

**MaineDOT**

**Bureau of Maintenance & Operations**

**Annual Report  
FY2010**

Maine Department of Transportation  
Bureau of Maintenance and Operations

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# Executive Summary

## Background

MaineDOT's Bureau of Maintenance and Operations (M&O) maintains and operates the backbone of Maine's transportation system, performing work that is crucial to Maine's economy and quality of life. M&O may be best known for plowing snow and controlling ice on Maine's 8,600 lane miles of state highways (400 contracted), as well as providing response services 24 hours a day, 365 days a year for road emergencies such as flooding, washouts, potholes and bridge repairs.

The scope of the Bureau's work however is much broader and includes summer highway maintenance on 8,800 center line miles of state and state aid highways, maintenance and repair of over 2,900 bridges and minor spans, and maintenance of over 300 miles of state-owned railroad lines (not including the recent purchase of 233 additional miles in Aroostook County). M&O operates and maintains the Maine State Ferry Service, which is a vital link to six year round communities. M&O also manages highway access and signing, and provides various other services, including maintenance of state-owned rest areas and Maine's 511 Traveler Information System. To provide a level of service that meets the public's expectations, the Bureau requires substantial resources, including:

- The equivalent of 1,450 employees when you include full-time and part-time employees.
- Buildings that include the Augusta headquarters, five region offices, and 145 crew maintenance facilities.
- 770 pieces of heavy equipment including trucks, graders, excavators, plows and others.
- Seven ferry vessels serving six islands operating out of three main land terminals.
- A working budget of nearly \$140m including ferry service funds.

Five years ago, M&O developed a report entitled "*Delivering More Efficient and Effective Service*". This was compiled as part of a department internal review process. During the last five years M&O has implemented many of the recommendations in the report, streamlined operations, implemented efficiencies and developed new initiatives. Some of the accomplishments include:

- Reduced our work force by 130 employees or by 10% over the last five years;
- Reduced the heavy fleet (loaders, dump trucks, backhoes and graders) and medium duty fleet by 20% over the last six years;
- Absorbed historic inflationary construction costs; and
- Refined and maintained the public's expectations for levels of service for different work activities.

In 2010, M&O continued streamlining operations and implementing new initiatives that include:

**Crew Classification System:** M&O developed a new employee classification system, which combined bridge, highway and traffic workers into one unified Transportation Worker classification. Now, the Bureau will be able to adjust the workforce as seasons change and priorities shift. Advancement is merit-based and designed to build a MaineDOT employee culture of professionalism, pride, and a willingness to mentor new and/or less experienced workers. To implement this we have:

- Restructured the crew classification system;
- Formalized crew training;
- Continued crew consolidation; and
- Implemented a physical performance and healthy lifestyles program.

**Heavy Fleet:** MaineDOT transferred our light fleet (cars and pick ups) to Central Fleet under the Department of Administrative and Financial Services (DAFS). This allowed Fleet Services to focus on its primary function, supporting heavy fleet and specialty equipment. This resulted in increased productivity and a savings of over \$2m since October of 2009. Highlights included:

- Transferring cars and pickups to central fleet;
- A regionalized central warehouse;
- Standardizing the heavy fleet;
- Implementing the refurbished equipment program; and
- Partnering on the purchasing of ride share program passenger vehicles.

**Continued Efficiencies:** M&O continues improving its processes and partnering with other bureaus and departments to continue streamlining operations. This includes:

- Partnering with New Hampshire and Vermont state transportation agencies;
- Enhancing emergency software such as the Statewide Incident Management System for situational awareness;
- Implementing Intelligent Transportation System (ITS) devices to increase highway capacity, safety situational awareness while reducing traffic delays;
- Implementing a light capital program;
- Defining statewide levels of service for different work activities;
- Developing statewide corridor management priorities that incorporates different bureaus and work plans; and
- On-going self-auditing for environmental, safety, and labor compliance.

**2010 Major Accomplishments:** M&O has a tradition of excellence in dealing with unexpected events. This is due to our highly committed, talented and creative workforce which allows the Department to succeed in its mission. Some of the accomplishments this year include:

- One of the lowest salt-use years in decades, resulting from a continued emphasis on workforce efficiencies and a lighter than usual winter;
- The mild winter in combination with the early spring and dry weather enabled us to ditch over 40% more shoulder miles than the three year average; grader ditching of 475 shoulder miles and excavator ditching of 275 miles;
- Replacement of over 2,000 culverts and catch basins;
- Strip over 18,000 miles of white and yellow paint lines;
- Replaced two piers on bridges over I-95;
- Inspection of over 2,300 bridges;
- Realized a savings of \$1.5m due to efficiencies from crew consolidation, increased individual crew size while reducing the total number of crews and managing overtime;
- Realized a savings of over \$1m by diversifying rest area maintenance.

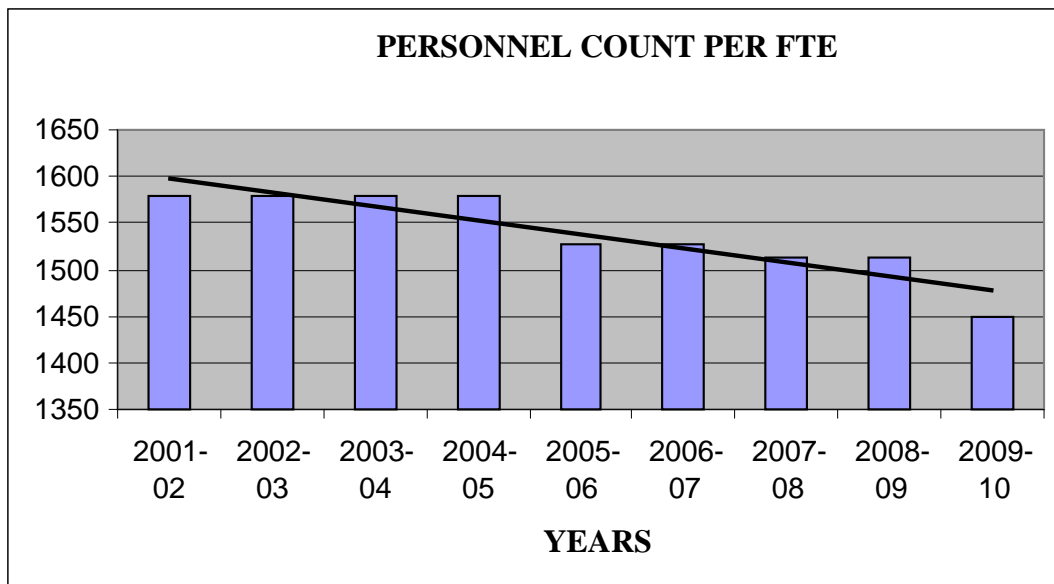
**Notable Events:**

- The Department collaborated with MEMA to develop an N1H1 contingency plan for essential employees;
- MaineDOT's Ryan Campbell won the Snow Plow Rodeo World Champion in Quebec, Canada; and
- M&O updated 45 variable speed limit signs on the interstate to be controlled remotely, utilizing solar power from Houlton to Portland.

