and rest areas.
 - **Maintenance** – "Pothole Killer Machines" are now used in some areas to fill potholes. These machines significantly reduce labor costs, and the material placed lasts longer than traditional pothole patching. In this example, NJDOT described that the costs per pothole were not significantly reduced, but that a crew could repair more potholes per day and the repair lasted longer. In addition, significant cost efficiency was gained when scrap metal proceeds were evaluated. Controls were put into place after it was determined that appropriate pricing and procedures were not being followed for scrap metal sold by the DOT through a private contractor.
 - **Salary Charges for Cost Sharing Agreements** – NJDOT implemented a policy change that resulted in significant savings by utilizing funds budgeted for salary charges for in-house oversight of cost sharing agreements while the agreements were being finalized. In some cases, it may take years to finalize these agreements, which was tying up budgeted salary costs. This policy change allowed NJDOT to utilize this funding on ongoing basis to provide budget relief in the short term.
 - **Cash Flow** – A modest policy change that resulted in a significant impact was changing the timing of selling bonds to align with the peaks/valleys of cash flow needs. NJDOT was able to sell bonds earlier in the year, reducing the amount of cash needed for short-term loans. NJDOT has also created systems to improve project tracking/management processes that have reduced project closeout times so reimbursements can be made earlier from FHWA and have reduced occurrences of over-expenditures that FHWA will not reimburse on federal projects.

- NJDOT indicated that they are moderately successful in demonstrating efficiencies. Their challenge is to identify key areas of potential efficiency and to allocate sufficient time and effort to develop them. This requires a willingness to de-emphasize or defer issues that are arguably of less importance but which tend to dominate the daily workload. From a time management perspective, a mechanism needs to be established that raises the importance of efficiency items for agency executives.

Documentation of Efficiencies

- NJDOT produces documentation of efficiencies that is shared with stakeholders and also produces internal documentation for management use.

Interview Summary #7: Utah Department of Transportation (UDOT)

Information for this summary was gathered from the following sources:

- Survey response (see [Appendix B](#) for the full response)
- Interview with Randy Park, Director of Project Development, Utah DOT

Defining Efficiencies

- The Governor of Utah identified a target to improve state government operations and services by 25% over four years (by 2017). A video introducing this target is available at: <http://gomb.utah.gov/operational-excellence/success-framework-introduction/>. See [Appendix H](#) for additional information about the video.
- The definition of efficiencies was described as “Quality Throughput achieved per Operating Expense”, or QT/OE. UDOT described the target being an improvement to this ratio, which might be accomplished several ways, for example:
 - The same throughput, the same quality, but reduced expenses;
 - The same quality, increased throughput, and the same expenses;
 - The same throughput, increased quality, and the same expenses.
- A 9-minute video explaining the use of QT/OE (including a detailed example) is available at: <http://gomb.utah.gov/operational-excellence/resources/qtoe-explanation/>. See [Appendix H](#) for additional information about the video.
- When asked the question of how UDOT would define efficiencies that achieve annual returns on investment (i.e. a new process or procedure that reduces costs annually), they indicated that they would consider this an efficiency in the initial year (and track the cost savings) however beyond the initial year, they would consider it standard practice and not include it in efficiencies calculations.

Demonstrating Cost Savings Through Efficiencies

- Utah has a very formal process for identifying goals, and defining strategies to accomplish the goals, called the SUCCESS Roadmap. SUCCESS is an acronym for:
 - **S**et measurable goals and targets
 - **U**se thinking tools and principles
 - **C**reate your own strategy
 - **C**reate your organization
 - **E**ngage staff at all levels
 - **S**ynchronize policy and projects
 - **S**tay focused
- This is detailed in their SUCCESS Roadmap. <http://site.secure.utah.gov/gomb/wp-content/uploads/sites/7/2013/08/SUCCESSRoadmapforAgencies.pdf>. See [Appendix I](#) for additional details about the SUCCESS Roadmap.
- The four areas that Utah is currently working on for the Success Framework include:
 - Project Delivery - Preconstruction, Grants of Access
 - Maintenance - Snow and Ice Control
 - Operations - Port of Entry Truck Processing
 - Administrative - Procurement
- **Benefits of tracking efficiencies.** UDOT indicated that they track cost savings through efficiencies because they want to show that they are being responsible with tax payer dollars, and because they want to show that money saved is being invested in the road network.
- **Specific calculations of efficiencies.** When we discussed specifics of how efficiencies are calculated, UDOT offered that if MnDOT reaches a point where they would like input on how a specific type of

efficiency was calculated, they would be happy to help. They felt this would be a more effective way than selecting a few examples, as there are a lot of details that go into the calculation.

- **Blue Light analogy for efficiency.** The example of “Blue Light” for welders was used by UDOT. The scenario is that a welding shop has a series of welders. Whenever the ‘blue light’ on the welding torch is lit, they are actually welding. When the blue light is not lit, they are doing other tasks (e.g. repairing equipment, getting supplies, measuring). The efficiency of a welder can be measured by the percentage of time that their blue light is lit.
- **Relationship of efficiencies to risk.** UDOT described that the extent to which efficiencies can be achieved is a factor of the risks that an organization is willing to take. Industries such as public service and transportation tend to minimize risk to the extent possible. In order to achieve and demonstrate efficiencies, people need to take risks, and the culture needs to support these risks, understanding the possible benefits (efficiencies) and the possible drawbacks.
- UDOT indicated that they have been very successful in demonstrating efficiencies.

Documentation of Efficiencies

- UDOT has deployed the SUCCESS Management Information System (SMIS) for reporting to the Governor’s Office of Management and Budget, as well as others within the DOT. SMIS will include baseline data as well as data achieved (to date) tracking progress toward increasing QT/OE.
- UDOT also publishes annual Efficiencies Reports. These reports include 1-2 page summaries of projects/initiatives that were conducted to achieve efficiencies, together with the cost savings and a description of the efficiency.
 - UDOT 2013 Annual Efficiencies Report:
<https://www.udot.utah.gov/main/uconowner.gf?n=14393526959106954>
(See [Appendix J](#) for a summary of cost savings from this document)
 - UDOT 2012 Annual Efficiencies Report:
<http://www.udot.utah.gov/main/uconowner.gf?n=2744130635144498>
(See [Appendix K](#) for a summary of cost savings from this document)
 - UDOT Annual Efficiencies Reports for 2006-2012:
<https://www.udot.utah.gov/main/f?p=100:pg:0:::1:T,V:3136>
- When asked if they have ever had to defend efficiencies calculations, UDOT indicated that they have never had any efficiencies challenged. They added that each efficiency reported is backed up with documentation and calculations, and that calculations tend to be conservative in nature whenever estimating.

2.2.2 Other State DOT Practices

Information in the following summaries was gathered from survey responses and online resources. Interviews were not conducted with these agencies; however, relevant practices were identified through a review of resources provided by each of the following agencies:

- Connecticut DOT
- Wisconsin DOT
- Wyoming DOT

Connecticut Department of Transportation (CTDOT)

I. General Approach

- Connecticut DOT (CTDOT) publishes a series of performance measure reports, which focus on results and accountability. The reports are published quarterly and the performance measures address eight policy objectives: provide safe and secure travel, reduce congestion and maximize throughput, preserve and maintain transportation infrastructure, provide mobility choice, connectivity, and accessibility, improve efficiency and reliability, preserve and protect the environment, support economic growth, and strive for organization excellence.

II. Examples of Efficiencies

- Examples of efficiencies are not shown in cost savings, but are measured over time through trends in positive, consistent, or negative directions. Some of the performances that are being measured by CTDOT are rate of annual highway fatalities, percent of entire network with good ride quality, number of bridge work items completed, and percent of construction contracts completed within budget.

III. Additional Information

- CTDOT performance measure reports: <http://www.ct.gov/dot/cwp/view.asp?a=3815&q=448402>

Wisconsin Department of Transportation (WisDOT)

I. General Approach

- Wisconsin DOT (WisDOT) measures efficiencies through a MAPSS Performance Improvement program that focuses on five goals: Mobility, Accountability, Preservation, Safety, and Service. WisDOT publishes quarterly reporting of performance progress, with updates in February, May, August, and November. WisDOT defines success in efficiencies for each of the department's strategic goal areas through a MAPSS Scorecard (i.e. the goal has been met, performance is trending in a favorable direction, trend is holding, performance is trending in an unfavorable direction). WisDOT tracks efficiencies more as performance measures rather than cost savings, but most could be translated into a dollar amount as shown in Part II: Examples of Efficiencies
- WisDOT also measures efficiencies through their Lean Government initiative. Projects under this initiative are directed towards the realization of the MAPSS goals. They also serve to address the statewide goals of: Reducing cost of Government, increasing customer satisfaction, and creating a comfortable employee work environment. WisDOT produces Lean Government reports for the Governor quarterly as well as annually. Project improvements are evaluated through a five-step process: Define, Measure, Analyze, Improve, and Control.

II. Examples of Efficiencies

- **Example 1** – Under WisDOT's Mobility goal, a sub goal is to deliver transportation choices that result in efficient trips and no unexpected delays. Vehicle travel delay caused by traffic congestion adversely affects all travelers and increases the cost of freight movement. This measure is Hours of Vehicle Delay. The goal in 2014 is to reduce hours of delay on a corridor basis from the same season in 2013. WisDOT measures this by user delay cost for each corridor in the state by looking at annual passenger and commercial user delay cost and total annual user delay cost and then compares it to the previous

year to measure which direction the trend is going.

- **Example 2** – One of WisDOT’s accountability goals is the continuous effort to use public dollars in the most efficient and cost-effective way. The department purchases property as part of transportation improvement projects, and land that is no longer needed after the project can be resold for development to help local economies. Their goal is to generate \$2.75 million in revenue from surplus land sales toward the Transportation Fund.
- **Example 3** – In order to address the MAPSS goals of Accountability and Service, as well as the statewide goals of decreasing cost of Government and increasing customer satisfaction, WisDOT consolidated telecommunications operations to reduce inventory, expenditures, and redundant staff that resulted from the previous practice of staff of each department performing telecommunications tasks in addition to their primary role. By centralizing operations, WisDOT was able to reduce telecommunications expenditures by \$810,800 over their base year of FY2011.
- Sections of the April 2014 MAPSS Performance Improvement Report and the Fiscal Year 2013 Annual Lean Government Report which detail these examples can be seen in [Appendix L](#).

III. Additional Information

- April 2014 MAPSS Performance Report: <http://www.dot.wisconsin.gov/about/performance/docs/perf-report.pdf>
- WI “Lean Government” Initiative: <http://www.dot.wisconsin.gov/about/performance/lean.htm>

Wyoming Department of Transportation (WYDOT)

I. General Approach

- Wyoming DOT (WYDOT) created a report for the 2012 fiscal year on efficiencies, saved resources and reduced expenditures that details the efficiencies saved on projects in each of the department’s primary functions, including: aeronautics, highways, highway patrol, operations, and support services. (The report was provided, via email, as a part of WYDOT’s response to the State DOT survey.)

II. Examples of Efficiencies

- **Example 1** – WYDOT is purchasing new trucks equipped with more advanced plow controls and equipment to mix a deicer with the sand before it is applied to the road surface. They anticipate purchasing 25 new trucks per year as part of the normal equipment rotation. WYDOT has also added remote salt/sand storage sites at locations where operators can re-load with salt/sand without traveling long distances to the existing sites. Studies demonstrate that this technique could save WYDOT up to \$2 million a year in sanding costs while improving safety and reducing the number of road closures.
- **Example 2** – The Aeronautics Division now purchases 85% of its aviation fuel in bulk, reducing cost and maintain a ready supply. The division also researched and analyzed flight profiles for efficiency and implemented revised guidelines to save fuel. WYDOT reduced its jet fuel costs by approximately \$65,000 in FY 2012 and saves approximately \$200,000 annually with these specific procedures.
- **Example 3** – WYDOT Aeronautics saved \$95,950 on a runway project that removed the regional federal requirement to cut back the longitudinal paving joints, without sacrificing life of the pavement.
- **Example 4** - An investment-grade energy audit of WYDOT facilities was conducted by Chevron Energy Solutions Company in March 2013. The audit targeted energy conservation measures at 33 WYDOT buildings, to include lighting, plumbing, BAS upgrade, waste oil heaters, cooling tower and rooftop air handler units, a boiler replacement in the main headquarters building, and paint booth upgrades. WYDOT will realize a reduction in maintenance and a reduction of \$177,000 in energy costs for the first year from the installation of identified energy saving strategies and modernization of facilities.

The projected payback period for the investment is 15 years. The equipment being installed has an average minimum life of 20 years.

III. Additional Information

- There were many more efficiency projects listed in the report; however, most did not list actual cost savings in monetary form. A majority listed that these projects were efficient or effective through new practices and processes that provided a benefit to WYDOT. Sections of this report which contain pertinent cost-savings examples can be seen in [Appendix M](#).

2.2.3 International Example

This section provides an overview of relevant practices from Rijkswaterstaat, Dutch Ministry of Infrastructure and the Environment. The information was provided in response to an email request, in an attempt to gather examples of relevant data from a transportation agency from outside of the United States.

Rijkswaterstaat, Dutch Ministry of Infrastructure and the Environment

Information for this summary was gathered from an email interview with Joop Van Bergen, Rijkswaterstaat, Dutch Ministry of Infrastructure and the Environment

Rijkswaterstaat currently has two initiatives related to Cost Savings due to efficiencies:

Initiative #1 “Versobering and Efficiencies” translated to “Austerity and Efficiencies”

- Rijkswaterstaat described how the available resources for their 3 primary networks (main road network, main waterways, and main water system – since most of the roads are below the waterline) are limited / too low, and not planned to change in the near future.
- In the past, Rijkswaterstaat has covered budget shortcomings by shifting budgets between projects and maintenance, but they realize that this is really pushing the problem to the future.
- In 2011, Rijkswaterstaat initiated a program aimed to stop pushing these shortfalls forward. The goal of this initiative “Austerity and Efficiencies” is to reduce costs by 1.6 B Euros by 2020 for maintenance of the installed base network as compared to 2009.

Rijkswaterstaat is pursuing ‘Austerity’ as follows:

- Roadside management cost reductions through such things as combining activities such as mowing one time a year instead of two times;
- Bank (waterway) management roughly based on the same principle as roadside management e.g. combining activities;
- Reducing “level of comfort” to a “basic level” on moorings/shore facilities (waterways);
- Reducing dredging activities sea access and inland waterways;
- Reducing maintenance for bridges, tunnels and similar infrastructure by adjusting the maintenance planning to be based more on technical needs than on “optimal” frequency of maintenance.
- Public lighting along road based on the principle that when not necessary (traffic density/intensity/incidents/works) lights along the roads could be switched off for certain periods during evening/night
- Widening up the “working windows” for contractors so work could start earlier and last longer with the possible effort that total period of work could last shorter and the possibility this brings in to change work planning’s/periods.;
- Dynamic Traffic Management systems, some examples of measures in this are e.g.;

 - Introducing new roadside stations with a new approaches on availability on e.g. lane management systems (signing) presenting information (speeds, red crosses, green arrows etc.);
 - Reducing lane management systems on less intensive parts of the road network;
 - Reducing the frequency that technologies are deployed, such as: cameras, dynamic road signs, ramp meters, etc.;
 - Stretching out the reaction/repair times in case of (technical) interferences; and

- Continuously opening up express lanes.
- Limit the amount of “active communication” describing roadwork activities to “users” for only those works for which it is most critical, such as large/complex public work projects;
- Reduce level of service for incident management e.g. not towing away every stopped/stranded vehicle but only those where safety is involved and could not be guaranteed for the (stranded) road user(s).

Rijkswaterstaat is pursuing ‘Efficiency’ as follows:

- Innovative contracts and contracting mechanisms
- Sand supplementation coastal areas
- Optimization of reducing slipperiness during winter periods
- Differentiate maintenance of road surfaces and making use of “life stretching” approaches for preserving the roads.

Initiative #2: Internal Rijkswaterstaat Organization

- Rijkswaterstaat has an internal process referred to as KR8 (translated this stands for ‘the Force’)
- The rough idea is to allow everyone on every working level in RIJKSWATERSTAAT (from director to junior staff) be aware of how he/she can improve their daily work, and make the solutions as efficient as possible within his/her own “circle of influence”.

3. Conclusions

This State of Practice TRS provided a summary of strategies and processes used by transportation agencies to define, demonstrate, and document cost savings through efficiencies. Key findings and conclusions include the following:

1. 11 of 12 agencies responding to the State DOT survey acknowledged they are pursuing cost savings through efficiencies. The majority of these pursuits are not the result of a formal mandate or directive, but rather a part of the current culture within the organization that acknowledges the need to save costs whenever possible;
2. A common success story shared by multiple agencies is the process of asking internal DOT staff to identify areas where cost savings through efficiencies can be achieved;
3. Whether agencies have a formal definition of efficiencies or not, they were all in agreement that cost savings through efficiencies are a factor of the work accomplished, the quality of the work, and the costs;
4. A large number of examples were provided and summarized in the document. To summarize at the highest level, cost savings through efficiencies tend to involve:
 - a. Value Engineering and/or innovative contracting approaches where the DOT and contractors find opportunities for reducing time, materials, or equipment use while delivering the same projects;
 - b. Process improvements where DOT staff creatively invent new ways to perform their duties, maintain their equipment, or utilize their staff;
 - c. A transition from the use of aesthetically pleasing attributes (decorative coatings, more than minimal lighting, etc.) to more basic attributes that do not jeopardize safety;
 - d. Evaluation and implementation of efficiencies in human resources (e.g. reallocate staff to highest need positions; consider outsourcing options, and recruitment/retention strategies.)
5. Agencies varied in their approach towards marketing their successes in achieving efficiencies, with some agencies regularly producing documents describing their accomplishments for the public to read while other agencies take a more 'low key' approach of answering questions when asked by public officials or other stakeholders.
6. When cost savings are achieved through efficiencies, the most common use of any costs saved is immediate reinvestment in the road network. A common message was that there is always more work to do than the budget allows, so cost savings through efficiencies often result in more work accomplished vs. actual budget reductions;
7. Some agencies take a conservative approach towards calculating efficiencies. One example of this is by counting the cost savings due to efficiencies only in the immediate year after the efficiency is introduced, and considering it 'standard practice' in subsequent years. A smaller number of agencies indicated they would count cost savings due to efficiencies in subsequent years, treating the process of developing the efficiency as an investment to be regained in subsequent years many times over;
8. The idea that the extent to which cost savings through efficiencies can be achieved is dependent upon the extent of risk an agency is willing to take was another key concept expressed.
9. Rijkswaterstaat uses the term austerity in the title of their efficiencies program, which is focused on cutting costs to avoid passing on deficits to future generations. From an economic view, austerity is commonly used to describe policies used by governments to reduce budget deficits during periods when funding is less than optimal.

Appendix A: Survey Administered to State DOTs

Survey of State Transportation Agencies

Defining, Demonstrating, and Documenting Transportation Efficiencies

Introduction:

MnDOT is working hard to communicate how public dollars are being used efficiently, and we suspect our struggles are similar to that of many other agencies. We are therefore requesting your input, via this survey, to learn about processes your agency uses to define, demonstrate, and document efficiencies. This survey is intended for response by your agency's Chief Financial Officer, Controller, or Finance Director. We thank you in advance for your assistance and look forward to receiving your response to this survey.

Background and Survey Information:

Public transportation agencies often have an interest in demonstrating efficiencies in the capital development, maintenance, and operations of transportation systems. At the federal level, President Obama's recent transportation budget proposes "increased quality and value in core administrative functions to enhance productivity and achieve cost savings....bringing greater value and efficiency for taxpayer dollars."¹

With the increasing challenge of reduced funding, it is not uncommon for a State DOT to have a goal of achieving X% cost savings through efficiencies in their annual capital and/or operations budget (e.g. by implementing innovative approaches or other strategies that reduce the overall needed budget or expanding services.)

While there is growing interest in documenting efficiencies, there is not clear consensus on how efficiencies are defined and/or what elements are included. Further, the issue is complicated by the consideration of efficiencies that reduce "internal" DOT costs (e.g. materials, labor, equipment) as well as efficiencies that reduce "external" costs (e.g. user costs such as traffic delay, mitigated or reduced detours, and traveler safety, but not necessarily a tangible cost expended by the DOT).

Information collected through this survey will help MnDOT to better understand how other State DOTs define, demonstrate, and document efficiencies. Survey results will be published in a synthesis report, distributed to respondents, and posted to the AASHTO Research Advisory Committee (RAC) website: <http://research.transportation.org/Pages/RACSurveyResults.aspx>.

Who should complete this Survey?

Your agency's Chief Financial Officer, Controller, or Finance Director

How to Submit Responses:

- 1) Email this completed Word document form to:
Linda Preisen, Athey Creek Consultants, at: preisen@acconsultants.org OR
OR
- 2) Complete the survey online at: <https://www.surveymonkey.com/s/C8LYCR9>

Please submit responses by Tuesday, April 22. The survey should take approximately 10 minutes to complete.

¹ <http://fcw.com/articles/2014/03/31/balutis-obama-management-agenda.aspx>

To complete the survey, click on a shaded checkbox or type in a shaded region (as appropriate).

I. Responder's Name and Contact Information

Name:	
Position Title:	
Agency:	
Email Address:	
Phone Number:	

II. Survey Questions

1. Does your agency demonstrate and/or track cost savings through 'efficiencies'?	
<input type="checkbox"/>	Yes
<input type="checkbox"/>	No
Comments:	

2. Do you have a prescribed definition for 'efficiencies' within the department?	
<input type="checkbox"/>	Yes
<input type="checkbox"/>	No
If yes, please provide the definition in the box below and attach any documents describing the definition:	

3. Indicate whether you have used or considered any of the following approaches for demonstrating cost savings through efficiencies:			
Approach	Select One Option		
	We have demonstrated efficiencies	We have considered demonstrating efficiencies	We have not considered demonstrating efficiencies in this area
Actual costs vs. programmed costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved project scoping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduced materials usage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved methods (e.g. calculations, processes, construction, capital program implementation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduced maintenance costs (e.g. mowing, patching, strategies that extend the life of the system)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduced system operations costs (e.g. snow and ice control, traffic management, strategies that keep the system functioning)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduced agency administration costs (e.g. human resources, administrative overhead, IT, financial management and planning)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Innovative contracting (e.g. design/build, value engineering)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased user benefits (e.g. safety improvements, congestion reduction, reduced number of days of detour delay)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Innovative approaches that have a higher initial cost but result in cost savings to the DOT over time (e.g. longer service life, reduced annual operations costs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Innovative approaches that have a higher initial cost but provide user benefits over time (e.g. safety improvements, congestion reduction, reduced number of days of detour delay)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Please list any other approaches you have considered or completed, to demonstrate cost savings through efficiencies:			

4. How does your agency document efficiencies? (select all that apply)	
<input type="checkbox"/>	We produce (formal or informal) documentation that is shared with the public. Please provide the website where this document is posted or attach document to your response:
<input type="checkbox"/>	We produce documentation (formal or informal) with stakeholders, such as legislators, governor, chambers, etc.
<input type="checkbox"/>	We produce internal documentation for management use
<input type="checkbox"/>	We don't document cost savings through efficiencies
<input type="checkbox"/>	Other:

5. Can you provide any written examples of how you have calculated and/or demonstrated cost savings through efficiencies?	
<input type="checkbox"/>	We cannot provide any examples
<input type="checkbox"/>	We would be willing to discuss this over the phone to describe the examples
<input type="checkbox"/>	We have examples that we'd be willing to share (please attach examples to your response)

6.A. Generally speaking, how successful has your agency been in demonstrating efficiencies?	
<input type="checkbox"/>	Very successful
<input type="checkbox"/>	Moderately successful
<input type="checkbox"/>	Somewhat successful
<input type="checkbox"/>	Unsuccessful
6.B. How do you measure your success, and/or what is your reasoning for your answer above (response above in 6A)?	

12. Does your State have legislatively and/or constitutionally designated roadways?
 (For instance, Minnesota state statutes require that MnDOT operate roads between a number of specific cities. See the following websites for relevant MN State Statutes:
www.revisor.mn.gov/statutes/?id=161.114&year=2013&keyword_type=all&keyword=route
www.revisor.mn.gov/statutes/?id=161.115&year=2013&keyword_type=all&keyword=route)

Yes

No

If yes, approximately what percentage of the State’s total roadway system is designated as such?

13. Does your State have any other rules or challenges that may influence the limits of efficiencies that can be achieved by the agency?

Yes

No

If yes, please provide a brief description of these challenges:

14. Does your agency have a Department-wide Cost Allocation Plan that you’d be willing to share with MnDOT?

Yes (please attach the Cost Allocation Plan)

No

15. As we (MnDOT) are working to increase our efficiency reporting and tracking – both for our own purposes and for our stakeholders; is there any advice you’d offer us that we’ve not asked about? Perhaps lessons learned that have been valuable to your agency?

16. Are there one or more DOTs that you are aware of, that are out ahead of other DOTs in this area? If so, which ones?

Thank you kindly for taking the time to share your experiences. We learn from one another and don't take lightly the time you put into completing this survey.

You may be contacted by a representative of Athey Creek Consultants (MnDOT's consultant for this project) to obtain clarification and/or additional information.

We will share the results we've collected after the results are compiled.

If you have questions about this survey, contact Dan DuHamel, MnDOT, at Daniel.J.DuHamel@state.mn.us.

**With Gratitude,
MnDOT**

Appendix B: Survey Responses

Below are the complete responses received from the survey distributed to the AASHTO RAC Listserv for this Transportation Research Synthesis. The following 12 DOTs responded to the survey:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Arizona DOT • Colorado DOT • Connecticut DOT • Florida DOT • Georgia DOT • Louisiana Department of Transportation and Development (LA DOTD) | <ul style="list-style-type: none"> • Missouri DOT • Maine DOT • New Jersey DOT • Utah DOT • Wisconsin DOT • Wyoming DOT |
|--|---|

Arizona Department of Transportation Survey Responses

Respondent: John Nichols
Deputy Director for Business Operation
jnichols@azdot.gov
602-712-7228

Question	Response
1. Does your agency demonstrate and/or track cost savings through 'efficiencies'?	Yes
1a. Comments:	Cost savings are tracked for major efficiencies at the division level. For example the ADOT Motor Vehicle Division has a formal efficiency team that quantifies and tracks implemented efficiencies.
2. Do you have a prescribed definition for 'efficiencies' within the department?	Yes
2a. If yes, please insert the definition in the box below, if possible:	ADOT's Process Improvement Manager uses the following definition when working with ADOT Programs: Professional practices to develop efficiency and effectiveness by identifying processes that deliver quality outcomes to an end-user customer, and using performance measurements and structured problem solving to improve outcomes and reduce waste.
3. Indicate whether you have used or considered any of the following approaches for demonstrating cost savings through efficiencies:	<ul style="list-style-type: none"> • Reduced materials usage • Reduced maintenance costs • Increased user benefits • Actual costs vs. programmed costs • Improved project scoping • Improved methods • Reduced system operations costs • Reduced agency administration costs • Innovative contracting • Innovative approaches that have a higher initial
<ul style="list-style-type: none"> ○ We have demonstrated efficiencies 	

	<p>cost but result in cost savings to the DOT over time</p> <ul style="list-style-type: none"> • Innovative approaches that have a higher initial cost but provide user benefits over time
3a. Please list any other approaches you have considered or completed, to demonstrate cost savings through efficiencies:	For IT projects there is well established process and formal "business case" that has to be written and approved for any project that requires more than 60 man-hours. Additionally, projects with higher dollar costs are subject to review by different established entities under Arizona law, based on the dollar amount of the project.
4. How does your agency document efficiencies? (select all that apply)	We produce internal documentation for management use
5. Can you provide any written examples of how you have calculated and/or demonstrated cost savings through efficiencies?	We have examples that we'd be willing to share
6. Generally speaking, how successful has your agency been in demonstrating efficiencies?	Very successful
6a. How do you measure your success, and/or what is your reasoning for your answer above?	At the division level, we estimate implementation costs of an efficiency compared to hard and soft dollar savings including reduction in workload or process time. Any efficiency that generates over \$100,000 per year in savings is considered a significant or major efficiency.
7. Does your State have legislatively and/or constitutionally designated roadways? (For instance, Minnesota state statutes require that MnDOT operate roads between a number of specific cities.)	No
7a. If yes, approximately what percentage of your State's total roadway system is designated as such?	There are approximately 60,000 center lane miles of public roads maintained in Arizona by our Highway User Revenue Fund. Approximately, 6,600 center lane miles of highways or state route or 10% fall under ADOT's jurisdiction. Approximately 1,300 center lane miles of ADOT roads are interstate highways.
8. Does your State have any other rules or challenges that may influence the limits of efficiencies that can be achieved by the agency?	Yes
8a. If yes, please provide a brief description of these challenges:	A major constraint for ADOT or any state agency is the agency's operation budget that is set each year by the legislative budget process. Additionally, each state agency is provided with a cap on number of full time employee positions that are allowed to be filled
9. Does your agency have a Department-wide Cost Allocation Plan that you'd be willing to share with MnDOT?	No
10. As we (MnDOT) are working to increase our efficiency reporting and tracking – both for our own purposes and for our stakeholders; is there any advice you'd offer us that we've not asked about? Perhaps lessons learned that have been valuable to	Look for opportunities for shared revenue on programs such as "logo sign operations" or with your third party vendors that may have statutory retention fees that could be reinvested in your agency systems through mutual agreements. Additionally, ADOT has a dedicated

your agency?

position devoted to training Agency programs on how to identify and implement efficiencies (e.g. process improvements, IT solutions, statutory or administrative rule changes.

11. Are there one or more DOTs that you are aware of, that are out ahead of other DOTs in this area? If so, which ones?

(No response received)

NOTE: Responses were not received for questions 1a, 2a, 3a, 6a, 7a, 8a.

Colorado Department of Transportation Survey Responses

Respondent: Gary Vansuch
Director of Process Improvement
gary.vansuch@state.co.us
303-757-9017

Question	Response
1. Does your agency demonstrate and/or track cost savings through 'efficiencies'?	Yes
1a. Comments:	(No response received)
2. Do you have a prescribed definition for 'efficiencies' within the department?	Yes, the definition is too long to insert in the text box below, please contact me to request the material
2a. If yes, please insert the definition in the box below, if possible:	(No response received)
3. Indicate whether you have used or considered any of the following approaches for demonstrating cost savings through efficiencies:	
<input type="radio"/> We have demonstrated efficiencies	<ul style="list-style-type: none">• Reduced materials usage• Reduced maintenance costs• Increased user benefits
<input type="radio"/> We have considered demonstrating efficiencies	<ul style="list-style-type: none">• Actual costs vs. programmed costs• Improved project scoping• Improved methods• Reduced system operations costs• Reduced agency administration costs• Innovative contracting• Innovative approaches that have a higher initial cost but result in cost savings to the DOT over time• Innovative approaches that have a higher initial cost but provide user benefits over time
4. How does your agency document efficiencies? (select all that apply)	<ul style="list-style-type: none">• We produce (formal or informal) documentation that is shared with the public: <p><u>CDOT Lean Process Improvement Program:</u> 1) General Information: www.coloradodot.info/business/process-improvement 2) Summary of results from CDOT improvement efforts (July 22, 2013):</p>

	<p>www.coloradodot.info/business/process-improvement/summary-of-results-from-cdot-improvements/summary-of-results-from-improvement-efforts-7-22.pdf/view</p> <p>3) Summary of results from CDOT improvement efforts (November 1, 2013):</p> <p>www.coloradodot.info/business/process-improvement/summary-of-results-from-cdot-improvements/summary-of-results-from-improvement-efforts-11-1-2013/view</p> <ul style="list-style-type: none"> • We produce documentation (formal or informal) with stakeholders, such as legislators, governor, chambers, etc.) • We produce internal documentation for management use
5. Can you provide any written examples of how you have calculated and/or demonstrated cost savings through efficiencies?	We have examples that we'd be willing to share
6. Generally speaking, how successful has your agency been in demonstrating efficiencies?	Moderately successful
6a. How do you measure your success, and/or what is your reasoning for your answer above?	<i>(No response received)</i>
7. Does your State have legislatively and/or constitutionally designated roadways? (For instance, Minnesota state statutes require that MnDOT operate roads between a number of specific cities.)	No
7a. If yes, approximately what percentage of your State's total roadway system is designated as such?	<i>(No response received)</i>
8. Does your State have any other rules or challenges that may influence the limits of efficiencies that can be achieved by the agency?	Yes
8a. If yes, please provide a brief description of these challenges:	<i>(No response received)</i>
9. Does your agency have a Department-wide Cost Allocation Plan that you'd be willing to share with MnDOT?	No
10. As we (MnDOT) are working to increase our efficiency reporting and tracking – both for our own purposes and for our stakeholders; is there any advice you'd offer us that we've not asked about? Perhaps lessons learned that have been valuable to your agency?	Please contact me
11. Are there one or more DOTs that you are aware of, that are out ahead of other DOTs in this area? If so, which ones?	There are quite a few DOTs pursuing this; please contact me.

NOTE: Responses were not received for questions 1a, 2a, 3a, 6a, 7a, 8a.

Connecticut Department of Transportation Survey Responses

Respondent: Wallace Lugli
 Finance Administrator
Wally.Lugli@ct.gov
 860-594-2204

Question	Response
1. Does your agency demonstrate and/or track cost savings through 'efficiencies'?	Yes
1a. Comments:	In some cases
2. Do you have a prescribed definition for 'efficiencies' within the department?	No
2a. If yes, please insert the definition in the box below, if possible:	<i>(No response received)</i>
3. Indicate whether you have used or considered any of the following approaches for demonstrating cost savings through efficiencies:	
<input type="radio"/> We have demonstrated efficiencies	<ul style="list-style-type: none"> • Actual costs vs. programmed costs • Reduced maintenance costs
<input type="radio"/> We have considered demonstrating efficiencies	<ul style="list-style-type: none"> • Improved project scoping • Reduced materials usage • Improved methods • Reduced system operations costs • Innovative contracting • Increased user benefits
<input type="radio"/> We have not considered demonstrating efficiencies in this area	<ul style="list-style-type: none"> • Reduced agency administration costs • Innovative approaches that have a higher initial cost but result in cost savings to the DOT over time • Innovative approaches that have a higher initial cost but provide user benefits over time
3a. Please list any other approaches you have considered or completed, to demonstrate cost savings through efficiencies:	<i>(No response received)</i>
4. How does your agency document efficiencies? (select all that apply)	<ul style="list-style-type: none"> • We produce (formal or informal) documentation that is shared with the public: CT-DOT "On the Move" Performance Measures: http://www.ct.gov/dot/cwp/view.asp?a=3815&q=448402 • We produce documentation (formal or informal) with stakeholders, such as legislators, governor, chambers, etc. • We produce internal documentation for management use
5. Can you provide any written examples of how you have calculated and/or demonstrated cost savings	We cannot provide any examples

through efficiencies?	
6. Generally speaking, how successful has your agency been in demonstrating efficiencies?	Somewhat successful
6a. How do you measure your success, and/or what is your reasoning for your answer above?	<i>(No response received)</i>
7. Does your State have legislatively and/or constitutionally designated roadways? (For instance, Minnesota state statutes require that MnDOT operate roads between a number of specific cities.)	Yes
7a. If yes, approximately what percentage of your State's total roadway system is designated as such?	<i>(No response received)</i>
8. Does your State have any other rules or challenges that may influence the limits of efficiencies that can be achieved by the agency?	No
8a. If yes, please provide a brief description of these challenges:	
9. Does your agency have a Department-wide Cost Allocation Plan that you'd be willing to share with MnDOT?	No
10. As we (MnDOT) are working to increase our efficiency reporting and tracking – both for our own purposes and for our stakeholders; is there any advice you'd offer us that we've not asked about? Perhaps lessons learned that have been valuable to your agency?	<i>(No response received)</i>
11. Are there one or more DOTs that you are aware of, that are out ahead of other DOTs in this area? If so, which ones?	<i>(No response received)</i>

NOTE: Responses were not received for questions 2a, 3a, 6a, 7a, 8a, 10, 11.

Florida Department of Transportation Survey Responses

Respondent: Brian Blanchard
Assistant Secretary
brian.blanchard@dot.state.fl.us
850-544-0325

Question	Response
1. Does your agency demonstrate and/or track cost savings through 'efficiencies'?	Yes
1a. Comments:	<i>(No response received)</i>
2. Do you have a prescribed definition for 'efficiencies' within the department?	No
2a. If yes, please insert the definition in the box below, if possible:	<i>(No response received)</i>
3. Indicate whether you have used or considered any of the following approaches for demonstrating cost savings through efficiencies:	
<input type="radio"/> We have demonstrated efficiencies	<ul style="list-style-type: none"> • Improved project scoping • Reduced materials usage

	<ul style="list-style-type: none"> • Reduced maintenance costs • Innovative contracting • Increased user benefits • Innovative approaches that have a higher initial cost but result in cost savings to the DOT over time • Innovative approaches that have a higher initial cost but provide user benefits over time
<ul style="list-style-type: none"> ○ We have considered demonstrating efficiencies 	<ul style="list-style-type: none"> • Improved methods • Reduced agency administration costs
3a. Please list any other approaches you have considered or completed, to demonstrate cost savings through efficiencies:	<i>(No response received)</i>
4. How does your agency document efficiencies? (select all that apply)	We produce internal documentation for management use
5. Can you provide any written examples of how you have calculated and/or demonstrated cost savings through efficiencies?	We have examples that we'd be willing to share
6. Generally speaking, how successful has your agency been in demonstrating efficiencies?	Moderately successful
6a. How do you measure your success, and/or what is your reasoning for your answer above?	<i>(No response received)</i>
7. Does your State have legislatively and/or constitutionally designated roadways? (For instance, Minnesota state statutes require that MnDOT operate roads between a number of specific cities.)	No
7a. If yes, approximately what percentage of your State's total roadway system is designated as such?	Just local vs. state roads
8. Does your State have any other rules or challenges that may influence the limits of efficiencies that can be achieved by the agency?	No
8a. If yes, please provide a brief description of these challenges:	<i>(No response received)</i>
9. Does your agency have a Department-wide Cost Allocation Plan that you'd be willing to share with MnDOT?	<i>(No response received)</i>
10. As we (MnDOT) are working to increase our efficiency reporting and tracking – both for our own purposes and for our stakeholders; is there any advice you'd offer us that we've not asked about? Perhaps lessons learned that have been valuable to your agency?	We track the innovative ideas by spreadsheet. Some have savings calculated; some are too difficult to calculate. Some savings are on the operating side, others are on the work program side
11. Are there one or more DOTs that you are aware of, that are out ahead of other DOTs in this area? If so, which ones?	<i>(No response received)</i>

NOTE: Responses were not received for questions 2a, 3a, 6a, 8a, 9, 11.

Georgia Department of Transportation Survey Responses

Respondent: **Connie Steele**
Finance Director
csteele@dot.ga.gov
404-347-0471

Question	Response
1. Does your agency demonstrate and/or track cost savings through 'efficiencies'?	Yes
1a. Comments:	<i>(No response received)</i>
2. Do you have a prescribed definition for 'efficiencies' within the department?	No
2a. If yes, please insert the definition in the box below, if possible:	<i>(No response received)</i>
3. Indicate whether you have used or considered any of the following approaches for demonstrating cost savings through efficiencies:	
<ul style="list-style-type: none"> ○ We have demonstrated efficiencies 	<ul style="list-style-type: none"> • Improved project scoping • Reduced maintenance costs • Reduced system operations costs • Reduced agency administration costs • Innovative contracting • Increased user benefits • Innovative approaches that have a higher initial cost but provide user benefits over time
<ul style="list-style-type: none"> ○ We have considered demonstrating efficiencies 	<ul style="list-style-type: none"> • Actual costs vs. programmed costs • Reduced materials usage • Improved methods • Innovative approaches that have a higher initial cost but result in cost savings to the DOT over time
3a. Please list any other approaches you have considered or completed, to demonstrate cost savings through efficiencies:	<i>(No response received)</i>
4. How does your agency document efficiencies? (select all that apply)	Some efficiencies are public and some are internally documented.
5. Can you provide any written examples of how you have calculated and/or demonstrated cost savings through efficiencies?	We would be willing to discuss this over the phone to describe the examples
6. Generally speaking, how successful has your agency been in demonstrating efficiencies?	Somewhat successful
6a. How do you measure your success, and/or what is your reasoning for your answer above?	It is often hard to compare due to change in source levels vs. reduced costs.
7. Does your State have legislatively and/or constitutionally designated roadways? (For instance, Minnesota state statutes require that MnDOT operate roads between a number of specific cities.)	Yes
7a. If yes, approximately what percentage of your	15%

State's total roadway system is designated as such?	
8. Does your State have any other rules or challenges that may influence the limits of efficiencies that can be achieved by the agency?	Yes
8a. If yes, please provide a brief description of these challenges:	Capital construction and maintenance funds are congressional balanced over the State Transportation Improvement Plan.
9. Does your agency have a Department-wide Cost Allocation Plan that you'd be willing to share with MnDOT?	No
10. As we (MnDOT) are working to increase our efficiency reporting and tracking – both for our own purposes and for our stakeholders; is there any advice you'd offer us that we've not asked about? Perhaps lessons learned that have been valuable to your agency?	Effectiveness may be a better focus than efficiency.
11. Are there one or more DOTs that you are aware of, that are out ahead of other DOTs in this area? If so, which ones?	<i>(No response received)</i>

NOTE: Responses were not received for question 1a, 2a, 3a, 11.