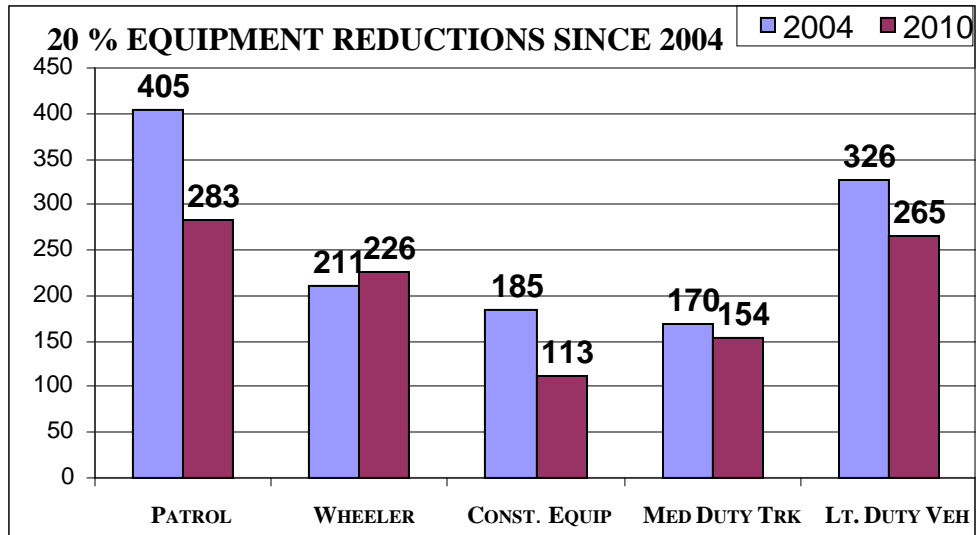
## I. Introduction

MaineDOT's Bureau of Maintenance and Operations (M&O) maintains and operates the backbone of Maine's transportation system, performing work that is crucial to Maine's economy. M&O plows snow and controls ice on Maine's 8,600 lane miles of state highways (400 contracted), and provides emergency response services 24 hours a day, 365 days a year. The scope of the Bureau's work is much broader, however. It includes summer highway maintenance on 8,800 centerline miles of state and state aid highways, maintenance of over 2,900 bridges and minor spans, providing a vital link between the mainland and the island communities of Islesboro, North Haven, Swans Island, Vinalhaven, Frenchboro and Matinicus with Maine State Ferry Service (MSFS) and maintenance of over 300 miles of state owned railroad lines. M&O also manages highway access and signing, and provides various services, including maintenance of rest areas and Maine's 511 Traveler Information System. In order to perform this work, M&O requires substantial resources, including:

- ⇒ About 1450 employees per FTE count
- ⇒ Augusta headquarters, 5 region offices and 145 smaller crew maintenance facilities
- ⇒ 770 pieces of heavy equipment
- ⇒ An annual budget of \$137m including ferry service funds
- ⇒ Actual expenditures of \$133m, with savings primarily due to a light winter.



**Reduced our workforce by 130, or 10%, over the last five years**



20% reduction in heavy and medium duty equipment over last 6 years

### *Maintenance and Operations Unit Review (MOUR):*

In 2003, Maine Department of Transportation conducted an internal review to gain efficiencies. The following are excerpts from the final report published in January 2004.

The team found that Maintenance and Operations has great strengths. The most important characteristic is dedicated and capable crews, who perform very well when their mission is clear. During snow fighting, floods, and emergencies like the ice storm, no one works harder to get the job done. Given this dedication, experience and commitment to public service, the team concluded that the people of Maine would not be well served by widespread privatization of core maintenance functions. The team also found that the basic structure of Maintenance and Operations with its four subject matter units is appropriate. Those units are Highway Maintenance, Bridge Maintenance, Traffic Engineering and Fleet Services.

Though Maintenance and Operations is a good organization, almost all those interviewed admit that the lack of consistent and clear direction and planning means that Maintenance and Operations has not been as effective or efficient as it could be. Selected recommendations completed over the last five years include:

- **Strengthen the planning of maintenance activities so that “resources” follow work.** Although some maintenance activities, perhaps 20%, cannot be planned, most can. MaineDOT must plan its maintenance activities better, similar to Department capital planning efforts that result in a mid range planning document. A similar approach has been adopted by Maintenance and Operations.

- **Reduce the number of Divisions from seven to five, and call them Regions.** Maintenance and Operations currently has five geographic Regions, to maximize the efficiency of service delivery. MaineDOT reduced the number of geographic units to five Regions, from the previous seven Divisions.
- **Review plow routes, camp locations, crew sizes, and truck fleet needs.** With fewer maintenance miles, larger trucks, advances in snow and ice control, and better communication technology, current camp locations, crew sizes, and the truck fleet were adjusted to match the work needs.
- **Transition the role of District Managers.** District Managers have taken on a variety of roles in various areas across the state. Their roles have transitioned to that of subject matter assistants to the Highway Superintendent in specific functional areas, such as planning, access management, utility permitting, bridge and more.
- **Establish clear and consistent levels of service.** Previously, the Divisions sometimes set their own expectations regarding levels of service. Expectations for consistent levels of service, for both summer and winter work, have been established for the new Region setup such that travelers cannot tell when they have crossed a boundary.
- **Create a pool of supplemental snow fighters.** To reduce overtime costs and increase safety, a supplemental group of snow fighters has been established to ease the burden on highway crews and increase efficiency. Personnel from the Bridge Maintenance Division, striping crews, other crews from Traffic Engineering Division, and Fleet Services were consolidated for this purpose.
- **Evaluate the efficiency of winter bridge work.** A great deal of effort and expense goes into maintaining bridges throughout the winter. An evaluation of the associated benefits and cost was performed. Opportunities to use bridge workers for snow fighting has been implemented with the support of the Maintenance and Operations management.
- **Reform culture of Motor Transport Services, Augusta.** The Motor Transport Services, Augusta office, has been reorganized to provide a support function. This means MTS Augusta has been transformed into an office that provides procurement and technical assistance functions, and is now known as Fleet Services.
- **Review light fleet maintenance.** The entire light fleet was transferred to Central Fleet under the Department of Administrative and Financial Services (DAFS) in 2009.

- **Regionalize central warehouse functions.** The central warehouse has been closed. Orders occur through a catalog system wherein requisitions are sent directly to the vendors. Products are then sent directly to the Regions in many cases.
- **Move toward a more standardized fleet.** Previously, MTS bought trucks almost every year on a low bid basis, resulting in numerous types of trucks. That created a need to stock numerous types of truck parts and to learn different technical specifications and repair methods. That was very inefficient. Fleet Services now purchases equipment based on a long-term replacement plan. This has increased the quality and consistency of our fleet of heavy equipment.