Louisiana Department of Transportation and Development Survey Responses

Respondent: Nita Chambers
 Deputy Undersecretary
nita.chambers@la.gov
 225-379-1010

Question	Response
1. Does your agency demonstrate and/or track cost savings through 'efficiencies'?	Yes
1a. Comments:	Each division in the department has an annual performance measure to manage and restrict Non-Personnel Service budgeted expenditures not to exceed 97% of fiscal year budget authority
2. Do you have a prescribed definition for 'efficiencies' within the department?	No
2a. If yes, please insert the definition in the box below, if possible:	Nothing other than to reduce cost
3. Indicate whether you have used or considered any of the following approaches for demonstrating cost savings through efficiencies:	
<input type="radio"/> We have demonstrated efficiencies	<ul style="list-style-type: none"> • Actual costs vs. programmed costs • Improved methods • Reduced maintenance costs
<input type="radio"/> We have considered demonstrating efficiencies	<ul style="list-style-type: none"> • Reduced agency administration costs • Innovative contracting • Increased user benefits • Innovative approaches that have a higher initial cost but result in cost savings to the DOT over time
<input type="radio"/> We have not considered demonstrating efficiencies in this area	<ul style="list-style-type: none"> • Improved project scoping • Reduced materials usage • Reduced system operations costs • Innovative approaches that have a higher initial cost but provide user benefits over time
3a. Please list any other approaches you have considered or completed, to demonstrate cost savings through efficiencies:	<i>(No response received)</i>
4. How does your agency document efficiencies? (select all that apply)	Other: We monitor and report internally on performance objective and pilot cost saving strategies on case by case basis.
5. Can you provide any written examples of how you have calculated and/or demonstrated cost savings through efficiencies?	We cannot provide any examples
6. Generally speaking, how successful has your agency been in demonstrating efficiencies?	Somewhat successful
6a. How do you measure your success, and/or what is your reasoning for your answer above?	For 3 years running we have met our 97% goal on department wide basis
7. Does your State have legislatively and/or constitutionally designated roadways? (For instance,	Yes

Minnesota state statutes require that MnDOT operate roads between a number of specific cities.)	
7a. If yes, approximately what percentage of your State's total roadway system is designated as such?	State currently owns over 27% of public roads in Louisiana
8. Does your State have any other rules or challenges that may influence the limits of efficiencies that can be achieved by the agency?	Yes
8a. If yes, please provide a brief description of these challenges:	Employee head count is controlled by legislature and this can impede efficiencies requiring us to contract out services that may be more cost effective to do with our own manpower.
9. Does your agency have a Department-wide Cost Allocation Plan that you'd be willing to share with MnDOT?	No
10. As we (MnDOT) are working to increase our efficiency reporting and tracking – both for our own purposes and for our stakeholders; is there any advice you'd offer us that we've not asked about? Perhaps lessons learned that have been valuable to your agency?	We implemented an integrated SAP system that will ultimately allow us to have the data necessary to identify and demonstrate additional efficiency opportunities in the future. We are looking at a comprehensive records management system that once developed and implemented would create efficiencies in our everyday work/processes.
11. Are there one or more DOTs that you are aware of, that are out ahead of other DOTs in this area? If so, which ones?	<i>(No response received)</i>

NOTE: Responses were not received for questions 3a, 11.

Maine Department of Transportation Survey Responses

Respondent: Dale Peabody
Research Director
dale.peabody@maine.gov
207-624-3305

Question	Response
1. Does your agency demonstrate and/or track cost savings through 'efficiencies'?	No
1a. Comments:	Not yet. Working on a process as part of our Strategic Plan capstone measures.

NOTE: Responses were not received for questions 2-11.

Missouri Department of Transportation Survey Responses

Respondent: Bill Stone
Research Administrator
william.stone@modot.mo.gov
573-526-4328

Question	Response
1. Does your agency demonstrate and/or track cost savings through 'efficiencies'?	Yes
1a. Comments:	We have what is known as "TRACKER" which is a statewide document developed quarterly that gathers Department Results through performance measures that we have equated to your term efficiencies. There are also Division documents known as "D-TRACKER" that gather results from performance measures gathered on individual division level. The statewide TRACKER is shared publicly on our website. The D-Trackers are internal documents.
2. Do you have a prescribed definition for 'efficiencies' within the department?	No
2a. If yes, please insert the definition in the box below, if possible:	No prescribed definition. Measures/efficiencies are compiled on a case by case basis and are placed in the TRACKER. Attached is a link to the April 2014 Tracker: http://www.modot.org/about/documents/April2014TrackerReduced.pdf
3. Indicate whether you have used or considered any of the following approaches for demonstrating cost savings through efficiencies:	
<ul style="list-style-type: none"> ○ We have demonstrated efficiencies 	<ul style="list-style-type: none"> • Actual costs vs. programmed costs • Improved project scoping • Reduced materials usage • Reduced maintenance costs • Reduced system operations costs • Reduced agency administration costs • Innovative contracting • Increased user benefits • Innovative approaches that have a higher initial cost but result in cost savings to the DOT over time • Innovative approaches that have a higher initial cost but provide user benefits over time
3a. Please list any other approaches you have considered or completed, to demonstrate cost savings through efficiencies:	<i>(No response received)</i>
4. How does your agency document efficiencies? (select all that apply)	<ul style="list-style-type: none"> • We produce (formal or informal) documentation that is shared with the public. <p>Missouri DOT Performance Measures "Tracker": http://www.modot.org/about/documents/April2014TrackerReduced.pdf</p>

	<p>4TrackerReduced.pdf</p> <ul style="list-style-type: none"> • We produce documentation (formal or informal) with stakeholders, such as legislators, governor, chambers, etc. • We produce internal documentation for management use
5. Can you provide any written examples of how you have calculated and/or demonstrated cost savings through efficiencies?	We have examples that we'd be willing to share
6. Generally speaking, how successful has your agency been in demonstrating efficiencies?	Very successful
6a. How do you measure your success, and/or what is your reasoning for your answer above?	<i>(No response received)</i>
7. Does your State have legislatively and/or constitutionally designated roadways? (For instance, Minnesota state statutes require that MnDOT operate roads between a number of specific cities.)	Yes
7a. If yes, approximately what percentage of your State's total roadway system is designated as such?	Do not readily have the percentage available. The following is the link to the Missouri State Statute designated the roadways. Missouri Revised Statutes "Chapter 227 - State Highway System Section 227.020: http://www.moga.mo.gov/statutes/C200-299/2270000020.HTM
8. Does your State have any other rules or challenges that may influence the limits of efficiencies that can be achieved by the agency?	Yes
8a. If yes, please provide a brief description of these challenges:	Funding
9. Does your agency have a Department-wide Cost Allocation Plan that you'd be willing to share with MnDOT?	No
10. As we (MnDOT) are working to increase our efficiency reporting and tracking – both for our own purposes and for our stakeholders; is there any advice you'd offer us that we've not asked about? Perhaps lessons learned that have been valuable to your agency?	Our TRACKER has been an extremely important activity for our department to measure our success in the different areas of the Department. The measures were developed in the mid-2000s and revised in the last year. The measures are developed based on our Tangible Results which are noted in our TRACKER. The TRACKER was received revised as our Tangible Results have been updated.
11. Are there one or more DOTs that you are aware of, that are out ahead of other DOTs in this area? If so, which ones?	Florida and Washington

NOTE: Responses were not received for questions 3a, 6a.

New Jersey Department of Transportation Survey Responses

Respondent: Gary Brune
 Chief Financial Officer
gary.brune@dot.state.nj.us
 609-530-2046

Question	Response
1. Does your agency demonstrate and/or track cost savings through 'efficiencies'?	Yes
1a. Comments:	<i>(No response received)</i>
2. Do you have a prescribed definition for 'efficiencies' within the department?	Yes
2a. If yes, please insert the definition in the box below, if possible:	Efficiencies are typically defined as initiatives that save NJDOT in operating or capital funds.
3. Indicate whether you have used or considered any of the following approaches for demonstrating cost savings through efficiencies:	
<ul style="list-style-type: none"> ○ We have demonstrated efficiencies 	<ul style="list-style-type: none"> • Actual costs vs. programmed costs • Improved project scoping • Reduced maintenance costs • Reduced system operations costs • Reduced agency administration costs • Innovative contracting • Increased user benefits • Innovative approaches that have a higher initial cost but result in cost savings to the DOT over time • Innovative approaches that have a higher initial cost but provide user benefits over time
<ul style="list-style-type: none"> ○ We have considered demonstrating efficiencies 	<ul style="list-style-type: none"> • Reduced materials usage
3a. Please list any other approaches you have considered or completed, to demonstrate cost savings through efficiencies:	"Continuous Improvement" process implemented in the Office of the CFO formally asks staff in accounting, budgeting, procurement and IT to identify initiatives that could yield cost savings, cost avoidance, or service improvements to stakeholders.
4. How does your agency document efficiencies? (select all that apply)	<ul style="list-style-type: none"> • We produce documentation (formal or informal) with stakeholders, such as legislators, governor, chambers, etc. • We produce internal documentation for management use
5. Can you provide any written examples of how you have calculated and/or demonstrated cost savings through efficiencies?	We would be willing to discuss this over the phone to describe the examples
6. Generally speaking, how successful has your agency been in demonstrating efficiencies?	Moderately successful
6a. How do you measure your success, and/or what is	<ul style="list-style-type: none"> • Reduced project cost

your reasoning for your answer above?	<ul style="list-style-type: none"> • Savings ideas implemented in State Budget • Cost avoidance realized <p>Some promising ideas that have not yet been implemented require a higher degree of focus than has been applied to date. In short, the agency needs to invest the time required and apply a higher priority to those efforts.</p>
7. Does your State have legislatively and/or constitutionally designated roadways? (For instance, Minnesota state statutes require that MnDOT operate roads between a number of specific cities.)	No
7a. If yes, approximately what percentage of your State's total roadway system is designated as such?	<i>(No response received)</i>
8. Does your State have any other rules or challenges that may influence the limits of efficiencies that can be achieved by the agency?	<i>(No response received)</i>
8a. If yes, please provide a brief description of these challenges:	Staff reduction is largely achieved through attrition, not layoff. Legislative authority is required to achieve certain efficiencies, including several in the contracting area.
9. Does your agency have a Department-wide Cost Allocation Plan that you'd be willing to share with MnDOT?	Yes
10. As we (MnDOT) are working to increase our efficiency reporting and tracking – both for our own purposes and for our stakeholders; is there any advice you'd offer us that we've not asked about? Perhaps lessons learned that have been valuable to your agency?	NJDOT's challenge, consistent with many public agencies, is to identify key areas of potential efficiency and to allocate sufficient time and effort to develop them. This requires a willingness to de-emphasize or defer issues that are arguably of less importance but which tend to dominate the daily workload. From a time management perspective, a mechanism needs to be established that raises the importance of efficiency items for agency executives.
11. Are there one or more DOTs that you are aware of, that are out ahead of other DOTs in this area? If so, which ones?	<i>(No response received)</i>

NOTE: Responses were not received for questions 7a, 8, 11.

Utah Department of Transportation Survey Responses

Respondent: Randy Park
Project Development Director
rpark@utah.gov
801-633-6267

Question	Response
1. Does your agency demonstrate and/or track cost savings through 'efficiencies'?	Yes
1a. Comments:	<i>(No response received)</i>
2. Do you have a prescribed definition for 'efficiencies' within the department?	Yes

2a. If yes, please insert the definition in the box below, if possible:	Quality Throughput divided by Operational Expenses
3. Indicate whether you have used or considered any of the following approaches for demonstrating cost savings through efficiencies:	
<ul style="list-style-type: none"> ○ We have demonstrated efficiencies 	<ul style="list-style-type: none"> • Actual costs vs. programmed costs • Improved project scoping • Reduced materials usage • Improved methods • Reduced maintenance costs • Reduced system operations costs • Reduced agency administration costs • Innovative contracting • Increased user benefits • Innovative approaches that have a higher initial cost but result in cost savings to the DOT over time • Innovative approaches that have a higher initial cost but provide user benefits over time
3a. Please list any other approaches you have considered or completed, to demonstrate cost savings through efficiencies:	<i>(No response received)</i>
4. How does your agency document efficiencies? (select all that apply)	<ul style="list-style-type: none"> • We produce (formal or informal) documentation that is shared with the public. UDOT 2013 Annual Efficiencies Report: https://www.udot.utah.gov/main/uconowner.gf?n=14393526959106954 • We produce documentation (formal or informal) with stakeholders, such as legislators, governor, chambers, etc. • We produce internal documentation for management use
5. Can you provide any written examples of how you have calculated and/or demonstrated cost savings through efficiencies?	We would be willing to discuss this over the phone to describe the examples
6. Generally speaking, how successful has your agency been in demonstrating efficiencies?	Very successful
6a. How do you measure your success, and/or what is your reasoning for your answer above?	<i>(No response received)</i>
7. Does your State have legislatively and/or constitutionally designated roadways? (For instance, Minnesota state statutes require that MnDOT operate roads between a number of specific cities.)	Yes

7a. If yes, approximately what percentage of your State's total roadway system is designated as such?	25%
8. Does your State have any other rules or challenges that may influence the limits of efficiencies that can be achieved by the agency?	No
8a. If yes, please provide a brief description of these challenges:	<i>(No response received)</i>
9. Does your agency have a Department-wide Cost Allocation Plan that you'd be willing to share with MnDOT?	No
10. As we (MnDOT) are working to increase our efficiency reporting and tracking – both for our own purposes and for our stakeholders; is there any advice you'd offer us that we've not asked about? Perhaps lessons learned that have been valuable to your agency?	<i>(No response received)</i>
11. Are there one or more DOTs that you are aware of, that are out ahead of other DOTs in this area? If so, which ones?	<i>(No response received)</i>

NOTE: Responses were not received for questions 1a, 3a, 6a, 8a, 10, 11.

Wisconsin Department of Transportation Survey Responses

Respondent: Paul Hammer
Director, Office of Policy, Budget & Finance
paul.hammer@dot.wi.gov
608-267-9618

Question	Response
1. Does your agency demonstrate and/or track cost savings through 'efficiencies'?	Yes
1a. Comments:	<i>(No response received)</i>
2. Do you have a prescribed definition for 'efficiencies' within the department?	Yes
2a. If yes, please insert the definition in the box below, if possible:	See the MAPSS Scorecard at www.mapss.wi.gov , with definitions of success in each of the department's strategic goal areas.
3. Indicate whether you have used or considered any of the following approaches for demonstrating cost savings through efficiencies:	
<ul style="list-style-type: none"> ○ We have demonstrated efficiencies 	<ul style="list-style-type: none"> ● Improved methods ● Reduced agency administration costs ● Increased user benefits ● Innovative approaches that have a higher initial cost but result in cost savings to the DOT over time ● Innovative approaches that have a higher initial cost but provide user benefits over time
<ul style="list-style-type: none"> ○ We have considered demonstrating efficiencies 	<ul style="list-style-type: none"> ● Actual costs vs. programmed costs ● Improved project scoping

	<ul style="list-style-type: none"> • Reduced materials usage • Reduced maintenance costs • Reduced system operations costs • Innovative contracting
3a. Please list any other approaches you have considered or completed, to demonstrate cost savings through efficiencies:	The department recently completed phase one of a cross-divisional project to achieve efficiencies in highway construction projects. As part of the phase two implementation of recommendations, we will be tracking metrics related to cost savings through efficiencies.
4. How does your agency document efficiencies? (select all that apply)	<ul style="list-style-type: none"> • We produce (formal or informal) documentation that is shared with the public: Wisconsin DOT MAPSS Performance Improvement Program: www.mapss.wi.gov Wisconsin "Lean Government" Initiative: www.dot.wisconsin.gov/about/performance/lean.htm • We produce documentation (formal or informal) with stakeholders, such as legislators, governor, chambers, etc. • We produce internal documentation for management use
5. Can you provide any written examples of how you have calculated and/or demonstrated cost savings through efficiencies?	We would be willing to discuss this over the phone to describe the examples
6. Generally speaking, how successful has your agency been in demonstrating efficiencies?	Moderately successful
6a. How do you measure your success, and/or what is your reasoning for your answer above?	We are doing well, but still have room to improve. Our performance improvement and Lean programs have been in place for 2.5 years. We anticipate additional efficiencies as they mature. The Legislature approved changes that provided the opportunity to move to a performance-based maintenance system that should result in additional cost containment. WisDOT is a leader in applying research and innovation to improve system performance, including the use of improved methods and materials, traffic operations, freight movement and safety initiatives.
7. Does your State have legislatively and/or constitutionally designated roadways? (For instance, Minnesota state statutes require that MnDOT operate roads between a number of specific cities.)	No
7a. If yes, approximately what percentage of your State's total roadway system is designated as such?	(No response received)
8. Does your State have any other rules or challenges	Yes

that may influence the limits of efficiencies that can be achieved by the agency?	
8a. If yes, please provide a brief description of these challenges:	Significant, ongoing transportation infrastructure needs exist in all modes, funding challenges exist at both the state and federal levels, need to provide transportation revenues that are adequate, sustainable and equitable.
9. Does your agency have a Department-wide Cost Allocation Plan that you'd be willing to share with MnDOT?	No
10. As we (MnDOT) are working to increase our efficiency reporting and tracking – both for our own purposes and for our stakeholders; is there any advice you'd offer us that we've not asked about? Perhaps lessons learned that have been valuable to your agency?	Various approaches are needed to adequately communicate efficiency efforts to stakeholders. Web based reporting, town hall meetings, and incorporating these topics into meetings and presentations with stakeholders are common for us. Ongoing commitment from the Secretary's Office (Commissioner for MnDOT) has been key to our success.
11. Are there one or more DOTs that you are aware of, that are out ahead of other DOTs in this area? If so, which ones?	Washington is a leader in tracking metrics in all performance areas. Also, see NCHRP 20-24(37), Measuring Performance among State DOTs: Sharing Good Practices.

NOTE: Responses were not received for questions 1a, 7a.

Wyoming Department of Transportation Survey Responses

Respondent: Gregg Fredrick
Assistant Chief Engineer - Engineering and Planning
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607-777-4484

Question	Response
1. Does your agency demonstrate and/or track cost savings through 'efficiencies'?	Yes
1a. Comments:	<i>(No response received)</i>
2. Do you have a prescribed definition for 'efficiencies' within the department?	No
2a. If yes, please insert the definition in the box below, if possible:	<i>(No response received)</i>
3. Indicate whether you have used or considered any of the following approaches for demonstrating cost savings through efficiencies:	
<ul style="list-style-type: none"> ○ We have demonstrated efficiencies 	<ul style="list-style-type: none"> ● Actual costs vs. programmed costs ● Improved project scoping ● Reduced materials usage ● Reduced maintenance costs ● Reduced system operations costs ● Innovative contracting ● Innovative approaches that have a higher initial cost but result in cost savings to the DOT over time
<ul style="list-style-type: none"> ○ We have considered demonstrating 	<ul style="list-style-type: none"> ● Improved methods

efficiencies	<ul style="list-style-type: none"> • Reduced agency administration costs • Increased user benefits
<ul style="list-style-type: none"> ○ We have not considered demonstrating efficiencies in this area 	<ul style="list-style-type: none"> • Innovative approaches that have a higher initial cost but provide user benefits over time
3a. Please list any other approaches you have considered or completed, to demonstrate cost savings through efficiencies:	<i>(No response received)</i>
4. How does your agency document efficiencies? (select all that apply)	We produce documentation (formal or informal) with stakeholders, such as legislators, governor, chambers, etc.
5. Can you provide any written examples of how you have calculated and/or demonstrated cost savings through efficiencies?	We have examples that we'd be willing to share
6. Generally speaking, how successful has your agency been in demonstrating efficiencies?	Moderately successful
6a. How do you measure your success, and/or what is your reasoning for your answer above?	We have not established an actual performance measure (goal) but are tracking reduction in project costs, realized cost savings, and reduction in man-hours to complete tasks.
7. Does your State have legislatively and/or constitutionally designated roadways? (For instance, Minnesota state statutes require that MnDOT operate roads between a number of specific cities.)	No
7a. If yes, approximately what percentage of your State's total roadway system is designated as such?	<i>(No response received)</i>
8. Does your State have any other rules or challenges that may influence the limits of efficiencies that can be achieved by the agency?	Yes
8a. If yes, please provide a brief description of these challenges:	Statutes limit highway construction to design/bid/build
9. Does your agency have a Department-wide Cost Allocation Plan that you'd be willing to share with MnDOT?	Yes - attached
10. As we (MnDOT) are working to increase our efficiency reporting and tracking – both for our own purposes and for our stakeholders; is there any advice you'd offer us that we've not asked about? Perhaps lessons learned that have been valuable to your agency?	<i>(No response received)</i>
11. Are there one or more DOTs that you are aware of, that are out ahead of other DOTs in this area? If so, which ones?	<i>(No response received)</i>
Additional Information Provided by Agency	<ul style="list-style-type: none"> • Provided report on Efficiencies, Saved Resources, and Reduced Expenditures

NOTE: Responses were not received for questions 1a, 2a, 3a, 7a, 10, 11.

Appendix C: Colorado DOT Process Improvement Report (Nov.2013)

Source: Colorado Department of Transportation website

<http://www.coloradodot.info/business/process-improvement/summary-of-results-from-cdot-improvements/summary-of-results-from-improvement-efforts-11-1-2013/view>

Colorado Department of Transportation (CDOT) **Process Improvement at CDOT: A Quick Summary**



November 1, 2013 progress report (quick summary version)

Submitted by:
Gary Vansuch
Director of Process Improvement

In this report

Section 1: Introduction and summary of results

Section 2: Cross-functional process improvement

Section 3: Localized process improvement

Section 4: Everyday Ideas

Section 5: Tracking employee engagement in improvement efforts

Pictured on the cover:

- *Top row, left to right: Everyday Idea Innovation: Attachment to Improve Shouldering Operations; Local Agency Project Delivery Process Improvement Team; and Everyday Idea Innovation: Hydraulic Fluid Holding Box, To Protect the Environment.*
- *Middle row, left to right: MRP/JIT Inventory Improvement Implementation Team; and Everyday Idea Innovation: Cart for Removing Plow Wings More Easily.*
- *Bottom row, left to right: Central Contracts Approval Process Improvement Team; Everyday Idea Innovation: Delineator Repair Tool to Improve Safety and Efficiency; and Oversize / Overweight Permits Process Improvement Team.*

Section 1: Introduction and Summary of Results

This is the November 1, 2013 update about Process Improvement at the Colorado Department of Transportation (CDOT), focusing on summarizing results from CDOT's process improvement efforts. Details are also available on-line:

<http://www.coloradodot.info/business/process-improvement>

At CDOT, we are improving our operations so that we can deliver excellent services and products to all of our customers. We are working to engage everyone, every day at CDOT to make government more effective, efficient and elegant. This is crucial for fulfilling CDOT's Mission: "To provide the best multi-modal transportation system for Colorado that most effectively and safely moves people, goods, and information", and it is key method for CDOT to make Colorado government more effective, efficient and elegant.

However, improvement does not happen magically; it requires focusing on key issues and working systematically to resolve those issues. To do that, CDOT applies continuous improvement tools and techniques, many of which were pioneered in the private sector. This includes the principles and practices of Lean process improvement.

There are several different avenues which CDOT employees use to improve processes, products and services, including:

- Cross-functional improvement (more details in Section 2 below);
- Local process improvement (more details in Section 3); and
- Everyday Ideas (more details in Section 4).

Additionally, other important components of the process improvement at CDOT include:

- the integration of change management, the people side of change, into our process improvement efforts and other change initiatives;
- benchmarking of processes in other organizations, and implementing better practices discovered through this benchmarking; and
- "after action" reviews to drive application of lessons learned throughout the organization.

A Special Note about the September 2013 Flooding, and Process Improvement

The floods of September 11-12, 2013 impacted many Coloradoans very significantly, and impacted CDOT operations, too. For our process improvement efforts, we adjusted the schedules of many process improvement projects to allow CDOT employees to focus their strength, time and resources on Flood Response efforts at CDOT. Consequently, many of these improvement efforts will now be completed later than originally planned.

Additionally, several ongoing process improvement efforts were even more directly affected by the floods -- and, proved helpful during the Flood Response -- as noted below.

Boulder Residency's "Roadway Data Cataloging System" Project. In the Boulder Engineering Residency, a process improvement team led by Abra Geissler and sponsored by Dan Marcucci had been

working since mid-2013 on a "Roadway Data Cataloging System", to organize data associated from Boulder-area highways, so that CDOT can design and construct projects more quickly in the future.

A key element of that Project was cataloguing data about local highways, including some that were subsequently damaged in the September floods. Prior to the September floods, data collection on State Highway (SH) 119 for this project was completed, and this information proved to be very helpful to the Boulder Residency and others in evaluating the flood damage to SH 119.

Since several Boulder-area highways are now being rebuilt, the team's data collection for these highways will be delayed until rebuilding of the affected highways is completed. And, the Project Team will need to collect data again about the rebuilt SH 119, too. However, the data system that the Project team developed will help make that cataloguing process much more effective and efficient.

Evans Residency's "5S" Project. Another Engineering Residency in Region 4, the Evans Residency led by Lou Keen, was working earlier in 2013 to implement "5S", a Lean method for creating and maintaining an organized, clean and high performance workplace. The Residency was making significant progress through September; then, the floods hit and essentially destroyed the building which housed the Evans Residency (and which also housed a unit of the Colorado State Patrol).

Reflecting the true can-do spirit of Coloradoans, the sponsors and team members for both of these efforts indicate that they will work to respond to issues created by the floods, and will then continue to make progress with these important process improvement efforts.

How the Shouldering Innovation Helped. Another improvement effort proved its usefulness during the September flood response. In the summer of 2013, CDOT's Maintenance Patrol 7, based in Estes Park, developed and implemented an "Everyday Idea": an innovative attachment that easily mounts to the blade of a John Deere highway shoulder grader (as shown in the upper left of the front cover of this document). With this new shoulder grading innovation, CDOT Maintenance Patrols are able to wheel-pack most of the fresh graded area simply by articulating the grader and using the rear wheels – which improves efficiency during regular highway maintenance activities.

And, this innovation has produced other benefits. The floods of September 11-12 effectively cut off access to the town of Estes Park. This same Maintenance Patrol (Patrol 7), along with help from Patrol 12 at Nederland and Patrol 10 at Boulder, scrambled to get State Highway 7 south of Estes Park back open to traffic. It was a huge job, because a culvert washed out and took much of the roadway with it in one 80-foot section, and shoulders were badly eroded in many locations. Motor graders, and this shouldering attachment innovation from Patrol 7, played important roles as the road was reopened within about 48 hours, providing the only practical access into Estes Park for the next several weeks.

Section 2: Cross-functional process improvement

"We initiated the Lean program in almost every state agency, where employee teams are now actively identifying waste and inefficiency to create savings." - Governor John Hickenlooper, 2012 State of the State address

Some of our CDOT improvement efforts focus on larger, cross-functional processes (and the products and services they produce); we refer to these as "Global Lean" projects.

Some of our cross-functional improvements also incorporate information technology to enhance how we work. Information technology is a powerful tool for improving our business, enhancing customer service and reducing the cost of government. CDOT frequently partners with the Governor's Office of Information Technology (OIT) to employ information technology to make CDOT's processes more effective, efficient, and elegant. We also partner with other state agencies on some selected process improvement efforts: for instance, five agencies including CDOT have banded together on a process improvement project to enhance printing services for state agencies.

Here are some of the results from these CDOT cross-functional improvement efforts:

1. Access permit applicants can track the exact status of each and every permit application, and they get a permit 16% more quickly than before (Project Team is pictured on the cover of this report).
2. Truck drivers on Colorado highways get oversize / overweight permits 30% faster, with 60% fewer errors than previously (Project Team is pictured on the cover of this report).
3. Local governments and other transit project grantees get reimbursed 75% more quickly than previously.
4. Local governments have their Congestion Mitigation and Air Quality (CMAQ) grant applications processed more than 23% faster than previously.
5. Local governments and other local agencies have faster access crucial highway transportation project information, and inactive funding on these projects has decreased by over 50%.
6. Applicants for CDOT positions spend 60% less total time in the hiring process (and hiring managers are able to fill vacancies on their teams 60% faster).
7. Consultant assistance for CDOT transportation projects will be available more quickly – with cycle time reduced by over 20% -- allowing transportation projects to start and finish more quickly.
8. Contracting by CDOT with Colorado businesses is now 19% faster than before.
9. Using material requirements planning (MRP) and "just in time" (JIT) purchasing strategies, inventory at CDOT storerooms was reduced by more than \$1.9 million (Project Team is pictured on the cover of this report).
10. The cost of government was decreased by \$50,000 through improvements in the process for accident reporting.
11. Improvement in the Erosion and Sediment Control Assessment reporting process saved \$420,000 annually.
12. Significant simplification of data entry for transportation system Project Managers has saved approximately \$400,000.
13. Improvements to CDOT's web-based mapping system (known as CPLAN) provides easier and faster access to CDOT maps and related information; this instantly-available information saves

each user (both inside and outside CDOT) up to 19 hours over the prior method for accessing this data.

14. The process for Federal Funding Accountability and Transparency Act (FFATA) reporting was improved, saving \$11,000 annually.
15. Improvements to CDOT's Traffic Analysis Geospatial Information System (known as "TAGIS") reduce off-system data collection costs for CDOT by about \$50,000 per year.

These projects are covered in more detail at these links:

<http://www.coloradodot.info/business/process-improvement/lean-case-studies>

<http://www.coloradodot.info/business/process-improvement/using-information-technology-to-improve-processes>

Cross-functional process improvement efforts that are currently in early stages of analysis or implementation are noted below (and at this website):

<http://www.coloradodot.info/business/process-improvement/upcoming-process-improvement-projects>

1. The Statewide Printing Services Collaboration Process Improvement Project – a joint effort of led by CDOT and including four other state agencies – is implementing an improvement plan developed during a Rapid Improvement Event (RIE) in July 2013, and is on-target for completion of that multi-agency effort in June 2014. This Project will allow state Print Shops to deliver more-timely print services and better customer service, and will provide cost savings statewide.
2. The Engineering / Right-of-Way (ROW) Process Improvement Project is focused on reducing total elapsed time on the ROW portion of the overall transportation project delivery process. Some of the people working on this Project were pulled into Flood Response efforts, and the schedule for completion of the project was lengthened. The RIE for this project was scheduled for October; that has been deferred until January.
3. The Customer Experience Process Improvement Project is focused on 1) standardizing the external customer experience when contacting CDOT, and 2) accelerating response time to the customer. Some of the people working on this Project were also pulled into Flood Response efforts, and the schedule for completion of the project was lengthened. The RIE for this project was scheduled for October; that has been deferred until late January.
4. The Heavy Equipment Process Improvement Project is focused on reducing the costs and lead-time for procuring heavy road equipment. The RIE for this project will be conducted in December.
5. The Project for Improving the Process for Qualifying Applicants for Federal Funding will standardize the qualification process for local agencies which are seeking federal funding for transportation projects. This effort includes personnel from the Federal Highway Administration (FHWA) as well as CDOT personnel. Resources for this project have also been affected by the Flood Response, and the RIE for this Project has been rescheduled to early in 2014.
6. The Damage Cost Recovery Process Improvement Project is standardizing the process for collecting and documenting cost recovery for damages on the Colorado highway system. This

Project is using a series of shorter Lean Workshops to analyze and improve this process, and it is scheduled to produce an improvement plan by late November 2013.

7. The Core Document Retention Process Improvement Project will standardize the workflow for retaining core CDOT documents; an RIE for this Project will be conducted in early 2014.
8. A newly-chartered effort will implement 5S (a Lean method for creating and maintaining an organized, clean and high performance workplace) at CDOT's Headquarters complex in south Denver. A large improvement event associated with this effort is tentatively scheduled for late Spring 2014.

Section 3: Localized process improvement

"Like any business, CDOT needs to constantly review our processes and procedures, then make needed adjustments and improvements to ensure that we are delivering the best customer service possible." CDOT Executive Director Don Hunt

While some of our improvements are larger, cross-functional projects, many improvements at CDOT are more localized: individuals or small teams of people improving the processes, products and services within their own functions and workgroups, to enhance efficiency and service to their customers.

Here are summaries of the results from these more-localized improvement efforts:

1. Landowners receive faster payment for lands they sell to CDOT (now just one week for most requests).
2. Improvement to the workflow, approval, and distribution process for purchase orders speeds the overall process and eliminated the need for manual printing and manual signatures.
3. An inventive interface for an Excel spreadsheet for Budget Actions has save 260 work hours per year in Region 5; this improvement is scheduled to be replicated within CDOT's other Regions.
4. The Central Contracts Review Process was streamlined to eliminate 23 low-value-add steps (a reduction of almost 50%), reducing the overall approval time from an average of approximately 5 days to an average of approximately 3 days (Project Team is pictured on the cover of this report).
5. An improvement to processing for W-9 forms has decreased the amount of time it takes to set up a new vendor in our CDOT computer system; consequently, these businesses can start doing business with CDOT more quickly.
6. Lean principles were applied to the state's rules for Harvesting Native Grasses on Highway Rights-of-Way; as a result, savings will occur by alleviating the need for CDOT to mow certain rights-of-way.

7. Using Lean principles, the state's Uniform Relocation Assistance Rules were reviewed. The rules were determined to be a non-value-add for the overall Relocation program. So, these rules were repealed to make the process more understandable overall to small businesses in Colorado.
8. The Environmental Project Clearance Request Process Improvement Project resulted in a faster environmental clearance process, and improvements have also increased the reliability and consistency of information transmittal.
9. CDOT's Maintenance Training Academy (MTA) used information technology to save \$20,000 each year in printing costs.

As noted previously, two ongoing localized improvement efforts – the Boulder Residency's "Roadway Data Cataloging System" Project and the Evans Residency's "5S" Project -- were significantly impacted by the September flooding. After Flood Response efforts are completed, these Residencies will continue these improvement projects, though the schedules for completing these projects will later than originally planned.

Some other ongoing localized improvement efforts include these:

1. The Project Closure Process Improvement Project will improve the process for closing-out transportation system projects in CDOT's Southeast Region (Region 2); an improvement plan for this effort is scheduled to be completed in January 2014. Best practices from this localized effort will then be replicated within CDOT's other Regions.
2. The Vehicle Accident Reduction Analysis Improvement Project is developing a thorough integrated analysis process to identify areas in CDOT's Southwest Region (Region 5) which experience higher vehicle accident rates. Additionally, this Project will involve front-line personnel in the Region to develop and implement short-term and longer-term roadway solutions to reduce the incidence of vehicle accidents in these high-risk areas. Initial improvements will be implemented starting in December, and best practices from this Region 5 effort will then be replicated within CDOT's other Regions.

Information about these more-localized improvement efforts is provided at this link:
<http://www.coloradodot.info/business/process-improvement/local-lean>

Section 4: Everyday Ideas

"Making government more effective, efficient and elegant means listening to our state employees and learning from them how we can do better." – Governor John Hickenlooper, 2011 State of the State address

Everyone at CDOT is encouraged to identify opportunities to make improvements to their workplaces and work processes. These "Everyday Ideas" are an integral part of CDOT's overall process improvement initiative. Everyday Ideas are innovations and ideas where one person (or sometimes a small group) will: 1) identify a problem or opportunity; 2) develop an innovative way of doing something better to solve that problem or seize upon that opportunity; 3) test that innovative way, to make sure it works; and then 4) implement it. These innovations and ideas are the embodiment of *"Everyone, Every Day, Improving Every Process and Every Product, To Benefit Every Customer"*.

Here are summaries of the results from implementing some of these Everyday Ideas:

1. A new tool makes highway delineator straightening safer and faster. This innovation has been replicated over 40 times across CDOT (this Everyday Idea is pictured on the cover of this report).
2. An improved highway sign cover reduces the incidence of these covers being blown off during times of heavy wind, thereby improving highway safety and eliminating the work needed to re-cover these highway signs.
3. An innovative Hydraulic Fluid Holding Box prevents fluid spills when working on heavy equipment – up to a few pints every time it is used. This innovation has been replicated over 120 times across CDOT (this Everyday Idea is pictured on the cover of this report).
4. A wing cart which allows easy and quick mounting and removal of wing plows from CDOT reduces this task from several staff-hours of work to just six (6) staff-minutes (this Everyday Idea is pictured on the cover of this report).
5. An improved drain assembly that assists with loading and unloading liquid deicer saves up to two (2) gallons from being spilled into the environment each time it is used.
6. A new tool for removing wing towers from motor graders improves the efficiency of this task by 50%.
7. An innovative attachment for highway shoulder graders provides a higher-quality shouldering line, and improves the efficiency for this job – and, as noted previously, this shouldering innovation proved to be very useful to during the first crucial days of September Flood Response efforts as part of the effort to restore access and travel on SH 7 (this Everyday Idea is pictured on the cover of this report).
8. Changes to an exhaust line reduced noise and improved personnel and visitor safety at the CDOT headquarters motor pool.
9. A new method for producing salt brine saves over \$300,000 annually.
10. A new way of storing tire chains saves money by reducing the likelihood of rusting.
11. Adding guards to the sides of an existing plow improves safety and efficiency for removing highway debris.
12. An innovation for washing highway delineation makes this job easier and more effective.
13. An improvement to highway closure gates improves safety and reduces costs.
14. A hinged delineator bridge mount bracket invention improves highway safety and also saves money.
15. Using orange tape on the handles of movable storage cabinets has improved personnel safety in tight workspaces where these cabinets are located.

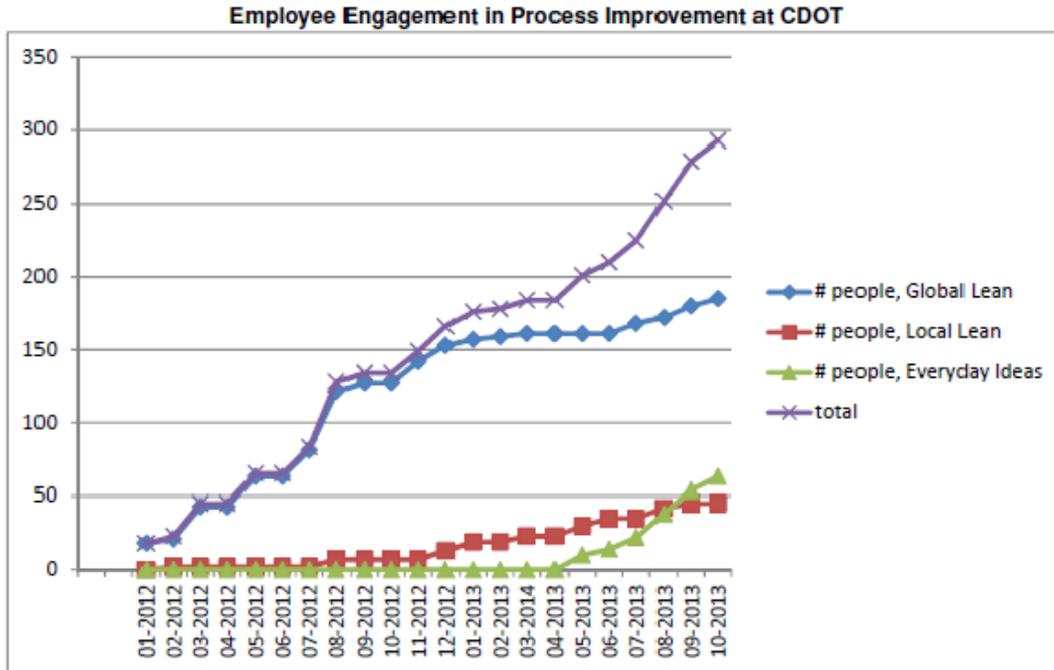
16. An inventive attachment for a skid loader improves safety and efficiency for Maintenance Patrols when removing debris from underneath fencing.
17. The process for storing certain types of pumps is now more efficient due to an innovative holder.
18. Innovative hitch plow rollers have been developed to improve efficiency and personnel safety when lowering of snow plow legs.
19. A clutch pedal holder improves job efficiency by 50% for certain types of truck maintenance activities.
20. A guardrail alignment tool improves personnel safety in the assembly or re-assembly of highway guardrail sections.
21. A new slide post pounder makes the job of getting highway posts in the ground easier and more efficient.
22. A guardrail post puller makes the job of getting damaged highway posts out the ground easier and more efficient.
23. A skid loader tool innovation makes it faster and safer to extract highway joints.
24. A set of loader bull plow legs improves the efficiency and stability of connecting or disconnecting snowplows.
25. Installing bridge corbels is now safer and faster through the use of lightweight corbel templates.
26. A truck skirt innovation improves the spreading of sand and salt on roadways, improving grip on the road and reducing the risk of damage to nearby vehicles.
27. A lever puller innovation reduces the time needed to pull highway posts.
28. A new method and tool improves safety and efficiency when raising highway signs.
29. A portable arrow boards reduces set-up time and improves employee safety in highway work zones.
30. A theft deterrent box secures wiring on non-clearzone highway light poles, reducing the risk of wire theft.
31. A new toolkit makes repairing highway guardrail faster, easier and safer.