### **Estimated Budget Savings and Benefits**

Implementation of this plan reduced costs; helped offset inevitable budget increases caused by inflation; and decreased the impact the budget shortfall would have otherwise created. This allowed more Highway Fund dollars to be put into product – highway and bridge projects, and less into process. Thus, savings have been realized over the last five years, with an on-going savings moving forward of over \$10m/year.

### **Implementation Schedule**

Implementation of the plan took place over several years, with the bulk of the organizational changes occurring within the last two to three years. Full implementation was on schedule and substantially completed by the middle of the year.

### **2009/2010 Legislative Session Recap:**

There was a call for more streamlining and efficiencies.

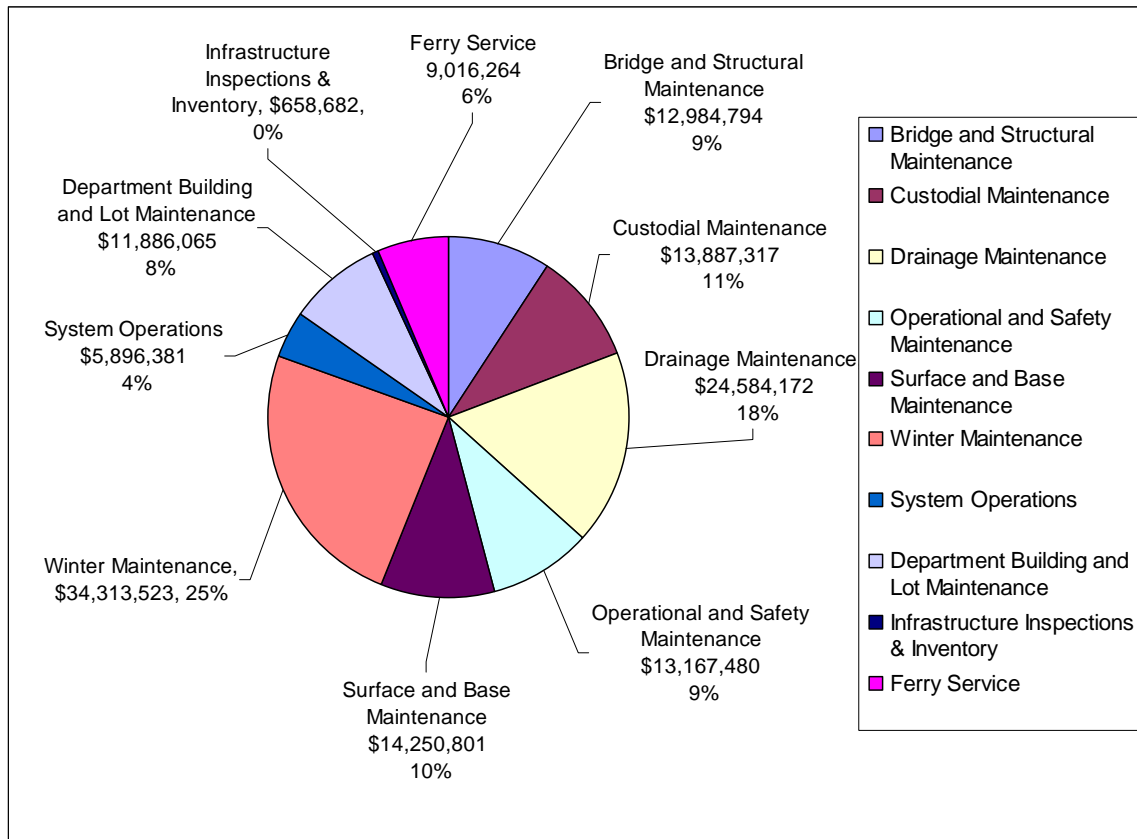
- A light capital account was established that allows us to track joint M&O and Project Development projects, efforts like MST, and to highlight the benefits to the system of M&O's summer work. This action has also highlighted the need for state capital cash.
- Light fleet operations were transferred to Central Fleet at BGS. Some project development employees who drive extensively were provided state vehicles.
- Laws were passed that place more responsibility on property owners for culvert replacements, timelines for the purchase of property for large projects, limiting some trucks weight fines, and encouraging MaineDOT to secure funding for the North- South Highway and other large projects.
- We worked with the Department of Agriculture and the DEP to limit impacts on MaineDOT from farmland preservation and climate change initiatives.

- The Legislature required a study to examine the current complex systems of highway classification, urban compacts, and municipal and state roles, to identify better ways to match appropriate standards to the roads and to deliver work more cost effectively for travelers.

## 2010 Activity Grouping Accomplishment Reports:

The Department uses activities and activity grouping to capture our accomplishments and expenditures. The Department is striving for a single process throughout the organization that will allow us to plan, implement and measure our work. These activities and groupings are reviewed annually to ensure this tool maximizes our ability to manage our resources, address efficiencies and set appropriate priorities. Below is a chart showing M&O expenditures in each major work group.

**2010 EXPENDITURES BY MAJOR WORK GROUP**



As expected, M&O spends a large portion of its resources on Winter Maintenance, Drainage Maintenance and Bridge - Structural Maintenance. We must continually balance these recognized needs with the remaining important activities the Bureau performs. This report highlights the important accomplishments of the Bureau for 2010 and a brief summary of how and why we do what we do.

### **New and Contemporary Initiative:**

In 2010, M&O continued streamlining our operations and implementing new initiatives.

**Crew Classification System:** M&O developed a new classification system, which combines bridge, highway and traffic employees into one unified Transportation Worker series. This will allow the Bureau to adjust the work force as seasons change and priorities shift. Employee advancement is merit-based and designed to build a MaineDOT culture of professionalism, competence, pride, and willingness to mentor new and/or less experienced workers. To implement this we have:

- **Changed bridge, highway and traffic manager and crew classifications to a unified Transportation Worker classification.** This creates a flexible pool of employees from management to crew with a wide variety of skills who can deliver a comprehensive portfolio of work activities. It provides reduced overtime expense and increased safety through expanding roles of other capable workers to supplement the traditional pool of snow fighters.
- **Formalized Crew Training.** The Transportation Worker transition also created an opportunity for the Bureau to define a formal training program to develop employees and provided a clear path of advancement within the organization, based on training and abilities. It is anticipated that this training will increase the professional competence and safety of our crews.
- **Continued Crew Consolidation.** With the constant review of these aspects, multi-functional crews have been created that has allowed the Bureau to reduce facilities and re-align equipment needs to perform at defined levels of service.
- **Implemented a Physical Performance and Healthy Lifestyles Program**

M&O also takes pride in helping all state government and our citizens. We collaborated with MEMA to develop an NIH1 contingency plan for essential employees and were directly involved with transporting vaccines throughout the state.

We are also very proud of Ryan Campbell. Ryan won the Snow Plow Rodeo World Championship in Quebec. This demonstrates the talent, pride and skill that our employees apply every day to ensure that our transportation system is well maintained.

## II. Bridge and Structural Maintenance

### Overview

MaineDOT owns and maintains 2,743 bridges and minor spans. MaineDOT inspects its bridge inventory as well as municipally-owned and maintained bridges in accordance with CFR 23. The combined total of state and municipally owned bridges equals 3,644 structures and minor spans. The state definition of a “bridge” is a structure 10 feet or greater in length while the federal definition is 20 feet or greater. Structures 10 feet to less than 20 feet are referred to as minor spans while structures 20 feet and over are referred to as bridges. Below is a generalized breakdown of the inventory.

- 2,390 Conventional Bridges
- 334 Metal Pipes
- 11 Ferry Transfer Bridges
- 8 Movable Bridges

Excluding metal culverts, over 50% of MaineDOT’s traditional bridges and minor spans are older than 50 years. 26% are over 70 years old and nearly 9%, which is more than 200 bridges, are over 80 years old. The average effective life of a bridge is 70 years, depending on many factors such as construction material, environment, use, and maintenance history.

Preservation and maintenance strategies for individual bridges and the statewide network are developed cooperatively with the five Regions, Bridge Management and the Capital Bridge Program. This collaboration offers a level of assurance that expenditures on a bridge, whether capital or maintenance funds is the right thing to do at the right time. The targets for maintenance and rehabilitation strategies are developed to align substandard bridge elements with the overall remaining service life of the bridge. Preservation strategies are to ensure that those bridge elements function safely for the desired service life.

The Bridge Maintenance Division provides structural engineering services to the Bureau. This work includes structural engineering and design of maintenance repairs and rehabilitation, which encompasses staging, temporary supports, and falsework. The engineering staff also provides ratings and evaluations for bridges, building floor loads, gantries, hopper stands, and other structural elements as needed.

### Preservation 2010

Approximately \$1.93m was expended on bridge-preservation activities, which is roughly 23% of the \$8.4m expended on all bridge maintenance activities statewide in FY2010. These activities included cleaning and washing bridges, repairing or sealing

bridge joints, repairing drains, painting, maintaining channels, and installation or repair of concrete wearing surfaces.

\$1.72m was expended on the preservation, maintenance and operations, except for operator costs, on the eight movable bridges and the 11 ferry transfer bridges. With the exception of two, all movable and transfer bridges are located in harsh salt water environments that require constant vigilance on the mechanical and electrical systems in order to provide safe reliable service. Only a few minor disruptions were experienced in FY 2010.

### **Maintenance Rehabilitation/Repair 2010**

\$3.27m was expended on structural repair or rehabilitation of bridges or bridge elements.

\$1.15m was expended on superstructure rehabilitation/repair of main support members and repairing decks. Main member repairs included patching of T-beams, adding steel plate reinforcement to steel beams, replacing connections and in some instances replacing small stringers or needle beams.

\$2.12m was expended rehabilitating concrete abutments and rehabilitation or replacement of concrete piers. Two piers were replaced on bridges over I-95. The cost of replacement is slightly less than the historic rehabilitation cost of \$300,000. The benefits are the worker exposure to harmful silica dust is virtually eliminated, laborious chipping of concrete is eliminated, the work can be completed in about one half the time and replacement piers are a 50+ year fix versus a 20 year fix which aligns the element with the remaining service life of the bridge.

### **Safety 2010**

\$1.35m was expended on curb/sidewalk repair or replacement, which included 17,000 linear feet of bridge rail repair or replacement.

### **Bridge Inspection 2010**

Most bridges and minor spans are inspected on a 24 month schedule. Other bridges with deteriorating conditions or bridges that merit closer scrutiny due to the lack of structural redundancy are on a 12-month inspection schedule. 2,300 bridges were inspected this past year by six full time and two part time NBI-certified bridge inspectors. Scour plans of action were evaluated and implementation plans developed.

### **Engineering 2010**

- 30 maintenance repair or rehabilitation projects were engineered.
- Gantries were load tested in various regions statewide.

- The design, fabrication and QC/QA for the fabrication of stand-alone hoppers were developed with fleet services.
- Several bridges were load rated.
- Contracts were administered for bridge ratings and scour plans of action.
- Bridge Maintenance actively participated in the Bridge Committee and its three subcommittees, Work Plan Development Subcommittee, Technical Committee and Bridge Posting Subcommittee.

### **Continuous Improvement**

\$8.4m was expended on bridge maintenance activities in 2010, which is \$1.5m less than the average expended in the previous three fiscal years. Repair activities production decreased the most from this reduced expenditure. The principal reason for this was the lack of experienced and qualified bridge workers. With the implementation of Transportation Worker and focused training, these numbers should rebound to historical expenditures, and more importantly, increased production and production rates.

Preservation activities such as sealing joints, both full and zone painting, bridge washing and cleaning and application of sealants for concrete surfaces that have direct exposure to deicing chemicals will be a major focus. The benefit/cost of these activities is extremely high and does not require a high level of skill except for full paint projects.

All major rehabilitation work will be evaluated for its overall benefit to the service life of the bridge. Function and safety are critical components, along with the location and use of the bridge, which is evaluated to ensure it is consistent with the overall goals of the Department.

### III. Drainage Maintenance

Adequate drainage is critical to a well maintained highway. Water sitting on the surface, or trapped in the sub-grade of the road causes rapid pavement deterioration, potholes and significant damage to the base of the roadway. Water is especially damaging during spring thawing cycles when many roadways across the state are posted for heavy trucks. When culverts become plugged, water will tend to pool on the roadway, and possibly wash out the road or a driveway approach. In an effort to minimize the destructive potential of water, many roads have a series of ditches, culverts and in urban catch basins settings, to move water away from the roadway, keeping the road base dry.

Drainage maintenance is typically needed when the sediment in the ditches gets deep enough to restrict or block the draining of water from the roadway surface or base. This situation would typically occur when the depth of the sediment in the ditch exceeds one-half the size of the culverts existing in that run.

There generally are two methods used for ditching:

Grader Ditching – This method is generally used when ditches are shallow and slopes are 4:1 or flatter. The work is performed with a grader or bulldozer cutting excess material from the ditch area, rolling it up on to the shoulder and then loading it into trucks to be hauled to a dump site. Typically, the crew would have seven –nine people. Equipment would be a grader, a loader, three or four trucks, and the materials needed to complete the erosion and sedimentation control plan.

Excavator Ditching - This method is generally used when slopes are steeper than 4:1 or the excess material is further away from the road. The work is performed with an excavator, which loads material directly into trucks that haul it to a dump sites. Typically the crew size for this method would be five-eight people. Equipment would be an excavator, three or four trucks, and the materials needed to complete the erosion and sedimentation control plan.