Information about results from Everyday Ideas is provided at this link:
<http://www.coloradodot.info/business/process-improvement/everyday-lean-innovations-ideas>

Section 5: Tracking employee engagement in improvement efforts

CDOT tracks the number of employees engaged with process improvement through their involvement with one of the efforts noted above. Though this, like many other measures, is not a perfect measure, it

does help us identify how broadly we are engaging employees in our improvement efforts, in pursuit of the goal of "Everyone, Every Day, Improving Every Process and Every Product, To Benefit Every Customer".



Appendix D: Colorado DOT Process Improvement Report (July, 2013)

Source: Colorado Department of Transportation Website

www.coloradodot.info/business/process-improvement/summary-of-results-from-cdot-improvements/summary-of-results-from-improvement-efforts-7-22.pdf/view

Summary of results from CDOT improvement efforts

Updated: July 22, 2013

KEY FOR TABLE BELOW:

Changes to Process: This column lists the types of waste, unnecessary steps and red tape removed when the improvement team made improvements to the old process.

Metrics: This column identifies the measurable customer-focused improvements, such as time or cost savings or error reduction, made as a result of improving the process.

As a Result: This column attempts to state in plain English why or how these improvements are important to the citizens, guests and businesses of Colorado.

CDOT process or product / service	Changes to Process	Metrics	As a Result:
Access Permits (permission for building access (like driveways) from private property to state highways)	Reduced the number of permit application reviews and approval steps.	Elapsed time for obtaining a permit decreased from 24 to approximately 20 days.	Access permit applicants can track the exact status of each and every permit application, and will get a permit 16% more quickly.
Oversize/Overweight Permits (permission for driving extra-large trucks on state highways)	Eliminated low-value-add steps. Utilized existing talent by cross-training personnel, resulting in fewer steps for most permits.	Reduced processing time by over 30% and also reduced the error rate by approximately 60%.	Truck drivers on Colorado highways will get permits 30% faster, with 60% fewer errors
Grant reimbursements (providing payments to recipients of CDOT transit grants)	Eliminated 26 low-value-add steps.	Total time to approximately 10 business days (from the previous 45-plus days)	Local governments and other grantees will get reimbursed 75% more quickly than previously
Local Agency Project Delivery (process for assisting local governments in their design, construction and management of State and Federally funded transportation projects)	Waste of processing was reduced: created different paths for small, medium and large projects – faster and less cumbersome paths for smaller efforts. Unnecessary steps were eliminated for many small and medium sized projects.	Funding tied-up on financially inactive Local Agency projects has dropped from \$2 million in early 2012 to under \$500,000 in June of 2013.	Local governments and other local agencies have faster access crucial transportation project information, and funding is much less likely to become inactive.
Congestion Mitigation Air Quality	Eliminated more than 20 low-value-add steps in the process.	Total elapsed time reduced by 23%.	Local governments will have their CMAQ grant applications processed

Process	Changes to Process	Metrics	As a Result:
(CMAQ) grants (grants provided to local governments to help improve air quality)			more than 23% faster than previously.
Hiring (process for hiring new CDOT employees)	Changed sequential steps to parallel steps. Incorporated innovative recruiting techniques. Reduced the job announcement period.	Reduced the overall time to hire a new employee from over 180 days to just 64 days	Applicants for CDOT positions will spend 60% less time in the hiring process.
Developing and executing consultant contracts (process for hiring consultants to assist with transportation system projects)	Reduced number of process steps from 352 to 95. Eliminated redundant reviews. Improved flow of key documents by introducing parallel processing.	Implementation still in progress. Reduced overall time to hiring consultant by 11% (July 2013), trending downward, with a longer-term goal of reducing the overall time by 50%.	Consultant assistance for CDOT transportation projects will be available more quickly, allowing transportation projects to finish more quickly.
Procurement / purchasing (process for procuring goods and services)	Reduced number of low value-add process steps by 15%. Employed information technology to automate Purchase Requisition workflow.	Implementation still in progress. Turnaround time within Procurement staff is 8 days (May 2012), down from an average in 2012 of 13 days.	Purchasing goods and services for CDOT efforts has been streamlined, reducing the cost of government.
Inventory management (managing inventory in CDOT storerooms)	Instituted just-in-time (JIT) inventory procurement management strategies. Employed information technology to implement materials requirements planning (MRP).	Increased annual inventory turns by 97%, from 3.5 to 6.9, improving CDOT's utilization of supplies. Decreased inventory levels from \$10.4 million to \$8.5 million between 2011 and June 2013.	The cost of state government at CDOT was reduced, through reducing storeroom inventory by more than \$1.9 million.
Contracting Improvement Initiative (process for preparing contracts)	Employed information technology to automate manual processing. Developed templates to standardize common contracting types.	Total time for contracting decreased 19% between 2011 and July 2013.	Contracting by CDOT with Colorado businesses is 19% faster.
Land Acquisition	Reduced the number of	Total time for the land	Landowners receive

Summary of results from CDOT improvement efforts, as of 7-22-2013

Page 2

Process	Changes to Process	Metrics	As a Result:
Approval (process for approving CDOT acquisition of land)	approvals required for acquiring land.	acquisition process was reduced by one week for most requests.	faster payment for lands they sell to CDOT.
Traffic data collection (process for viewing and downloading important traffic-related data in the TAGIS system)	Employed information technology to automate manual activities. Reduced customer time needed to access to data.	Decreases the time required to access traffic data; there is now instant data access by customers.	The cost of government was decreased by \$50,000. Eliminated wait time for customers who need to access traffic data.
Accident Reporting (collecting and reporting data about accidents)	Eliminated redundant data entry. Employed information technology to automate manual activities.	Cost for reporting data was decreased.	The cost of government was decreased by \$50,000.
Federal Funding Accountability and Transparency Act (FFATA) reporting (reporting federally-mandated information)	Employed information technology to automate activities that were previously performed manually.	Cost for reporting data was decreased.	The cost of government was decreased by \$11,000.
Erosion and Sediment Control Assessment reporting (collecting and reporting data about transportation project inspections)	Standardized process steps across multiple CDOT Regions. Employed information technology to automate manual activities	Cost for reporting data was decreased.	The cost of government was decreased by \$420,000.
Milestone Data Entry and Tracking (recording and reporting about key milestones on transportation system construction efforts)	Significantly simplified data entry for Project Managers. Eliminated entry of duplicate information. Adjusted templates to be more user-friendly.	Time required to input data was reduced from many hours to 30 minutes, saving about 10,125 hours of data entry time for transportation system Project Managers.	The cost of government was decreased by approximately \$400,000.

Appendix E: Florida DOT Methodology for Cost Savings Implementation – CEI & Design Contracts

Source: Florida Department of Transportation

METHODOLOGY FOR COST SAVINGS IMPLEMENTATION- CEI & DESIGN CONTRACTS

Ground Rules:

The objective of the Secretary's one-time Cost Savings Initiative is to identify opportunities for consultant fee savings for a select group of design and Construction Engineering Inspection (CEI) contracts. The **Prime** Consultant firm was asked to identify any and all scope refinement opportunities for design and CEI contracts, such as: (a) reduction or elimination of non-value added services; (b) elimination of unnecessary conditions or specification requirements; (c) removal of nonvalue added deliverables or phase reviews; and/or innovative ideas for streamlining project delivery.

The long term aim of this effort is to incorporate the cost saving ideas gained from this exercise into ongoing and future design and CEI contracts. The Consultants have identified a list of ideas, which have been vetted with the District Design Engineers and CEI Managers. FDOT will implement the cost savings ideas approved by Assistant Secretary Blanchard & the District Secretaries, on the 61 identified design & CEI contracts. There will be an overall resultant decrease in consultant fees for each contract, where ideas can be implemented. Procurement will issue a supplemental amendment to reduce the contract amount, and will also increase the Consultant fixed fee operating margin under the supplemental, as incentive for cost saving reductions. The savings share is 25% consultant and 75% Department. Please note; the contract final deliverable must remain the same, with no reduction in quality of services.

Methodology is provided below for implementing the savings on the designated contracts. This methodology will be followed by all Districts, for CPR.

FDOT Project Manager and Consultant Steps:

1. The FDOT Project Manager will initiate discussions with the Consultant, concerning the cost savings ideas approved by Assistant Secretary Blanchard and the District Secretaries. No other savings ideas other than the approved ideas provided in the e-mail from Brian Blanchard dated 1/11/13 will be implemented on the sixty-one design & CEI contracts.
2. The FDOT Project Manager will transmit a copy of the cost savings ideas to the Consultant firm via e-mail, to begin the process of determining which work activities can be eliminated from a given contract.
3. The Consultant will be instructed via the e-mail to review the savings ideas listed, and determine what ideas can be implemented on the contract. The Consultant firm is strongly encouraged to incorporate as many of the listed savings ideas as possible on the contract, without regard to the District.
4. All Consultant submittals will be made using the **AFP**, to ensure a complete record is maintained of how the fee reduction was determined, and how the operating margin fixed fee was derived. The starting place for the AFP will be based on the **original** hours and fees associated with the contract basic services, inclusive of hours and fees associated with any **supplementals** that may have occurred (TOTAL CONTRACT VALUE). This may require creating a new AFP, just for this effort. If no supplementals have occurred, the Consultant may be able to utilize the original AFP, if it matches what CITS and the paper contract shows (with supplemental

added in). THIS IS THE STARTING PLACE. A copy of the “starting place” AFP will be submitted to the FDOT Project Manager and FDOT Procurement.

5. Using the starting place AFP, the Consultant firm will then identify the staff hours by job classification, and total fees that can be removed from the contract. This information will be shared with the FDOT Project Manager and the reductions agreed upon between both parties before moving to the next step. This may be an iterative process.
6. Once Step 5 is completed, the Consultant firm will need incorporate the agreed number of hours to be reduced and submit a Reduced AFP.
7. The FDOT Project Manager will need to confirm that all reductions and information in the reduced AFP are in accordance with what was agreed upon between the FDOT Project Manager and the Consultant.
8. The Consultant firm will need to revise the scope of services accordingly. The revised scope will be incorporated in the amendment reducing the contract amount.
9. Once the overall reduction has been agreed upon, the fee detail (Reduced AFP) and the revised scope of services (if applicable) will be submitted to PSU.

Procurement Steps (General Description):

1. PSU will need to calculate the amount of the operating margin to be added to the contract. The amount of increase in operating margin (fixed fee) should equal 25% of the overall savings for the contract. Please check to ensure that the overall contract fixed fee does not exceed 42% operating margin calculated on direct labor, for federally funded contracts. PSU will need to verify which contracts include federal funding. If the contract is federally funded, please have your PSA contact CO Procurement before proceeding. FDOT will need to coordinate with FHWA and obtain concurrence on any changes proposed on Federal-aid projects. Also, cost sharing should be limited to state funds only on a Federal-aid contract. PSU will need to switch the funding source of the “Additional Operating Margin” to state funds, if the overall project is federal funded. PSU will need to coordinate with the FDOT Project Manager and Work Program.
2. PSU will prepare the contract amendment reducing the overall cost of the contract. The overall fee of the contract reduction (negative supplemental agreement) should be equivalent to 75% of the savings. Under the same amendment, fixed fee will be increased.
3. The compensation element previously established for the fixed fee **should not** be increased. Instead, a new compensation element for fixed fee will be added to the contract, called “Additional Operating Margin Related to Cost Savings”. This provides an audit trail on the contract of what transpired. Please note, the compensation element previously established for fixed fee should be reduced in accordance with reductions to hours.
4. Savings should be recorded on the Cost Savings SharePoint site:
<http://fdotsharepoint.dot.state.fl.us/fa/fahome/VendorMgmt/SitePages/Home.aspx>

Please refer to instructions for entering information on the SharePoint site (separate document).

For the sixty-one contracts, we have identified five methods of compensation that were used:

1. Lump Sum Basic Services or Salary Related Costs (Scheduled D-1)
2. Salary Related Costs (Cost Reimbursable with separate Fixed Fee Operating Margin (Table 4)

3. Salary Related Costs (Cost Reimbursable with separate Fixed Fee Operating Margin - Table 6)
4. Salary Related Costs (Cost Reimbursable with Operating Margin paid in proportion to direct labor invoiced (also known as cost plus percentage of cost- Table 5A/5B)
5. Salary Related Costs (Cost Reimbursable with Fixed Fee Operating Margin- No Table)

We have identified the method of compensation for each of your contracts. That information is provided for you in a separate spreadsheet. For those few task work order contracts that are included,

Below is a more expanded description of the Procurement steps related to the AFP, for three of the methods of compensation identified for your contracts. Please note: This methodology works best if only the prime's basic services (or salary related costs) are reduced. The methodology does not address reductions to separate geotech, survey, optional services compensation elements, etc.

LUMP SUM BASIC SERVICES OR SALARY RELATED COSTS (Schedule D-1)

1. Procurement Office will pull the "Starting Place" AFP.
2. Procurement will also pull the "Reduced Hours" AFP.
3. The total contract amount in the Reduced Hours AFP spreadsheet should then be subtracted from the total contract amount for the Starting Place AFP spreadsheet. This represents the Total Cost savings (TCS).
4. Apply 25% to the TCS. This represents the consultant's share of the savings. Create a brand new compensation element entitled "Additional Operating Margin related to Contract Savings", which should be paid as LS2 method of payment, percentage completion. This new compensation element will be the amount of the 25% consultant cost savings share.
5. Reduce the Compensation Element from which the hours originally came, by TCS amount. The net (-75%) represents the resultant reduction to the contract.
6. Reflect the above in the contract amendment, including the revised scope of services.
7. Please Note: The contract amendment will require a negative encumbrance issued against the contract, in the amount of the net savings (-75% of the TCS).

SALARY RELATED COSTS (COST REIMBURSABLE SALARIES WITH SEPARATE LUMP SUM FIXED FEE OPERATING MARGIN)

1. Procurement Office will pull the "Starting Place" AFP.
2. Procurement will also pull the "Reduced Hours" AFP.
3. The total contract amount in the Reduced Hours AFP spreadsheet should then be subtracted from the total contract amount for the Starting Place AFP spreadsheet. This represents the Total Cost Savings (TCS). Identify how much of TCS is salary related costs, and how much of TCS is operating margin.

4. Apply 25% to the TCS. This represents the consultant's share of the savings. Create a brand new compensation element called "Additional Operating Margin related to Contract Savings", which should be paid as LS2 method of payment, percentage completion. This new compensation element will equal the 25% consultant cost savings share.
5. Reduce the Compensation Element from which the hours originally came (Salary Related Costs), as well as the operating margin compensation element (less hours for original services means less operating margin for the original services).
6. Reflect the above in the contract amendment, including the revised scope of services.
7. Please Note: The contract amendment will require a negative encumbrance issued against the contract, in the amount of the net savings (-75% of the TCS).

COST PLUS CONTRACTS (COST REIMBURSABLE, OPERATING MARGIN INCLUDED IN LOADED BILLING RATE, TABLE 6)

1. Procurement Office will pull the "Starting Place" AFP.
2. Procurement will also pull the "Reduced Hours" AFP.
3. The total contract amount in the Reduced Hours AFP spreadsheet should then be subtracted from the total contract amount for the Starting Place AFP spreadsheet. This represents the Total Cost savings (TCS).
4. Apply 25% to the TCS. This represents the consultant's share of the savings. Create a brand new compensation element called "Additional Operating Margin related to Contract Savings", which should be paid as LS2 method of payment, percentage completion. This new compensation element will equal the 25% consultant cost savings share.
5. Reduce the Compensation Element from which the hours originally came (Salary Related Costs), by TCS amount. The net (-75%) represents the resultant reduction to the contract.
6. Reflect the above in the contract amendment, including the revised scope of services.
7. Please Note: The contract amendment will require a negative encumbrance issued against the contract, in the amount of the net savings (-75% of the TCS).

Reporting the Cost Savings on the Contract Cost Savings SharePoint site

The negotiated savings need to be tracked and reported through the Contract Cost Savings SharePoint site, available at the following link:

<http://fdotsharepoint.dot.state.fl.us/fa/fahome/VendorMgmt/Lists/Group%20A%20%20Major%20Contracts/AllItems.aspx>

District Procurement staff should coordinate entering the contract savings information into the SharePoint.

The basic contract identifying information is already completed for you in the SharePoint. You will only need to complete the following four additional fields of information:

1. Department share of the savings for the contract (75% of the savings)
2. Consultant share of the savings for the contract (25% of the savings)
3. Total Contract Savings
4. Any comments related to the renegotiation effort

Group A - Major Contracts - C9680 - 1

View

Version History Alert Me

Manage Permissions

Edit Item Delete Item

Manage Actions

Item	21
District	1
Contract ID	C9680 - 1
Short Title	ENGINEER
Contract Type	STANDARD TWO PARTY AGREEMENT BY STATUTE
Method of Procurement	CONSULTANTS' COMPETITIVE NEGOTIATION ACT [S. 287.055, FS]
Vendor Name	TRANSYSTEMS CORPORATION
Original Total Contract Amount	\$4,664,696.00
Current Total Contract Amount	\$4,664,696.00
Amount Remaining To Be Paid	\$4,356,192.78
Source of Funding	FEDERAL
Contract Begin Date	6/18/2012
End Date of Current Contract Term	6/17/2022
Department Share (75% savings)	
Consultant Share (25% savings)	
Total Contract Savings	
COMMENTS / NOTES	I-75 FROM N OF KINGS HWY TO S
COMMENTS RELATED TO RENEGOTIATION	

The screenshot shows a contract details page for 'Group A - Major Contracts - C9680 - 1'. The page has a dark header with a 'View' button and a list of actions: 'Version History', 'Alert Me', 'Manage Permissions', 'Delete Item', 'Edit Item', and 'Manage'. Below the header is a table with contract details. The last four rows of the table are highlighted in yellow: 'Department Share (75% savings)', 'Consultant Share (25% savings)', 'Total Contract Savings', and 'COMMENTS RELATED TO RENEGOTIATION'. Red arrows point to these highlighted rows from the right side of the page.

For More Info...

1. We have provided graphical detail of the AFP steps for your use, as another attachment.
2. Central Office Procurement has drafted an example of how to write your contract amendment. It is also provided as an attachment.

Please feel free to contact Central Office Procurement if you have any questions.

Appendix F: Florida DOT Document Describing Cost Savings from Efficiencies as of May 2014

Source: Florida Department of Transportation

Florida Department of Transportation Cost Savings/Efficiencies/ Revenue Generation – as of May 2014

Implemented:

1. **Office of Design - Reduction in Resurfacing Funding** - Improvements in resurfacing technology expanding the life of pavement have resulted in a reduction of the number of lane miles needing to be resurfaced annually. The result is a reduction in the required funding level for our resurfacing program, making more funds available for other priorities as follows:
 - FY 2014: \$167.6 million
 - FY 2015: \$164.6 million
 - FY 2016: \$188.3 million
 - FY 2017: \$194.3 million
 - FY 2018: \$199.3 million
2. **Office of Design - Value Engineering Program** – During FY 2011/12, Value Engineering Studies during the Design Phase resulted in the approval of 78 recommendations resulting in nearly **\$140 million** in savings.
3. **Office of Maintenance - Reduction of Maintenance Funding** – The Maintenance Rating for FY 10/11 was an 87 with a target of 80, therefore we reviewed the maintenance funding and determined that a reduction was needed of approximately 12% or \$67 million annually.
4. **Office of Design - Pavement Only Projects (POP)** – The 2012 cost savings from the POP program was approximately **\$12.4 million**. The annual savings from 2013 – 2015 is expected to be about \$2.3 million per year, as derived from actual cost per lane mile estimates for POP projects vs. traditional resurfacing project cost per lane mile estimates.
5. **Office of Materials - Materials Changed Asphalt Mix Design Criteria:** In July 2012, FDOT eliminated restrictive mix design criteria which now allows the use of a greater amount of lower cost materials (Reclaimed Asphalt Pavement and sand) in the construction of asphalt pavements. These changes have resulted in an approximate savings of \$1.00/ton of asphalt mix produced, while at the same time maintaining the same level of quality. It is estimated that these changes have resulted in approximately **\$ 4.6 million** worth of savings passed along to the State of Florida in 2013.
6. **Office of Maintenance & State Structure Office - One coat Paint vs three coat and use of weathering steel** – Currently require the use of weathering steel in lieu of painted steel bridges where appropriate and the use of a one coat paint system vs a three coat system. Reviewed FY 2014 projects, and there was one project using weathering steel and the estimated savings is **\$261,000**. This estimate uses a savings of \$0.50 per pound for the cost of paint which was eliminated.
7. **Office of Design - Cost Savings Initiative Program** – During FY 2011/12, 21 Cost Savings Initiatives proposed by Contractors and approved by the Department during the Construction Phase yielded **\$3.89 million** in construction savings.
8. **Office of Design - Implementation of Florida I-Beams (FIBs)** – The Structures Design Office worked with Contractors, Precast Concrete Producers and other stakeholders to bring research to reality, upgrading the main precast concrete structural members for what is the most commonly constructed type of bridge built in Florida. Replacing technology that has been around since the 1950s, the savings in

construction costs of bridges, starting in FY 2011/12, is now being realized at a level of **\$2.215 million** per year.