Replacing and repairing structures are the other two activities included under the drainage grouping. Before roadways are paved, the crews review the drainage structures being affected. They either are replaced or repaired if they are not functioning adequately or if it is determined they will not last at least two to four years. In order to stretch our limited funding, we are leaving existing structures in place to maximize their useful life. By taking more risk and leaving pipes in place, emergency repairs to culverts and drainage systems are more common.

## **Performance Expectations**

### **Ditching**

All locations that present recurring drainage problems shall be reported in a work request for consideration in an upcoming ditching program. Drainage issues that threaten the highway or create a safety hazard will take precedence. Drainage issues that are similar in nature will be prioritized in accordance with the corridor priorities.

80% of the areas identified in the biennial Maintenance work plan shall be completed.

### **Drainage Structures**

50% of the catch basin inventory (excepting the low risk areas) shall be cleaned annually.

100% of culverts that have failed to adequately convey water shall be cleaned annually.

### **Expenditures**

The following tables lists the costs associated with each activity for 2010 as compared to a three year average:

	<b>3 yr ave.</b>	<b>2010</b>
<b>DRAINAGE MAINTENANCE</b>	<b>\$13,173,829</b>	<b>\$15,868,198</b>
MAINTAINING DITCHES-SUMMER	\$5,621,123	\$5,809,040
MAINTAINING DITCHES-WINTER	\$1,088,075	\$735,016
MAINTAINING DITCHES-GRADER	\$957,775	\$1,730,262
CLEANING DRAINAGE STRUCTURE	\$1,175,118	\$1,493,889
REPAIRING DRAINAGE STRUCTURE	\$4,620,533	\$1,906,136
REPLACE/NEW INSTALL DRAIN STRU	\$30,463	\$4,193,856
ADM		\$5,245,670
CREW		\$3,333,088
CP		\$137,216

## Accomplishment

Below are the accomplishments for 2008 through 2010:

<b>DRAINAGE MAINTENANCE</b>	<b>2008</b>	<b>2009</b>	<b>2010 Units</b>
MAINTAINING DITCHES-SUMMER	319	229	272 Shoulder Mile
MAINTAINING DITCHES-WINTER	27,522	32,580	16,416 Hours
MAINTAINING DITCHES-GRADER	267	215	475 Shoulder Mile
CLEANING DRAINAGE STRUCTURE	19,944	19,502	19,240 Each
REPAIRING DRAINAGE STRUCTURE	2,197	1,378	945 Each
REPLACE/NEW INSTALL DRAIN STRU	N/A	152	1,163 Each

## Highlights

- The light winter, in combination with the early spring and nice weather, allowed us to expend 20% more, but produce over 40% more shoulder miles. Graders ditched 475 shoulder miles and excavators ditched 275 mile for a total of 750 shoulder miles.
- Repaired or replaced over 2,000 structures, which is close to a three-year high; Costs were high due to the number of structures requiring replacement and cost of materials.

## Challenges

- With a network of over 16,000 lane miles of roadway, we are only ditching less than 6% of our network a year. On average roads should be ditched on a 10 year cycle.
- Funding resources need to double to properly maintain our drainage structures.

## IV. Custodial Maintenance

M&O performs a number of activities that are routine in nature. Some activities are performed throughout the year, while others are done on an annual basis. Picking up trash on the interstate and other high-profile arterials is done every spring, sporadically when litter becomes an issue in specific areas. Removal of dead animals is an activity that is needed throughout the year. Our goal for litter picking is to clean up all the mowed areas of the interstate in the spring before mowing and 20% of the remaining system.

Every spring, we sweep urban areas and in front of curbing to remove dirt and we remove debris from catch basins. By cleaning these locations we provide a more efficient storm water system that protects highway assets and reduces the amount of roadway materials in environmentally sensitive areas. Catch basins will normally be inspected and cleaned on a two-year cycle.

Bridges are cleaned and washed annually to remove the sand, salt, and other debris. This effort provides a better-functioning bridge system and also extends the useful life of all bridge components. Flushing after sweeping removes remaining chloride deposits on concrete and steel surfaces especially flat or creviced areas that would not flush during normal rainfall events.

Vegetation management focuses on management of the natural roadside environments to provide for safe travel. Clear zones are maintained to reduce the risks from encroaching trees, brush, and vegetation. Natural areas are monitored for hazardous trees which may affect the roadway. The goals include: maintaining and improving existing clear zones for visibility at curves, intersections, hills, and other critical areas; improving sunlight to the road surface in winter; improving drainage; reducing hazardous trees within the right of way limits which may fall into the roadway; reducing risks to workers and others from insects which may be factors, such as deer ticks and lyme disease; reducing risks from poisonous plants found in work zones; and reducing roadside weeds which reduces driver sight distance and visibility of roadside hazards such as large animals. The primary programs that address these issues are:

- **Roadside Spray:** Including roadside brush control; invasive plant control; weed control at facilities, islands, curb areas, and roadsides; and control of poisonous plants
- **Hazardous Tree Removal:** identifies single trees that present a hazard to the traveling public
- **Sustainable Vegetation:** utilizes certain plants to help provide brush control that reduce maintenance costs, improve worker safety by reducing hazardous work locations. Another example is planting living snow fence, normally red pine to cut down on snow drifting across roads.



- **Roadside and Interstate Mowing:** This strategy is not about aesthetics but is meant to reduce fire starts in the right of way, improve visibility, and prevent unwanted vegetation encroachment.

With the above strategies, the Department has been able to reduce mowing and fossil fuel consumption. With regard to interstate mowing strategy, for the last five years the Department has implemented a methodology of mowing only two passes on all interstate inslopes the first time out (typically by mid to late June), mowing to the toe of inslope the second time around, and including all mowable backslopes in the fall. Roadside mowing on non-interstate roads is done once per season and generally involves making one pass approximately six feet in width to reduce unwanted brush and weeds.

The closure of several of MaineDOT's rest areas has been a topic of some controversy, but it is important to recognize that these closures have been approached in a thoughtful and logical manner.

MaineDOT maintains two types of rest area facilities: those that are open year-round and seasonal facilities that are open from late May to early October. The location of the vast majority of these rest areas was established several decades ago when traveler services were significantly different from what they are today. Although cost savings is certainly part of the equation, the rest area closures in Maine have been an attempt to strategically identify areas where consolidation or elimination of facilities would minimize the impact on travelers. For example, the new rest area facility in West Gardiner is a consolidation of both the northernmost Maine Turnpike facilities and the MaineDOT facilities in Augusta. This allowed both entities to provide travelers with a more modern facility that offers a full array of services.