9. **Office of Design - Scope Reviews of Resurfacing Projects** – In an effort that will continue and expand into other parts of the work program, the Department is now conducting independent project scope reviews, beginning with Interstate Resurfacing Projects, which have resulted in construction savings of about **\$1.3 million**. This practical design approach is a continuing effort that will yield additional construction savings.
10. **Office of Maintenance - Long Term Recurring Cost Reductions for Call Box Removal: Implemented in 2013 and will be completed in 2014**
 - a. Annual Maintenance/Testing \$894,128
 - b. Base Stations and consoles: \$118,248
 - c. **Total Savings** **\$1,012,376/year**
11. **Office of Design - Revised Bridge Coating policy** – changed policy of Class V Finish from default application to choice driven selection resulting in **estimated savings of \$1M per year**.
12. **Office of Right of Way - Outdoor Advertising Control Voluntary Compliance Program** – Implementation of a voluntary compliance program to work with the owners of illegal signs to have the signs meet statutory requirements or be removed. For calendar year 2013, the program has realized approximately **\$766,508** in savings through voluntary compliance measures, of which approximately \$207,567 was cost savings through voluntary removal of illegal signs by sign owners. An additional 160 signs have been permitted resulting in additional \$19,848 in permit fees.
13. **Office of Maintenance - Reduction of Fleet** – The Districts were asked to review their light duty fleet utilization and through the process the Department determined that a overall reduction of 5% was needed or a reduction of 153 vehicles. A fleet utilization performance measure is also being developed to ensure that all light duty vehicles are utilized efficiently. At an average annual cost of \$5,000 per vehicle to operate and maintain this reduction is an estimated annual savings of approximately \$750,000. Update 4-9-14: FDOT has continued to reduce passenger vehicles to correspond with the reduction in staff and have reduced at least another 200 vehicles since the first reduction in 2012 for a total reduction of 353 vehicles and an estimated savings of \$1,750,000.
14. **State Spec & Est. Office - Elimination of Patterned Pavement Project Testing** – A Maintenance Agreement was created and implemented requiring Local Agencies to be responsible for the regular testing of patterned pavement installations. This eliminated the number of lane miles needing to be tested by Maintenance bi-annually. The result is the elimination in the additional funding level for the Maintenance program, making more funds available for other priorities. (2013) Estimate savings of **\$234K annually**.
15. **Office of Materials - State Materials Office Maintenance Department Team -“Reduced Monthly Utilities Costs”** – Team evaluated, collected and initiated performance improvements on the HVAC system at the State Materials Laboratory, making adjustments along the way to improve automated control of the HVAC system. Discovered areas within the system that were out of specifications. Worked with the mechanical equipment to ensure peak performance. In the calendar year of 2010 the Utility cost (electric, gas, water) for the year was \$1,137,553.99 (Monthly average \$94,796.17) in 2013 the yearly cost was \$890,141.84 (Monthly average \$74,178.87) for a yearly cost savings of \$247,412.15.
16. **State Spec & Est. Office - Elimination of Sign Sheeting Test Deck Travel** – The sign sheeting field testing program was redesigned allowing manufacturers to utilize third party locations in Miami and shipping panels for testing to the Central Office facilities. This eliminated travel over a three-year period and maintenance of a test location. (2012). Estimated savings of **\$116,000 annually**

17. **Office of Maintenance - Advertising in Rest Areas / Wireless services/ PSA** – Executed contract to allow advertising at rest areas and the use of free wireless. We are still in the process of installing the monitors and wireless hardware at the rest areas. Once implemented in full we estimate revenue of approximately **\$100,000 annually** statewide, in addition to providing this wireless service and Public Service Announcements at all of our rest areas. Update 4-9-14: Contract is ongoing and monitors have been installed in approximately 67% of Rest areas. Some issues with vendor obtaining advertising so to date no revenue has been generated.
18. **State Spec & Est. Office - Publication of the 2013 Electronic Specifications Book** – The Department published its first Electronic Specifications Book in 2012, effective for January 2013, replacing the traditional hard bound Specifications Book that are normally published every three years. (2013) Cost savings of **\$100,000** every 3 years.
19. **State Spec & Est. Office - Utilized Existing Equipment** – Instead of purchasing needed equipment, personnel identified unused equipment throughout the agency and transferred from within the Department to units that needed it. (2012) Cost savings **of \$26,000**
20. **State Spec & Est. Office - Streamlined Application Review Process** – Implemented a checklist review for all QPL product categories where the Product Evaluators conduct the all but the most technical review of the application and products. This has been a time saving for both the technical reviewers and product evaluators with the added value of faster evaluations for the manufacturers. (2013) Added value of **\$25,000 annually**
21. **State Spec & Est. Office - Electronic Product Applications** – Improved the product submittals by allowing manufacturers to submit information electronically. This eliminates the need for Department personnel to scan the docs, review for EDMS publication and dispose. This is hours of time saving per year of labor making time available for other activities. (2011). Cost savings of **\$10,000 annually**
22. **State Spec & Est. Office - Implemented the use of email for QPL product requalification notifications** – Implemented the use of email and eliminated the use of certified mail for requalification notification. This is also is hours of time saving per year of labor making time available for other activities. (2011) Cost savings of **\$10,000 annually**
23. **Office of Materials - Pavement Systems Materials Team “Implemented an Automated Fault Measurement Tool for Rigid Pavements” – Plaque Award** - Developing and implementing an Automated Fault Measurement Tool for concrete Pavements. Florida Department of Transportation has typically measured joints in concrete pavement using a manual device. This process is tedious, slow and labor intensive, requiring costly lane closures significantly impacting the traveling public. Recognizing the need for process improvement, the team has developed and implemented an automated device to measure faulting at highway speeds. **Average Annual Saving of \$7, 500.**
24. **State Spec & Est. Office - Utilized scholarships for Travel-** Applied for and received a scholarship for NTPEP travel and lodging. This covered the entire cost of the travel. (2011, 2012, 2014) Cost savings of **\$1,000** for each year.
25. **Office of Maintenance - Permit Automation for the issuance of overweight / over dimensional permits**, of which we issue approximately 80,000 permits annually. Update: 4-9-14: The new Permit Application System (PAS) was designed to reduce permit issuance time, reduce permit processing errors and reduce the Department’s contract costs for the Permit Office. PAS was released to the Department in August 2013 and released to the public in December 2013. In just over 3 months, customer utilization of PAS has spiked to over 65% with 2,224 registered users and over 15,000 permits issued. The Department has not realized its intended cost savings yet due to unforeseen issues with the GIS Routing data. However, the Department is working diligently with OIS and is seeking additional federal funding to resolve the GIS Routing data issues in order to achieve an annual savings of approximately \$300,000.

26. **Office of Materials - Benefits of Recycled Concrete Aggregate in Road Construction** - The FDOT has increased its use of crushed concrete that would normally go into landfills. This helps to save other natural rock resources, and can save contractors time and money during construction. The Department had one approved facility in 2009 and has nine approved facilities in 2014.
27. **Office of Maintenance - Increased the weight for annual permits for sealed containers (implemented in 2013)** – It was determined that Georgia and South Carolina were issuing annual permits for sealed containers up to 100,000 lbs coming out of the ports, and ours were capped at 95,000 lbs. Therefore, after review and analysis we determined that we were able to increase to 100,000 lbs and use the same map for bridge restrictions, thus keeping Florida ports competitive with neighboring states ports.
28. **Office of Maintenance & Design - Removal of lights from overhead signs** – This research is complete and the Department is in the process of implementing the removal of sign lighting on overhead signs. The research showed that it was less expensive with no lights and higher reflective sheeting. For FY 2014, it has been determined based on projects entered TRANSPORT, the savings amount to approximately **\$532,000** for FY 2014.
29. **Office of Construction - Email Submittal of Wage Classifications** – FDOT received approval from the US Department of Labor to submit wage classifications via email and have gotten USDOL to submit responses via email thereby expediting process and eliminating postage and handling costs.
30. **Office of Materials - Revised Construction Training Qualification Program (CTQP)** - to allow for employee, contractor, and consultant staff qualification extensions based on demonstrated sustained skills without having to retake the course thus saving time and expense associated with training. Minimum testing thresholds for qualifications have been set. Database query has been created. We are negotiating with the database vendor to finalize the price for the revised approach.
31. **Office of Construction - Chevron Striping Changes** – eliminated chevron striping in gore areas on limited access facilities.
32. **Office of Construction - Allowance to use clear curing compound for curing concrete** – eliminates the need to remove by blasting the curing compound for any future coatings applications.
33. **Office of Construction - Streamlined Technical Proposal Requirements** – reduced deliverables for Design-Build projects to reduce costs to proposing Design Build Firms.
34. **Office of Construction - Revised Plans Preparation Manual** - to address Non-Conventional (Design-Build) projects making it clearer of DB Firms to know what applies their contracts.
35. **Office of Construction - Design-Build Electronic submittals** – allow for electronic submittal of Expanded Letters of Interest on Adjusted Score Design Build projects and require submission of Technical Proposals and Bid Price Proposals via Bid Express on Low Bid Design-Build projects.
36. **Office of Construction - Construction Specification Change** – allow traffic on milled asphalt surface for longer period of time to enable greater production for contractor.
37. **Office of Construction - Streamlined verification testing on Design Build Foundations** - the number of and time to determine need to perform verification tests of foundations on design-build projects has been reduced.
38. **Office of Right of Way - Outdoor Advertising Litigation Management**- SharePoint based tracking and storage system set up to eliminate the need to maintain paper files and efficiently and effectively share case file documents with legal staff. The cost savings is undetermined as the effect over the long term is reduced paper, copying, storage and time.

a. It is too early since implementation to identify cost savings but we will closely monitor and report as soon as we have supportable data (probably in six months).

39. **Office of Construction - Use of Accelerated Bridge techniques** – uses of prefabricated bridge components saved impacts to traffic.
40. **Office of Right of Way - Reduction in Right of Way Roll Forward** - Reduction of Right of Way roll forward in the amount of **\$499.6 Million** for FY12/13 and a reduction in the gap between the FY13/14 statewide work program and expenditure projection from 120% to 39% which will result in more accurate cash forecasting for the Department. **NOTE:** This will be updated in early July to reflect actual numbers for fiscal year-end secured from the Offices of Work Program and Financial Management.

Pursuing:

1. **Office of Construction - Elimination of lights from temporary Maintenance of Traffic (MOT) devices** – research supports elimination of temporary lights from barricades, barrier walls, and temporary signs. **Estimated savings of \$17M per year.** Presently, Florida and Arizona are the only remaining states to require use of lights on these MOT devices.
2. **Assistant Secretary for Engineering & Ops - Advertising for the Statewide Sponsorship Program**, which may include but not limited to adopt-a-highway litter removal program, Rest Areas, WI-FI, travel information services (511), Road Ranger Program (emergency service patrols), beautification sponsorship programs or Florida Scenic Highway Program. The Sponsorship Program is an innovative program that allows a person, a firm, or an entity to sponsor an element of a public agency's highway operation through the provision of highway-related services, products, or monetary contribution. The purpose is that these sponsorship opportunities benefit the traveling public with an improved transportation system by providing flexibility for public agencies to pursue innovative sources of financing for maintenance and construction activities and other highway-related services. This program will create new revenue streams for FDOT by establishing long-term corporate relationships/partnerships that provide meaningful brand engagement and awareness opportunities with the everyday users of FDOT's transportation system. **Update:** FDOT has advertised for the private entity to coordinate, market & solicit for potential sponsors; execute the agreements; collect the fees & assume fiduciary responsibility for the Statewide Program.
3. **Office of Construction - Migrating to electronic delivery of construction forms and documents** – estimated annual **savings of \$2M.**
4. **Office of Maintenance - Converting Highway Lights to LED** – Pursuing this idea, currently researching what issues are involved with retrofitting. Turnpike is working on a pilot project.
5. **Office of Right of Way - Online Vegetation Permit Application Management** – Implementation of a SharePoint based application tracking and management system was developed to provide efficient and effective communication and data sharing between Central Office, District Personnel, and the Consultant to manage the vegetation management permit process. The cost savings will be realized in administrative time and expense. It is too early since implementation to identify cost savings but the Office of Right of Way will closely monitor and report as soon as the Office has supportable data (probably in six months).
6. **Office of Construction - Elimination of Asphalt Friction Course from gore areas** – revising design standards to eliminate FC from gore areas on limited access facilities.
7. **Office of Construction - Resetting existing Guardrail** – leading effort to reuse existing guardrail panels when guardrail reset to new FHWA height criteria rather than having to replace with new panels.

8. **Office of Construction - Working on electronic as-built plans** – eliminates need for third party scanning of plans and project records.
9. **Office of Construction - Working on design and construction standards for unbonded post-tensioning systems** – Slightly higher upfront construction cost, but potential for savings of several millions in long-term maintenance costs. Extended service life of structures has potential to save several millions in future construction costs.
10. **Office of Materials - Working on non-destructive testing methods for detecting corrosion in post-tensioned structures** – Potential savings of several millions in future repair and construction costs by extending bridge service life. Active university research underway to determine the best non-destructive methods to identify areas of corrosion. This will allow the Department to minimize destructive testing.
11. **Office of Materials - Concrete Probe** - working on device to probe the depth of fresh concrete (for concrete pavement) to avoid more expensive and destructive coring to check depth and make appropriate payment adjustments. Pilot projects are underway using the prototype device.
12. **Office of Construction - Civil Integrated Management (CIM)** – advancing the use of CIM on FDOT projects. This should improve construction efficiency and lower costs. It should also identify conflicts and plan errors prior to actual construction which also reduces costs incurred when we encounter such conflicts and errors during construction.
13. **Office of Construction - Asphalt Payment Adjustments** - Working on a simplified system to replace Arithmetic Mean calculation used for asphalt payment adjustments. The new system would use data already entered into the Roadway Report and with a few entries would quickly determine maximum allowed quantities to be paid on a project. The new system should greatly reduce the data entry, calculations and thus the costs of determining quantity and pay adjustments.
14. **Office of Maintenance -Increasing the Inspection Cycle for some Bridges from 24 to 48 months as allowed by FHWA** – Currently researching what States are using 48 month inspection cycles, what bridge types and environmental conditions would be applicable for 48 month inspection cycles; AASHTO and FHWA research supporting increased bridge inspection cycles; and the expected annual cost savings for going to 48 month bridge inspection cycles. This change will require amendment to the Florida Statute 335.074(2).
15. **Office of Maintenance -Elimination of Payment & Performance Bonds for Asset Maintenance (AM) Contracts** – OOM is currently investigating the feasibility of this idea. Because these contracts are not low bid (they are best-value and require a Technical Proposal), only financially sound, stable, quality contractors are hired, thus reducing the chances of default. Further, in the very rare case of a default actually occurring, there is very little risk of damages or unfinished projects – just a continuation of ongoing maintenance. Consequently, it may be just as easy and efficient to procure a new contract rather than execute a takeover agreement to allow the surety to complete the contract. AM Contractors may pay somewhere between 2% & 5% for bonds for an almost \$150 million annual value of AM Contracts. Eliminating this could theoretically save between \$3 & \$7 million per year.
16. **Office of Materials - New Development and Implementation of Pavement Marking Management Program** - Implementation of a non-contact, mobile technology capable of assessing pavement markings continuously at highway speeds. Gathering the inventory of the stripe reflectivity using the mobile technology eliminates the need for maintenance of traffic and provides improved safety and efficiency over the traditional site-specific handheld reflectometers. Cost savings of mobile measurement over hand-held approach **\$50.00 per lane-mile** (projected **annual savings of \$1.4M**).

17. **Office of Materials - New approach to approving Curing Compound for DOT Projects** -The Department will no longer evaluate concrete curing compounds on a lot per lot, or as needed basis. This change will take effect in July of 2014 upon implementation of the July Workbook. The manufacturer will now be required to submit their product to an independent laboratory (including NTPEP) for testing and consideration for use. If the testing reported by the laboratory hired by the manufacturer indicates that their product meets the specification requirements, then the product will included in the Qualified Product List. The Department previously has tested each lot of concrete curing compound prior to use on each project. Based on the labor, equipment and time involved, it is estimated that this transition in product testing and acceptance will save the Department \$70,080 and streamline the construction of projects, by providing a list of pre-approved materials to our contractor from which to choose.
18. **Office of Materials - Modification of the Department's Asphalt Emulsion Pretest Program:** This new program begins in July 2014. Under the new program, the responsibility for all testing and certification shifts to the material supplier, and eliminates the need for routine FDOT testing. The material suppliers will be randomly inspected and verification samples will be obtained for FDOT testing as a check on the quality of the material. This will reduce the number of samples tested by FDOT by approximately 50%, which will result in a corresponding cost savings by the Department or will allow Department staff to perform other duties.

Appendix G: Selected Cost-Saving Measures from Missouri DOT

Source: Missouri Department of Transportation 2014 'Tracker' Report
<http://www.modot.org/about/documents/April2014TrackerReduced.pdf>

RESULT DRIVER:

David Silvester,
District Engineer

DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

MEASUREMENT DRIVER:

Renate Wilkinson,
Planning and Programming
Engineer

Percent of programmed project cost as compared to final project cost-4a

PURPOSE OF THE MEASURE:

This measure determines how close total project completion costs are to the programmed costs. The programmed cost is considered the project budget.

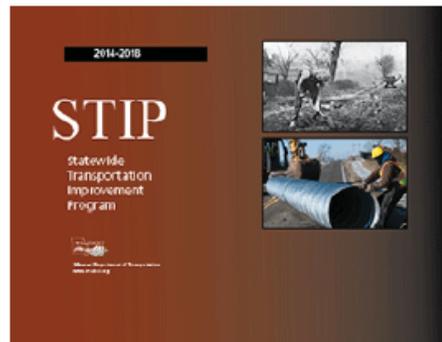
The focus on accurate program cost estimates has become increasingly important due to decreasing transportation funding and increasing costs. As of March 31, 2014, 294 projects had been completed in fiscal year 2014 at a cost of \$719 million. This represents a deviation of -11.3 percent or \$91 million less than the programmed cost of \$810 million. Of the 294 projects completed, 71 percent were completed within or below budget. In comparison, 72 percent of projects were completed within or below budget as of the same date a year ago. The largest component of project savings comes from award savings, at 91 percent. Engineering and miscellaneous (right of way, utilities and other costs) savings represent 18 and 11 percent, respectively. Construction phase costs were 20 percent over what was awarded.

MEASUREMENT AND DATA COLLECTION:

The completed project costs are reported during the fiscal year in which the project is completed. Road and bridge project costs include design, right-of-way purchases, utilities, construction, inspection and other miscellaneous costs. The programmed cost is based on the amount included in the most recently approved Statewide Transportation Improvement Program. Completed costs include actual expenditures. Multimodal and Local Public Agency project costs typically reflect state and/or federal funds, but not local funding contributed toward projects.

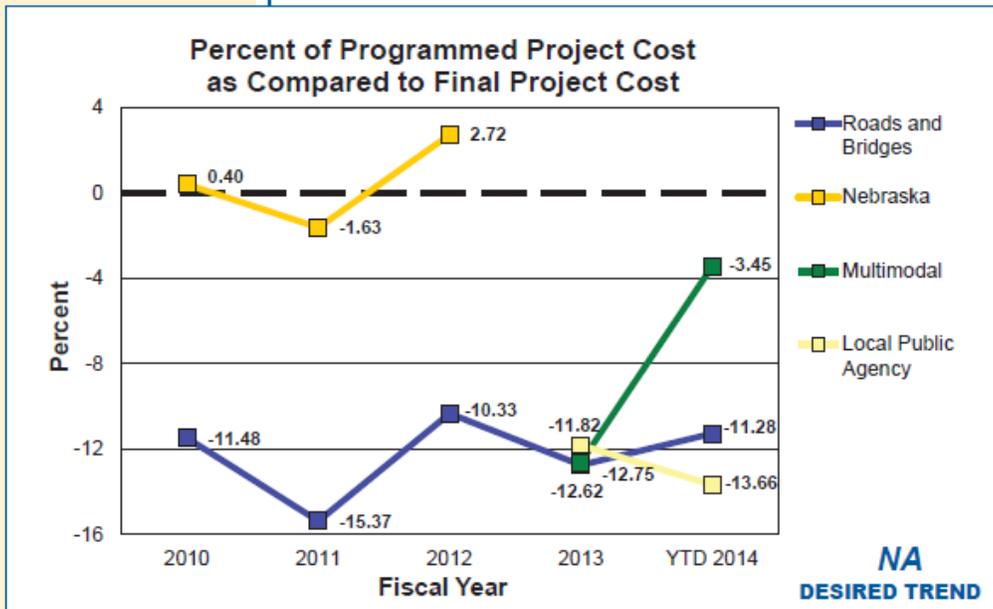
In addition, 41 Multimodal projects were completed for a cost of \$29.2 million, -3.5 percent or \$1 million less than the programmed cost of \$30.2 million. And 110 Local Public Agency projects were completed for a cost of \$55.2 million, -13.7 percent or \$9 million less than the programmed cost of \$64 million.