The Pittsfield rest area closures have also been viewed as a reasonable option because of the proximity of the Newport exit, which offers numerous opportunities for travelers to easily access Maine businesses that offer fuel and food as well as public rest rooms. In other cases, such as in T22 MD along Route 9 between Brewer and Calais, a new restroom facility was added through a contract with an existing Maine restaurant business. Additional partnerships with entities that have a vested interest have also been created to provide maintenance of numerous other facilities. These partnerships include the Scenic Byways groups in Western Maine and the Northern Maine Development Group.

## **Performance Expectations**

### **Litter**

Interstate litter and debris removal: 100% of all mowed areas annually

Non-interstate: A minimum of 20% of the total non-interstate mileage annually.

### **Sweeping**

Areas to be swept shall be identified annually by crew area and captured in a work request specifying the target accomplishment prior to the start of sweeping. One hundred percent of that annually identified target accomplishment shall be swept.

### **Rest Areas**

One hundred percent of all MaineDOT rest areas that are open to the public shall meet the cleaning and maintenance cycles defined in the rest area level-of-service standards.

### **Expenditures**

The following tables lists the costs associated with each activity for 2010 as compared to a three-year average.

	<b>07-09</b>	
	<b>3 yr average</b>	<b>2010</b>
<b>OPERATIONS AND SAFETY MAINTENANCE</b>	<b>\$878,015</b>	<b>\$8,499,135</b>
MAINTAINING GUARDRAIL/FENCES	\$878,015	\$938,675
INSTALLING GUARDRAIL	\$111,582	\$96,688
MAINTAIN ROADSIDE SAFETY DEVIC	\$54,096	\$18,657
LANDSCAPING	\$25,541	\$36,637
STRIPING	\$4,124,793	\$4,151,870
MARKING PAVEMENT LEGENDS	\$508,104	\$258,013
INSTALLING SIGNS	\$864,303	\$515,694
MAINTAINING SIGNS	\$721,914	\$928,770
MAINTAINING STREET LIGHTING/TR	\$1,096,441	\$1,537,184
MAINTAINING OTHER ELECTRICAL E	\$36,536	\$14,945
ADM		\$2,809,623
CREW		\$1,785,229
CP		\$73,494

**Accomplishments:**

Below are accomplishments for 2008 through 2010

<b>CUSTODIAL MAINTENANCE</b>	<b>FY 08</b>	<b>FY 09</b>	<b>FY 10</b>	<b>Unit of Measure</b>
PATROLLING & INSPECTING	400,036	393,182	357,037	Center Line Mile
REMOVING LITTER & DEBRIS	19,627	22,365	20,954	Shoulder Mile
SWEEPING	7,227	9,861	14,849	Shoulder Mile
MOWING	10,123	8,744	9,694	Shoulder Mile
CHEMICAL BRUSH SPRAYING	1,810	5,929	3,746	Shoulder Mile
REMOVING TREES	9,402	12,795	9,376	Each
REMOVING BRUSH	149	297	178	Shoulder Mile
MAINT REST/PICNIC AREA	4,921	3,958	678	Each
CLEANING BRIDGES	4,692	4,552	4,245	Each
RAILROAD MAINTENANCE	N/A			

**Highlights:**

- Overall reduced our custodial maintenance cost by over \$1.5m. This is primarily the result of strategic rest area closures and innovative contracting.
- Maintained level-of-service and reduced expenditures for patrolling and inspecting, picking litter, and sweeping.
- Met level of service for cleaning bridges.
- Expended \$3,232,200 on sustainable vegetation management program.
- The roadside spray program treated 3700 shoulder miles of roads at a cost of \$223,300. This cost is inclusive of labor equipment and materials.
- The hazardous tree removal program included the removal of approximately 240 hazardous trees at a cost of \$108,495 (\$65,745 in state funds and \$42,750 in federal funds).
- Roadside mowing involved the use of both contract and state forces. Approximately \$650,000 was spent mowing interstate and routed roads. The statewide accomplishment was 9,700 shoulder miles.

## V. Operational and Safety Maintenance

M&O undertakes several operational and safety maintenance activities that are directly related to ensure the safety of the traveling public. One important activity is our pavement striping program. In the last quarter of the fiscal year, the striping and stencil program had a major setback due to the lack of paint. We were notified in late April that there was a major resin shortage worldwide. This was a direct hit on the manufacturing of striping paint. We were told by our supplier that they could not meet our needs until late summer or early fall. By June 30<sup>th</sup>, we were short by close to 65,000 gallons of paint that would have normally been in our inventory by then. As of June 30<sup>th</sup>, we were behind by 45 to 55% of our normal spring accomplishment.



Guardrail is another important safety asset requiring maintenance. Guardrail exists to improve the safety of vehicular traffic by redirecting errant vehicles or enabling the vehicle to come to rest or slow sufficiently to allow the driver to regain control. All damaged guardrail that is on the ground or presents a blunt end to the traveling public shall be immediately addressed to restore the full normal shoulder width and to minimize exposure to traffic until such time as permanent repairs can be made. Permanent repairs, and repairs to any other damage that has affected the structural integrity of the system, shall be made in accordance with our established LOS.

Signs are another essential asset to highway safety. Installing and maintaining all signs, both regulatory and informational, is done by crews located throughout the state.

### **Performance Expectations**

Interstate guardrail repairs to damaged crash ends and other structural damage shall be made within four weeks unless winter conditions (e.g. frost, snow banks) prevent such repair from occurring, in which case all damage shall be repaired or replaced by June 15<sup>th</sup>.



On our lower priority roads, damaged crash ends and other structural damage shall be repaired within eight weeks unless winter conditions (i.e. frost, snow banks) prevent such repair from occurring, in which case all damage shall be repaired or replaced by August 1<sup>st</sup>.

Cable guardrail shall be repaired in kind as availability of parts exists or replaced with beam guardrail as funding permits.

## Expenditures

The following table lists the costs associated with each activity for 2010 as compared to a three-year average.

	<b>07-09</b>	
	<b>3 Year Ave</b>	<b>2010</b>
<b>OPERATIONAL AND SAFETY MAINTENANCE</b>	<b>\$8,421,326</b>	<b>\$8,499,135</b>
MAINTAINING GURADRAIL/FENCES	\$878,015	\$938,675
INSTALLING GURADRAIL	\$111,582	\$98,688
MAINTAIN ROADSIDE SAFETY DEVIC	\$54,096	\$18,657
LANDSCAPING	\$25,541	\$36,637
STRIPING*	\$4,124,793	\$4,151,870
MARKING PAVEMENT LEGENDS*	\$508,104	\$258,013
INSTALLING SIGNS	\$864,303	\$515,694
MAINTAINING SIGNS	\$721,914	\$928,770
MAINTAINING STREET LIGHTING/TR	\$1,096,441	\$1,537,184
MAINTINGING OTHER ELECTRICAL E	\$35,536	\$14,945
ADM		\$2,809,623
CREW		\$1,785,229
CP		\$73,494

\* Note: The striping program is a federal program and reimbursed by FHWA.