MoDOT uses this historical data as a guide for programming future projects. In FY 2014, MoDOT added 10 percent of available funding for highway and bridge construction awards or \$68.5 million worth of projects in anticipation of award savings. However, award savings to date for FY 2014 are averaging only 1 percent. Future programming assumptions will be revised downward to reflect this trend.

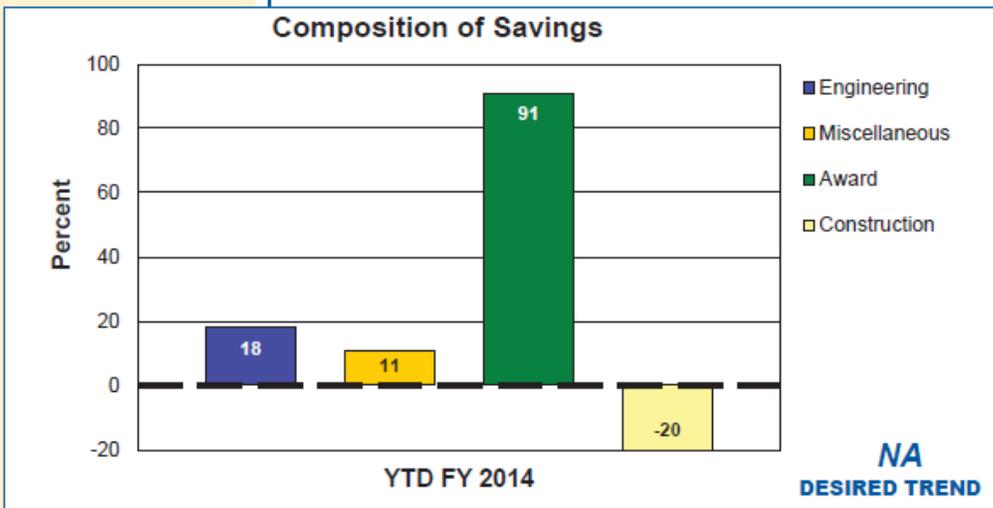


Missouri Department of Transportation 4a

DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE



Positive numbers indicate the final (completed) cost was higher than the programmed cost. Comparative data is from Nebraska Department of Roads, one-year schedule of highway improvement projects.



Positive numbers indicate savings. Miscellaneous includes right of way, utilities, and other costs.

RESULT DRIVER:

David Silvester,
District Engineer

DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

MEASUREMENT DRIVER:

Llans Taylor,
Innovations Engineer

Value Engineering-4e

PURPOSE OF THE MEASURE:

This measure tracks the use of value engineering during design and construction on traditional MoDOT projects including:

- Value analysis during the design phase, and
- Construction value engineering proposals during the construction phase.

MEASUREMENT AND DATA COLLECTION:

Information on value analysis during design is gathered from MoDOT's STIP Information Management System application. Construction value engineering change proposal information is gathered from MoDOT's value engineering change proposal database.

The goal of value engineering is to build the right project at the right time, meeting the project need with appropriate project scope. MoDOT uses the VE program to ensure the public receives great value for every tax dollar invested in Missouri's transportation system. Due to decreasing funding, MoDOT is increasingly focused on smaller, maintenance-type projects that are not traditionally targeted by the VE program. Still, MoDOT must be innovative in utilizing the VE process to search for innovative solutions to reduce project costs and provide additional value.

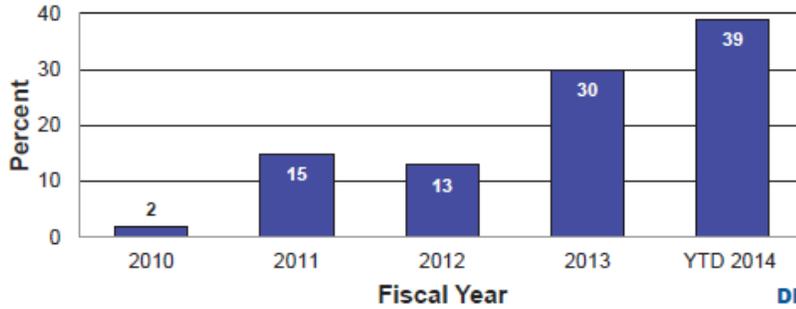
MoDOT uses design phase value analysis to remove unnecessary scope, reduce project costs and to improve project flexibility. Value analysis includes specific, targeted processes aimed to improve the project value, including the formal VE program studies. Tracking progress toward the goal of evaluating all projects for value allows MoDOT to accurately gauge its performance. So far, for fiscal year 2014, 39 percent of projects underwent some form of value analysis during the design phase.

MoDOT partners with industry to find more cost effective methods to accomplish the proposed work on our projects in order to better use our limited available funds. During the construction phase, the Value Engineering Change Proposal process encourages contractors to submit proposals to deliver improved projects of the best attainable value. After award of a project, contractor proposals for cost reduction are considered and if accepted, the contractor receives a portion of the savings, up to a maximum of 50 percent. Even though the savings are shared, the program generates savings on active projects that can be used to offset project cost escalation or reduce cost of delivering the project. So far for fiscal year 2014, 17 VE proposals were approved resulting in MoDOT savings of \$555,000. Although with reduced project scopes there are fewer opportunities, MoDOT leaders will continue to challenge department staff and industry partners to improve the value of construction projects.

A successful VECP program will incorporate approved VECPs into future design plans, so MoDOT can realize 100 percent of the affiliated savings for future projects. VE changes implemented as MoDOT best practices are incorporated into MoDOT's Engineering Policy Guide.

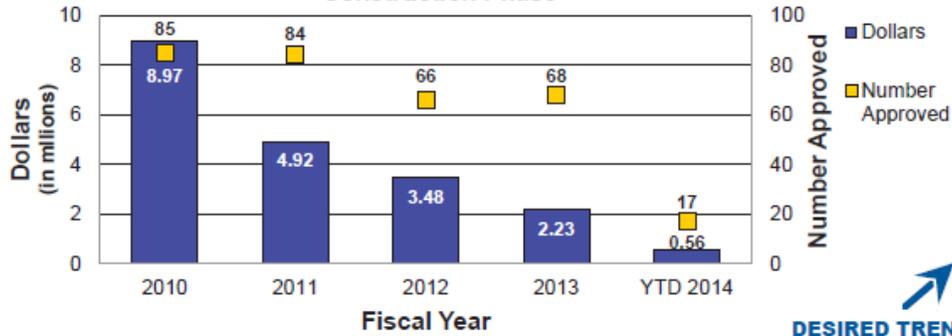
DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

Percent of Awarded Projects with Value Analysis
Design Phase



DESIRED TREND

Value Engineering Change Proposals
by Dollar and Number
Construction Phase



DESIRED TREND

Value Engineering Changes
Implemented as Best Practice

UNDER DEVELOPMENT

RESULT DRIVER:
Brenda Morris,
Financial Services Director

MEASUREMENT DRIVER:
Jay Bestgen, Assistant
State Construction and
Materials Engineer

PURPOSE OF THE MEASURE:
This measure tracks
MoDOT's recycling efforts
in construction projects and
internal operations.

MEASUREMENT AND DATA COLLECTION:
The recycled material
used in construction projects
is measured through
MoDOT's SiteManager
database, which tracks
material incorporated into
projects. Data is collected
on an annual basis due to
the seasonal nature of construction.
Recycled material from
internal MoDOT operations,
are captured from the
annual Missouri State Recycling
Program report and from
other internal records.

USE RESOURCES WISELY

Number of tons of recycled material-6j

In 2004, recycled asphalt pavements and roof shingles started being incorporated into new asphalt pavements to help offset increasing costs. While the cost of rock, sand, liquid asphalt, labor, fuel and equipment have increased since 2004, recycling efforts have helped offset the cost increases. In 2013, 26 percent of the 3.3 million tons of new asphalt pavement constructed came from recycled components. This saved MoDOT and taxpayers about \$11 per ton, or \$30 million overall. The \$30 million savings would be equivalent to improving 680 miles of a two-lane roadway with a thin overlay.

MoDOT also recycles materials no longer needed for internal operations. The majority of the recycled products come from: aluminum, cardboard, office paper, scrap rubber/tires, scrap metal, motor oil and wood pallets. Of these, 2,500 tons of scrap metal makes up the majority of the recycling followed by 641 tons of rubber/tires (equivalent to more than 61,000 passenger car tires) and 95 tons of motor oil (equivalent to about 27,000 gallons).

Recycling is good for the environment and helps stretch limited funding. With costs continuing to increase, fuel tax revenues declining and federal funding being uncertain, it is important to focus on increasing recycling efforts.

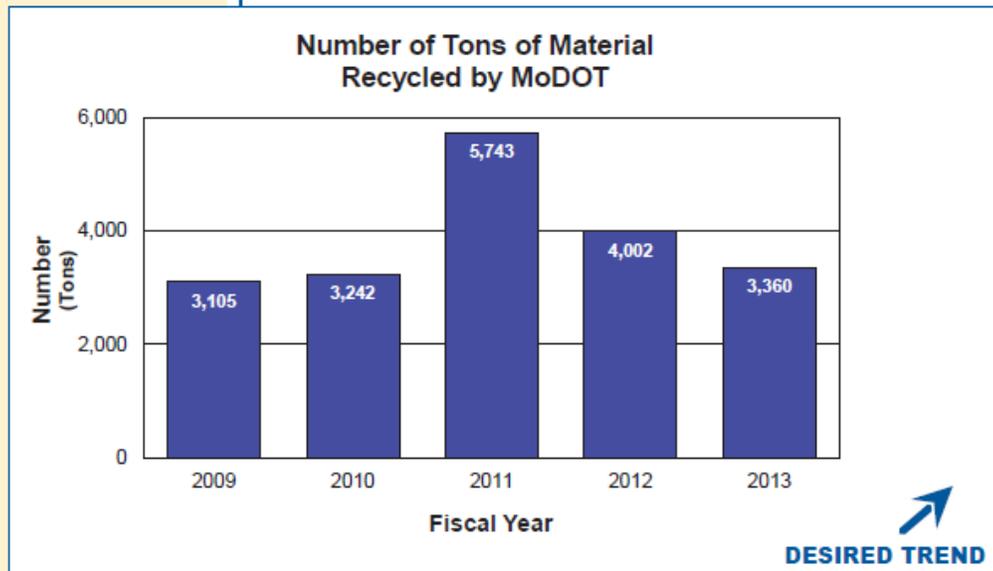
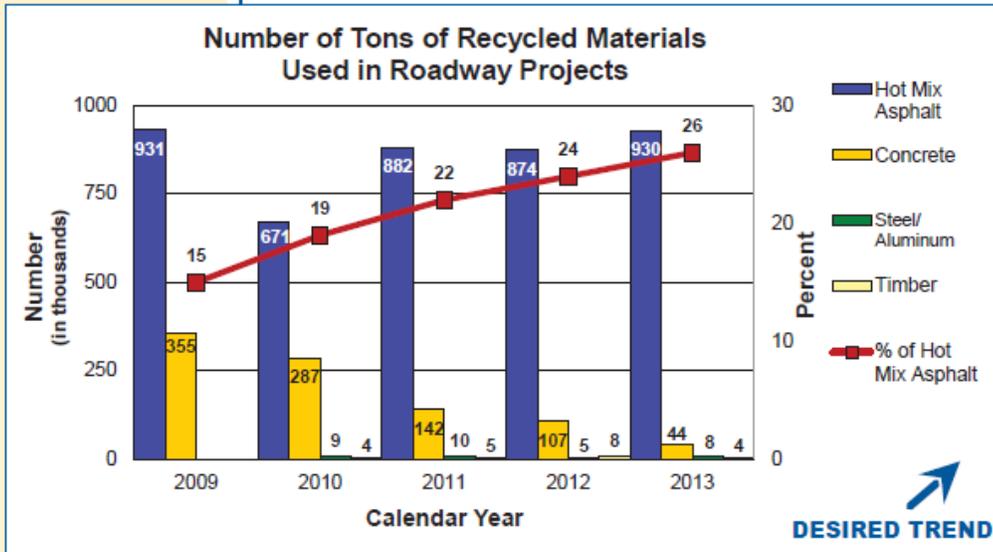


Roofs to Roads

MoDOT is among the first state agencies in the nation to recycle shingles to resurface or rebuild highways.

Shingles are ground up and processed.

USE RESOURCES WISELY



Missouri Department of Transportation 6j2

Appendix H: Summary of Utah Videos on Efficiencies

Source: Utah Department of Transportation Website

www.udot.utah.gov

Video #1: SUCCESS Framework Introduction

- In this 3 minute video, Governor Hubert introduces the SUCCESS Framework, a target to improve State government operations and services by 25% over the next four years (by 2017). The Governor explains that the SUCCESS Framework is a set of management principles designed to boost the quality and efficiency of government services with the goal of delivering ever-increasing value per dollar to the citizens of Utah. The SUCCESS Framework consists of three phases: State agencies focusing on major systems and goals of each system through quality throughput divided by operating expense; the production of a one page operational improvement strategy for each major system; and applying operational excellence tools and processes to the system as guided by the one page improvement strategy and measuring the results on quality throughput and operating expense. Applying the SUCCESS Framework to all State agencies will improve operations by ensuring that measurements and activities align with organizational mission or purpose; finding and eliminating waste; and more activities that drive value.
- SUCCESS Framework Introduction video can be found here: <http://gomb.utah.gov/operational-excellence/success-framework-introduction/>

Video #2: An Introduction to QT/OE – Utah GOMB Training

- This 9 minute video introduces the SUCCESS Framework concept of QT/OE by the Utah Governor's Office of Management and Budget. The definition of efficiencies is described as "Quality Throughput achieved per Operating Expense" or QT/OE and is a tool to measure how well an organization is performing. The Q stands for quality and the degree of excellence, which is a description measure for how good something is. T represents throughput, the capacity of an organization to meet the demand for its services and is tracked through measuring the volume of people served or units of work completed. T is the reason for a given operation. Q and T combined provide a better understanding of the value of services or production. OE is the operating expense or the money used to produce the quality throughput. Organizational performance is defined by QT divided by OE, which takes into account the throughput of the system (the quality) and how efficient the organization is at producing that value and how these terms relate to each other. Increasing QT/OE can be accomplished in several ways:
 - The same throughput, the same quality, but reduced expenses;
 - The same quality, increased throughput, and the same expenses;
 - The same throughput, increased quality, and the same expenses.
- An introduction to QT/OE video can be found at:
<http://gomb.utah.gov/operational-excellence/resources/qtoe-explanation/>

Appendix I: Utah SUCCESS Framework Road Map

Source: Utah DOT



SUCCESS FRAMEWORK ROAD MAP

The purpose of the SUCCESS Framework is to help our public services deliver the greatest value per taxpayer dollar, to demonstrate excellence, and to strengthen our ability to capture the story of our work. Governor Herbert has set the target to improve state government operations and services by 25% (a combination of quality, cost, and throughput) throughout the next four years. This roadmap outlines the general milestones, activities, and some deliverables as it relates to reaching the Governor's goal and our strategy to strive for ongoing improvement.

1. Orientation and Expectations

An ongoing effort to orient and update agency leaders as the work progresses. This includes connecting leaders to GOMB support, tools, and what to expect in terms of reporting.

2. Agency profiles (due by September 1, 2013) ([Template](#))

Major systems will be identified and prioritized for implementation by dollar value or social impact. These systems must account for 80% of budget. Also, GOMB support teams will be identified and connected with contacts for the systems in your agency.

3. Throughput Operation Strategy (TOS) Produced for All Major Systems (due by July 1, 2014)

Our consultants will help your teams create a throughput operating strategy (TOS) for each major system. The TOS will be the central tool you will use to strategically achieve great results.

4. System Profile Produced With a QT/OE Baseline (due by July 1, 2014) ([Template](#))

The improvement ratio, quality throughput / operating expense defined and baselined.

5. Operational Measures Configured and Implemented

Once the TOS is configured and QT/OE defined, our consultants will assist your system team in identifying and operationalizing additional measures that help you manage your operation.

6. Bringing the TOS to life: Application of SUCCESS Framework Tools to Get Results

In the coming months, GOMB will continue to bring you additional tools that will help you get the desired results in your improvement ratio, QT/OE. The TOS will be central to this process. The core tools are organized into four functions: maximizing your control point, acceleration, mistake proofing, and policy synchronization. Other tools and best practices will be developed and deployed to help agencies further their efforts to continually improve.

7. Ongoing support from GOMB

In addition to regular contact from consultants, GOMB will be hosting all tools and materials on their website and through other venues. These tools can be used and replicated in your agency.

8. Report Results and Recognize Success

Several reporting tools will be made available soon, including the SUCCESS Management Information System (SMIS). These reports will help you to discern progress and will be used by the Governor to track our progress.

9. Continued Use of Tools to All Systems

According to the prioritization, prepare and launch operational excellence tools to the remaining major systems identified in your agency profile. The process of ongoing improvement (POOGI) will continue beyond the four year target for a 25% improvement. Continued use of tools to all systems is the goal.

10. Anchor Budgeting Processes to Performance

Budgeting processes will be anchored to performance in accordance with the SUCCESS Framework. Opportunities will be identified to align budget structure (i.e. line items) to support systems. Need for additional investments will be evaluated in the context of the impact on quality and throughput. Efforts will be made to evaluate changes to base budgets in the context of impact on quality and throughput.