## Accomplishments:

Below are the accomplishments for 2008 through 2010

<b>Operational and Safety Maintenance</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>Unit of Measure</b>
MAINTAINING GUARDRAIL/FENCES	63,973	59,908	44,000	Linear Feet
INSTALLING GUARDRAIL	9,821	8,416	11,166	Linear Feet
MAINTAIN ROADSIDE SAFETY DEVIC	172	1,429	168	Each
LANDSCAPING	881	182	192	Hour
STRIPING	18,073	17,268	17,100	Center Line Mile
MARKING PAVEMENT LEGENDS	151,808	225,570	174,148	Square Feet
INSTALLING SIGNS	19,801	18,631	10,827	Each
MAINTAINING SIGNS	12,310	14,158	148,897	Each
MAINTAINING STREET LIGHTING/TR	8,138	7,263	6,706	Hour
MAINTAINING OTHER ELECTRICAL E	602	259	494	Hour

## **Highlights:**

- Maintained 44,000 linear feet, and installed 11,166 feet of guardrail this season, or slightly below the three-year average. Some of this reduction can be accounted for by more accurate guardrail reporting and recent upgrades to interstate guardrail systems, reducing the need for maintenance work.
- The Department seeks reimbursement from insurance companies for state property damages that are identified in police crash reports. In 2010, we were reimbursed over \$390,000 by insurance companies for accident damages. This is over \$150,000 more than the previous two years of reimbursement payments.
- Installed or maintained over 25,000 signs this year. This is below the three year average.
- Traffic striping and stencil crews closed out the 2009 paint season with 100 percent of the white edge line program completed 96 percent of the yellow centerline program completed, and 100 percent of the stencil program completed. As for the start of the 2010 striping and stencil season, we have had a major setback in the striping program due to the lack of paint. As of June 30<sup>th</sup>, we were behind by 45 to 55 percent of our normal accomplishment.
- International paint shortages reduced the amount of striping and stenciling completed in the spring of 2010, which is reflected in the 2010 accomplishments above.

## VI. Surface Maintenance

Over 45 percent of the state highway system has never been built to modern standards. These roads have segments of highways that are geometrically and/or structurally inadequate. To maintain a serviceable roadway, at least a seven year preservation paving cycle should be employed. The majority of these roads are on the collector system, connecting local roads to the arterial system.



With the financial constraints the department and state have experienced over the last few years, the Department has had to extend the paving cycle to over 10 years on most of these roadways. Our pavement condition rating has slowly moved from bad to worse. Fewer miles paved create rougher roads for the traveling public. Potholes are more prevalent and create slower travel speeds and increased vehicle damage.

Maintenance Surface Treatment (MST) is a layer of sand mix used to keep roadways in serviceable condition. It is usually applied to unbuilt arterials, unbuilt major collectors, and all minor collectors. It is intended to keep the roadway maintainable for snow plowing, to minimize maintenance costs, and to provide reasonable rideability. It is not a structural fix to a roadway, but does allow the pavement to be sealed temporarily to keep out moisture. Life expectancy of a MST treatment is usually four years, dependent upon the underlying soil conditions. Historically, the Department planned on an MST cycle every six to seven years, which would lead many to believe the actual life of the pavement was six to seven years; however, the pavement conditions are moving into the low end of serviceability.

Pavement Preservative Maintenance (PPM) is comprised of many different treatments. The determination of the particular treatment is based on the existing roadway conditions.  $\frac{3}{4}$ " overlays are performed on a roadway with no structural needs, but may have cracking and rutting which are detrimental to a long-lasting safe highway. If a roadway shows structural issues, then the treatment depth will be increased to  $1\frac{1}{4}$ " or heavier. If the travel way of the road has needs but shoulders are in adequate condition, then a mill-and-fill may be selected. This means milling out the existing pavement and filling (paving) in with new hot mix. These treatments are placed on built roadways that have an adequate base, drainage in place, and are in fair to good condition.  $\frac{3}{4}$ " treatment is expected to give eight years of life.  $1\frac{1}{4}$ " overlays and mill-and-fills are expected to last 10 to 12 years. Like all roadways, some have better-draining bases than others, some carry different traffic volumes of cars and, more importantly, large trucks, so there is variation. The hot mix composition is a mixture of stone with sand and is more sturdy and durable than MST, which is mostly sand. When the Department selects a project for a



preservation treatment, it also looks at the safety needs of the roadway. The Department will upgrade guardrail to the current standards according to DOT policy. The Department will review a clear zone for safety issues. These are not issues that are dealt with on MST work. In short, a PPM treatment protects the investment made when the roadway was built, whereas MST treatment does not protect the investment due to its minimal depth and non-structural composition.

As part of the 2009 legislative session, a new Light Capital account (9075) was established that allows us to better track joint M&O and Project Development efforts – efforts like MST - and highlight the benefits to the system of M&O summer work. This has also highlighted the need for state capital cash.

For 2010, the MST program was placed in the 9075 appropriation, along with state haul, personal services and all other were allocated for haul, traffic control, signs, and backing up shoulders. \$2.4m was transferred from 9055 to 9075. If funding increases and as the 9075 account matures, we plan on expanding this account to cover all projects completed by maintenance that add value to the system.

Unfortunately, funding levels set forth in the State Highway Fund Budget for 2010 severely reduced MST. MST was scaled back early in the year from 600 to about 400 miles when we advertised for bids in May, pending legislative action. Based upon the passed budget, we only paved about 250 miles this year. This is the lowest level in recent memory. Proposed MST projects were re-prioritized to match the reduced funding based upon road condition, traveler impacts, the functional classification of the road, traffic volumes, and the desire to award work to all of the successful bidding pavement contractors.

In addition to the MST cutbacks, state funded capitol improvement projects, five to ten foot culvert replacement (STRUTS) and the state aid crew projects were put on hold for the year. The only projects funded using state funds were those that were actively under construction as a state-aid project.