Governor's Office of Management and Budget

<http://www.governor.utah.gov/gopb/>

Appendix J: Summary of Efficiencies & Cost Savings from UDOT 2013 Annual Efficiencies Report

Source: <https://www.udot.utah.gov/main/uconowner.gf?n=14393526959106954>

Title	Efficiency	Savings (\$)	Page #
Bicycle Detection and Pavement Markings	Detection of vehicles and bicyclists at intersections improved safety by reducing potentially fatal bicycle-vehicle crashes; improved air quality by encouraging alternative transportation.	Reduced bicycle-vehicle crashes and achieved qualitative savings from a single detection system for various transportation modes while collecting real-time performance measures.	4
Flashing Yellow Arrow for Left Turns	Improved safety at intersections that change from Protected/Permissive to Flashing Yellow Arrow left-turn phasing.	Potential annual public cost savings per installation ranging from \$17,745 (property damage only) to \$2,769,000 (fatality) from reduced crashes.	5
Reflectorized Yellow Tape on signal-head back plates	Improved safety with newly installed reflectorized yellow tape by reducing overall crashes by approximately 14.9 percent at 25 intersections	Estimated savings of \$125,000 due to reduction of collisions at intersections.	6
Portable weather station for advance warning of debris flows	Contribute to overall safety, minimize equipment losses, reduce response time and minimize impact to commerce.	Estimated \$50,000 from reduced risk to field crews, motorists and equipment.	7
Audio over IP Highway Advisory Radio in Utah County	Reduced cost of field equipment for Highway Advisory Radio by approximately 90 percent, and established a more reliable and easier-to-use system.	Equipment and construction cost savings of \$500,000 in FY 2013.	9
Commercial Vehicle Bypass (PrePass) Partnered Fiber-Optic Cable Installations	Established a partnership with PrePass to provide electronic bypass for commercial vehicles at Port of Entry facilities if credentials, safety score and weights are in compliance.	More than \$10 million in operational cost savings to the State and to commercial motor carriers in FY 2013.	11
Partnered Fiber-Optic Cable Installations	Minimized construction traffic impacts and installation of additional traffic management fiber-optics through consolidated construction operations.	More than \$5.6 million in reduced construction costs.	13
Resolving Utility Conflicts through a preserve and protect approach	Significantly reduced engineering, materials, splicing and construction costs and time while reducing traffic impacts, improving construction safety and maintaining uninterrupted service to telecommunication customers.	\$754,000 total (\$377,000 for the Department) and 121 days saved on the US-89 State Street Project in Orem.	16

Title	Efficiency	Savings (\$)	Page #
Utah Prairie Dog Programmatic Agreement	Agreement streamlines the environmental review process, requires less staff time, clears projects in advance of when needed, and yields a predictable response from federal agency consultation.	Eliminates up to 135 days per project of review by the U.S. Fish and Wildlife Service.	18
Performance-driven programming	Developed and improved processes to strengthen Utah's economy by reprogramming our limited transportation funds on the next highest-priority projects.	\$2.25 million in opportunity costs gained in FY 2013.	19
Energy-Efficient LED lighting Upgrades in Department Facilities	Replacement of existing T12 lamps with new energy-efficient lamps; implementation of reductions in electrical needs and associated pollution.	Total electricity cost savings of approximately \$15,000 from lighting upgrades and Department LED initiatives	21
iMAP GIS Tool	Reduced application development costs and improved data capture on projects and mapping of crashes, resulting in better data analysis.	Estimated \$200,000 in software development and upgrade costs saved.	22
Improved Decision Making Using Mobile Data Collection	Reduced pavement maintenance and surveying cost as a result of improved access to asset data.	Estimated annual cost savings of \$3.4 million in better pavement management and \$400,000 in reduced design survey.	24
MMQA Data Collection Teams	Reduced human error and increased data consistency while reducing the number of assets measured, the frequency of data collection and the number of people collecting data.	Estimated operational savings of \$50,000 during FY 2014 (over FY 2013) with designated data collection teams.	26

Appendix K: Summary of Efficiencies & Cost Savings from UDOT 2012 Annual Efficiencies Report

Source: <http://www.udot.utah.gov/main/uconowner.gf?n=2744130635144498%20>

Topic	Title	Efficiency	Savings (\$)	Page #
Environmental Matrix Organization	Environmental Matrix Organization	Applied resources where and when they were needed to create consistency and develop employees	Potential time and cost savings from the reorganization of environmental staff resources	4
Improved Asset Inventory Using LiDAR Point Cloud	Improved Asset Inventory Using LiDAR Point Cloud	Reduced surveying cost while improving accuracy in asset data collection	Estimated cost savings per year of \$250,000	5
Application of Geographic Information Systems	UPlan GIS Web Application	Improved work flow and data visualization	Estimated \$300,000 cost savings in fiscal year 2012	7
	Planning and Environmental Linkage Tool	Reduces person-hour needs by streamlining NEPA data collection and CATEX documentation	Approximately \$100,000	8
	Emerging Area Plan for Uintah Basin	Enabling planners and stakeholders to synchronize local government and state projects	Approximately \$50,000 in staff costs	8
	I-15 Freight Mobility	Working with highway freight operators and GIS tools to address mobility and safety needs	Reduced time to identify and meet a freight mobility need	8
	Trans Tech Program	Increased productivity of the labor force in both maintenance and construction, by optimizing labor throughout the year to match the peak seasons in maintenance and construction	Approximately \$4 million during fiscal year 2012 from utilizing the same labor force in both maintenance and construction activities	9
Signal Coordination Improvements	Real-Time Performance Measurement of Traffic Signal Operations	Assess effectiveness of traffic signal timing and coordination plans in real time	Estimated \$3 million in reduced user costs in the coming year	11
	Dynamic Dilemma Zone Detection on High-Speed Corridors	Fewer crashes at intersections from adjusting signal timing based on vehicle approach speed	\$495,000 in user cost safety savings for fish year 2012	12
	Traffic Signal Operations During Large Civic Events	Reduced loading and unloading times for those attending large events	\$130,000 per BYU football game and \$400,000 per Stadium of Fire event in user cost savings	12

Topic	Title	Efficiency	Savings (\$)	Page #
	Corridor Responsive Ramp Metering	Real-time adjustment of ramp metering rate to provide better traffic flow on ramps and the interstate	\$170,000 in user cost savings for fiscal year 2012	13
	ACS Lite Traffic Adaptive Signal System in Heber City	Reduced delay and travel time by allowing signal systems to adapt to traffic demands	\$310,000 in user cost savings for fiscal year 2012	13
Traveler Information Tools	Traveler Information Tools	By communicating directly with mobile devices, UDOT is providing its customers with instant, convenient access to UDOT Traffic traveler information	Timely access to traveler information helps drivers minimize delay	14
Templates for Work Processes	Adapting to New Power Service Formal Required by Rocky Mountain Power	Utility Company's cooperation with projects including meetings, scheduling, coordination and prioritization have improved	Actual \$ unknown, but in scheduling utility action and cooperation it has been effective	15
	Using Projectwise to Streamline Right of Way Document Reviews	Right of Way document review times have been reduced by utilizing electronic file systems and processes	Over 500 person hours saved during fiscal year 2012	16
	Templates for Preconstruction Work Processes	Reduced time spent on design has resulted in quicker project delivery	\$15,000 annual savings	17
	Expedited Delivery Contracting	68% reduction in time between advertising and beginning of construction (77 days to 25 days)	First project estimates a 30% reduction in Preconstruction Engineering costs	18
	Motor Carrier Division Business Systems Improvements	Eliminated errors in the misinterpretation of hand written records and in the delivery of these hand written records to the courts	Improvements in electronic submission of citations to the courts provide approximately \$900 in annual savings Division-wide	19
	Repetitive Utility Agreement Templates	Faster preparation and processing of repetitive agreements	10 days duration (average) saved and 4 to 6 person hours (average) saved in creating and executing agreements	19
Innovative Contract Management	Change Order Review	Other recommendations are expected to save time and money in administration of the change order process	Implementation of the recommendation to have additional support and an independent review of all change order cost information has saved over \$400,000 this construction season	20

Topic	Title	Efficiency	Savings (\$)	Page #
	Cost Based Estimating	Adding contractor experience to UDOT project delivery teams helps save costs and smooth out project delivery	\$12.9 million in fiscal year 2012	21
	Project Scheduling System with a Business System Interface	Assists projects to meet the committed construction advertise date, minimize project design delays, and continue to capture valuable historical schedule information, trends and measures	Estimated savings of more than \$150,000 in fiscal year 2013 based on the inflation cost of the construction delays	22
	Project Level Risk Management Initiative	The Department has begun implementing a Project Level Risk Management process on many of its projects to eliminate, minimize, or assign risks and save project costs. The goal is to have this process used on all projects by the end of fiscal year 2014	\$7 million on the SR-14 Landslide Repair Project	23
	Effective Utility Location and Identification Process	Subsurface Utility Engineering investigation resulted in design and construction cost savings through managing risk from utilities	One-time savings of \$10 to 12 million on the I-15 CORE Project	24
	Maximized Value Through Fixed Price, Base Design Procurement	Created a competitive and innovative environment that resulted in an increased value for the fixed price on the I-15 CORE Project	One-time savings of \$125 to 150 million on the I-15 CORE Project	25
	Effective Risk Mitigation and Change Order Management Process	Reduced project construction cost and accelerated project delivery	Estimated \$45 to 50 million on the I-15 CORE Project	27
	Effective Right-of-Way Identification Process	Early Right-of-Way negotiation and delivery resulted in less project delay and cost	One-time savings of \$15 million on the I-15 CORE Project	29
Snow Removal Innovations	Snow Removal Innovations	The implementation of slurry spreaders, gravity flow brine tanks, and the installation of snow fences enhance road safety and accessibility and reduce snow removal expenses	Innovative snow removal efficiencies present cost operational savings of \$124,000 per year	31

Appendix L: Cost-Saving Measures from Wisconsin DOT

Source: Wisconsin DOT website (MAPSS Performance Measures)

<http://www.dot.wisconsin.gov/about/performance/docs/perf-report.pdf>

Wisconsin Department of Transportation MAPSS Performance Improvement



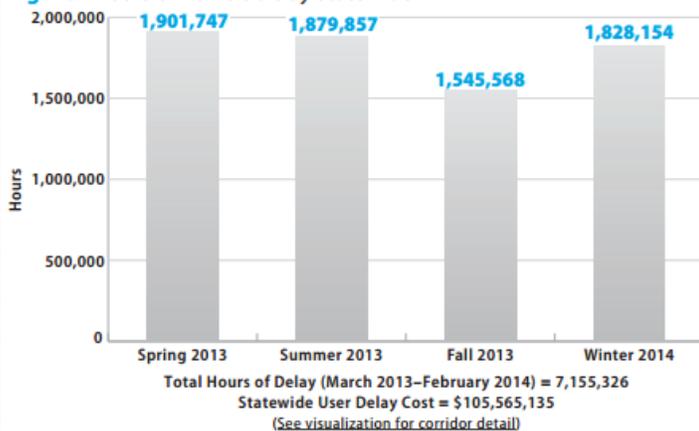
Mobility: Delay (hours of vehicle delay)

Report Date: April 2014 **Data Frequency:** Quarterly (Seasonal Quarters) **Division:** Transportation System Development

Why is it important? Reducing the annual total hours of vehicle delay and user delay cost on a corridor improves that highway's efficiency and supports regional economic productivity and development. Highway congestion occurs when traffic demand exceeds the available capacity of the highway system, this can be measured as vehicle delay. Congestion results in slower speeds, longer trip times, higher levels of harmful emissions and increased costs for auto, bus and freight movements. Congestion is broken into two categories: recurring (regular high volumes, traffic jams) and unexpected (crashes, bad weather).

Performance measure target: This is a new Mobility measure for Wisconsin Department of Transportation (WisDOT). The department's quarterly seasonal goal is to reduce vehicle delay and user delay cost from the same quarter of the previous year.

Figure: Hours of Vehicle Delay Statewide



How do we measure it? Delay is defined as the extra time spent driving in congested road conditions, as compared to free flowing travel conditions. Delay is reported on the state's nine Interstate corridors. Hours of delay is calculated by measuring the number of vehicles on a corridor and then comparing actual travel times for segments of a route to the amount of time it would take to travel that same corridor at the posted speed limit. User delay cost is determined by multiplying user cost, vehicle delay and vehicle occupancy rates. User delay cost data is split into two categories: passenger cars and freight vehicles. Data for this measure was acquired from WisDOT-owned vehicle sensors and an FHWA-sponsored national data set. Further improvements to the data contributing to this MAPSS measure will refine future results. User cost information is provided by the [Wisconsin Transportation Economic Analysis Guidelines](#).

How are we doing? This is a new performance measure for WisDOT and the initial reporting of its data. Vehicle Delay and User Delay Cost will be reported quarterly and will be based upon data gathered from each specific corridor of the Wisconsin Interstate Highway System. Statewide hours of vehicle delay increased by 348,356 hours during the 2014 winter quarter compared to the 2013 winter quarter.

What factors affect results? Any interference (i.e., special events, peak period traffic, crashes, construction, poor weather) that greatly increases traffic or restricts free-flow conditions will adversely affect actual travel time.

What are we doing to improve? Data on corridor congestion helps WisDOT formulate traffic management strategies and evaluate the impact of changes, such as deploying more advanced Intelligent Transportation System technologies, maximizing existing roadway space to match peak period demands, sharing information through electronic message boards and [WisDOT's 511 traveler information services](#), clearing disabled vehicles more quickly, encouraging drivers to select alternate routes, efficient and timely winter weather management and by expanding highway capacity through highway improvement projects. The Zoo interchange reconstruction project is implementing an integrated corridors management system to improve traffic flow during construction.

Wisconsin Department of Transportation MAPSS Performance Improvement



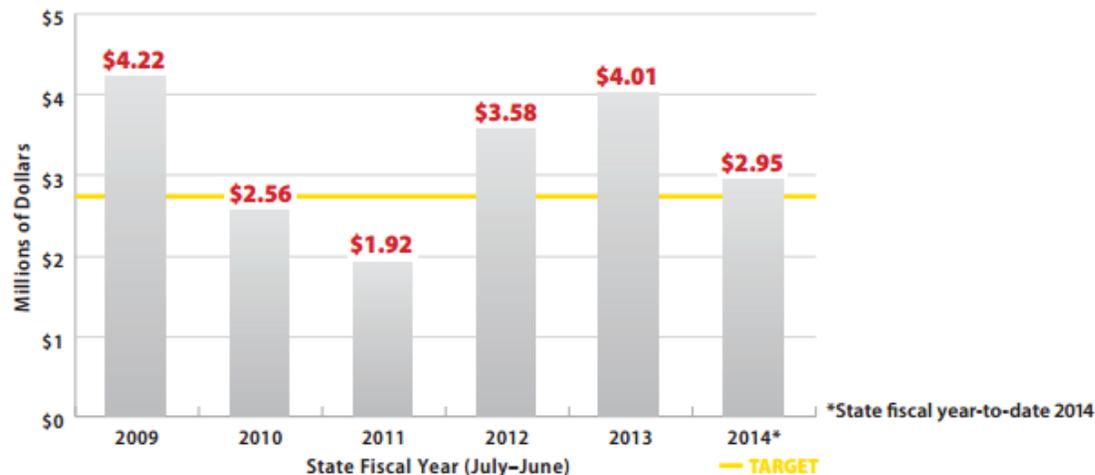
Accountability: Surplus property management

Report Date: April 2014 **Data Frequency:** Quarterly (Fiscal Year) **Division:** Transportation System Development

Why is it important? The department purchases property for transportation improvement projects. Once the project design and construction is complete, some of the land is no longer needed by the state and can be made available for private development. The revenue generated by surplus land sales is deposited into the Transportation Fund to be available for other transportation improvements. Surplus land that is sold spurs local economic development since the parcels often have good access and visibility. When land is returned to the tax rolls, local governments benefit because they can generate new property tax revenue from the property.

Performance measure target: The department's goal is to generate \$2.75 million in revenue each state fiscal year through the sale or lease of surplus property in accordance with Wisconsin State Statute 85.15(2) and to return as much land as possible to the local tax rolls.

Figure: Dollar Value of Surplus Land Sold



How do we measure it? The department's regional offices enter sale and lease data into a central system. This data is then broken down into four categories—sale of land, sale of buildings and personal property, rental income and lease income. The total revenue from surplus land sales is compiled for each state fiscal year.

How are we doing? Sales and lease of surplus property continue to improve in the real estate market. There are several large parcels being marketed and sales have exceeded the sales budget for FY2014. The marketing plan goal for all regions was set at 158 parcels. If all parcels are sold, the number of parcels on the department's land inventory will be reduced by 10 percent. Presently 65 of the parcels have sold and closed for the fiscal year.

What factors affect results? The national economy affects the interest developers have in surplus land for economic development. With increased job growth, easier lending policies and stronger buyer confidence, there is an increase in surplus land purchases both in public and private sales.

What are we doing to improve? The department has hired several consultants in the regional offices to help market and sell excess land and to perform other property management functions such as the sale of personal property, lease revenue and rental income. We are also analyzing our surplus land sale process for opportunities to streamline and standardize procedures across regional offices to speed up the sale of surplus land. In 2013, the department implemented an electronic template for the regions to use in developing annual marketing plans. This system captures marketing history and allows for opportunities to do regional comparison and identify best practices. The department is working within the real estate inventory management system (READS) program on an inventory hold category for properties being held for future use in transportation projects. It will also have a hold category for single abutter properties in which the abutter does not have interest in owning the surplus land. The category will help the department better manage its sellable parcels and separate properties that cannot be sold.

Wisconsin Department of Transportation Telecommunications Long-Term Action Plan Project Report



Project Summary

The objectives of this project were to consolidate telecommunications operations centrally and to reduce overall costs for the department. The project team centralized management of telecommunications inventory, incidents, ordering, auditing of invoices and implemented cost reduction strategies.

This project commenced prior to the statewide Lean Initiative and was completed on December 31, 2012.

Improvements

- Created central department wide inventory database, eliminating the need for each division to maintain their own inventory while improving the accuracy of the records
- Reorganized staff duties to free up hours for mission-critical tasks
- Reduced telecommunications spending by \$810,800 in FY12

MAPSS Core Goal Area

- Accountability
- Service

Statewide Goal Area

- Cost of government
- Customer satisfaction

Issue

Prior to this project, telecommunications operations were performed primarily by division staff on a part time basis in addition to their primary role. These staff often had insufficient training in information technology and these positions had high turnover rates. In addition, maintenance of telecommunications data was decentralized among WisDOT divisions and performed manually with redundant data entry steps, frequently resulting in incomplete and inconsistent records.

The goals of the project were to improve the workflow of telecom functions; reduce overall telecommunication expenses; integrate telecom data; improve oversight; and instill a culture of customer service in responding to requests for telecom services.

Analytical Methodology

The project team applied process improvement principles to the telecommunications expense management program across the department. The team's mission was to consolidate telecommunications management operations centrally through management of inventory and expenditures, eliminating the need for each division to maintain their own inventory. The project scope was limited to voice communications.

Telecommunications staffing was reorganized to consolidate these duties among fewer division staff. The team established a Technical Support Group and a Telecommunication Advisory Group to share information and receive input from divisions on processes and direction.

Results

Freed staff time: Prior to this initiative, 57 divisional staff members were assigned telecommunications related duties. As a result of this project, the number of divisional staff assigned these duties will be reduced to 26.

Data improvements: A department wide inventory was completed, a central master inventory database was created and a process was implemented to keep the database current. An accounts payable report was created to eliminate redundant data entry steps.

Cost savings: Overall, the department reduced annual telecom expenses by \$810,800 from the FY 11 base year, an 18 percent reduction from FY11. An estimated \$350,800 of this amount was due the improved inventory and record keeping modifications.

Next Steps

DOT will partner with DOA in assessing an automated telecommunications expense management system.

Appendix M: Cost Saving Measures from Wyoming DOT Report on “Efficiencies, Saved Resources and Reduced Expenditures”

Source: Wyoming DOT

Air Fleet Fuel and Flight Profile Efficiency Initiatives (Page 1)

The Aeronautics Division now purchases 85 percent of its aviation fuel in bulk, reducing cost and maintaining a ready supply. The division also researched and analyzed flight profiles for efficiency and implemented revised guidelines to save fuel. By flying specific altitudes and air speeds, and by practicing certain ground procedures, WYDOT reduced its jet fuel costs by approximately \$65,000 in FY 2012.

Benefit: These specific procedures allow WYDOT to burn approximately 15 percent less fuel than the average operation reported by Cessna. Purchasing jet fuel in bulk saves approximately \$200,000 annually.

Project status: Ongoing

FAA Specification Review for Wyoming Airports (Airport Engineering and Construction Program) (Page 2)

WYDOT Aeronautics is leading an effort, along with the FAA, airport consulting engineers, and construction contractors, to evaluate and request modifications to the standard national FAA Specifications. Areas identified by the committee include changes based on Wyoming aggregate, asphalt binder, constructability, aircraft usage, etc.

Benefit: One example of savings is a runway project where \$95,950 was saved by removing the regional federal requirement to cut back the longitudinal paving joints, without sacrificing life of the pavement.

Project status: Ongoing

Snow Control Techniques (Ongoing) (Page 10)

WYDOT is purchasing new trucks equipped with more advanced plow controls and equipment to mix a de-icer with the sand before it is applied to the road surface. We anticipate purchasing 25 new trucks per year as part of the normal equipment rotation.

WYDOT has also added remote salt/sand storage sites at locations where operators can re-load with salt/sand without traveling long distances to the existing sites.

Benefit: Studies conducted in the Arlington area of Interstate 80 demonstrated that this technique could save WYDOT up to \$2 million a year in sanding costs while improving safety and reducing the number of road closures and the effort needed to remove the ice and snow. Variable speed limits, in conjunction with the advanced snow control techniques, are expected to reduce the number of crashes, where poor road conditions were cited as a factor, by 20 percent and the number of injury crashes by nearly two-thirds. The number of road closures in the Arlington area has been reduced by one-third.

The additional remote salt/sand storage sites increase the amount of time that plow operators are on the road fighting ice and snow by not having to travel further distances to load the plow trucks. An example of reduction in workforce is in WYDOT’s District 3 where the total number of employees is currently 175 compared to 204 employees in 2008, but the level of service and completing work programs remains the same as it was five years ago.

Project status: Estimated completion date for fully implementing more advanced snow plows is the fall 2016.

Energy Audit (Page 18)

An investment-grade energy audit of WYDOT facilities was conducted by Chevron Energy Solutions Company in March 2013. The audit targeted energy conservation measures at 33 WYDOT buildings, to include lighting, plumbing, BAS upgrade, waste oil heaters, cooling tower and rooftop air handler units, a boiler replacement in the main headquarters building, and paint booth upgrades.

Benefit: Evaluate WYDOT's energy consumption and promote efficiencies through the installation of identified energy saving strategies and modernization of facilities. WYDOT will realize a reduction in maintenance and a reduction of \$177,000 in energy costs for the first year. The projected payback period for the investment is 15 years. The equipment being installed has an average minimum life of 20 years.

Project status: To be completed in the fall 2014