**Expenditures:**

The following tables list the costs associated with each activity for 2010 as compared to a three year average:

	<b>07-09</b>	<b>2010</b>
	<b>3 year ave.</b>	
<b>SURFACE AND BASE MAINTENANCE</b>	<b>\$ 15,181,352.82</b>	<b>\$9,198,379.14</b>
ROADWAY BASE GRAVEL		
SEALING CRACKS	\$ 21,760.94	\$180.00
REPAIRING SURFACE	\$ 3,776,836.22	\$6,049,104.98
SHIMMING	\$ 842,622.49	\$200,148.57
PLACING HOT MIX	\$ 73,389.72	
MST LAY DOWN*	\$ 5,844,708.71	\$109,866.38
MST TRUCKING*		\$2,913.63
GRADING SHOULDER & GRAV RDS	\$ 1,420,232.51	\$953,914.11
REBUILD/REPAIR SHOULDER*	\$ 3,201,802.23	\$1,882,251.47
ADM		\$3,040,777.41
CREW		1932103.949
CP		79,540

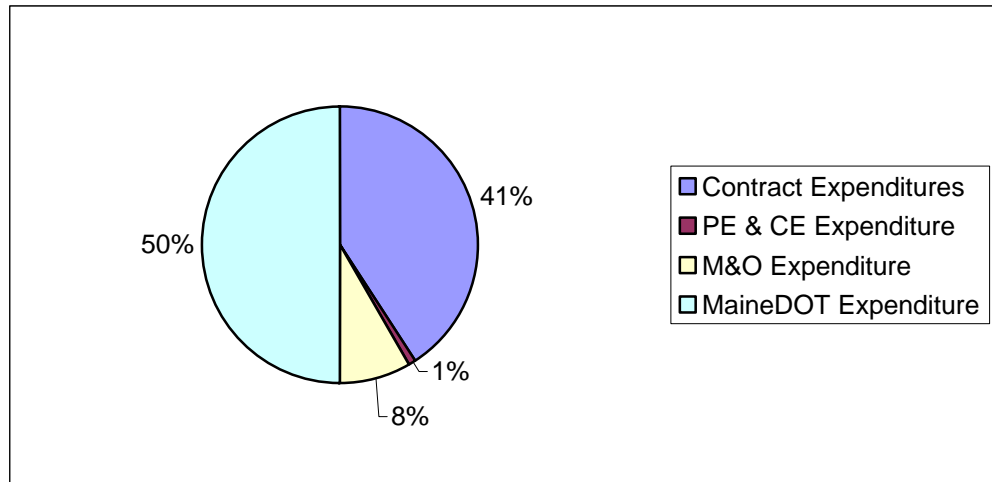
\* Note: shifted \$2.4m from 9055 account to the 9075 account. Also reflects cut backs in mileage and reductions in state aid construction work.

**Accomplishments for Surface and Base Maintenance:**

<b>SURFACE AND BASE MAINTENANCE</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>Unit of Measure</b>
ROADWAY BASE CUTS AND FILLS	N/A			
ROADWAY BASE GRAVEL	N/A			
SEALING CRACKS	N/A		0	
REPAIRING SURFACE	20,763	18,995	15,476	Tons
SHIMMING	84,458	17,836	3,302	Tons
PLACING HOT MIX				
MST LAY DOWN	574,476	543,249	160,724	Tons
MST TRUCKING	N/A	N/A	104,530	Tons
GRADING SHOULDER & GRAV RDS	10,214	9,234	5,520	Shoulder Mile
REBUILD/REPAIR SHOULDER	251	263	299	Shoulder Mile

**Accomplishments and Expenditures for MST:**

Region	(mi)	Contract Expenditures	PE & CE Expenditure	M&O Expenditure	MaineDOT Expenditure	% Complete (Tonnage)
REG 1	42.3	\$1,221,355.59	\$22,210.68	\$278,768.59	\$1,522,334.86	100.28%
REG 2	63.3	\$1,888,924.95	\$48,198.42	\$431,917.95	\$2,369,041.32	94.88%
REG 3	48	\$1,394,521.98	\$38,617.53	\$204,062.08	\$1,637,201.59	98.65%
REG 4	59.3	\$1,909,676.47	\$21,507.36	\$368,933.81	\$2,300,117.64	100.09%
REG 5	40.1	\$1,379,221.69	\$28,165.63	\$331,365.78	\$1,738,753.10	98.98%
	<b>253</b>	<b>\$7,793,700.68</b>	<b>\$158,699.62</b>	<b>\$1,615,048.21</b>	<b>\$9,567,448.51</b>	<b>98.34%</b>

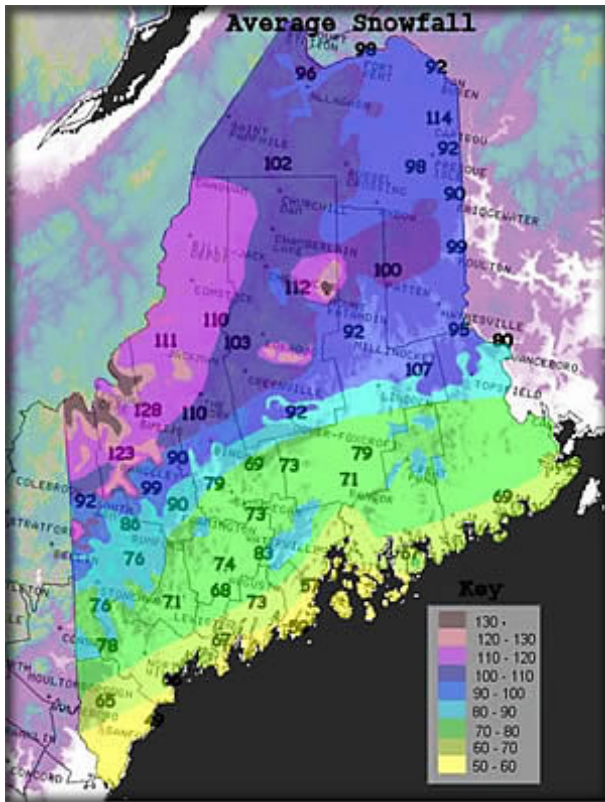


- The cost for patching potholes was \$1.5m over the three-year average. Part of this increase is due to the continued inflationary cost of materials, along with the deteriorated pavement conditions, as a result of ten-years plus pavement cycles.
- Shimming, grading shoulders, and rebuilding shoulder activities were at record lows due to reduced funding for state aid construction and the MST program.

**Challenges:**

- The Department will be able to re-establish the MST program to over 600 miles in 2011. However with the reduction of mileages for MST in the last few years, the roadway network will take several years to get back to a seven year paving cycle.

## VII. Snow and Ice Control



### I. Overview

MaineDOT has a fleet of roughly 400 plow trucks that is used to control snow and ice on approximately 8,600 lane miles of Maine's state roads (not including 400 other lane miles that are contracted with municipalities and private contractors). Like most entities that control snow and ice on high-speed, high-volume highways, MaineDOT uses an anti-icing approach that is very effective for returning roads to bare pavement after a storm ends.

Maine typically receives an annual snowfall of 60 to 70 inches in the southern part of the state and about 110 inches in the western mountains and northern areas. Average winter temperatures are usually between 13

and 23 degrees, but minimum temperatures into the -20s and below are not uncommon. MaineDOT usually plans on an average of 30 "treatable" events in a winter.

### II. Winter 2009-2010

The winter of 2009-2010 was a much lighter winter than Maine typically receives. Instead of the normal storm average of 30 treatable events, this past winter had an average of 24 events statewide. As a result, overall costs were below average for the year. When considering the direct costs associated with the labor to run the plow trucks, the materials purchased and the equipment costs, the total for the year was just over \$22m. However, in order to fully quantify what a snow and ice program costs, one must also consider the numerous expenses that support the program as a whole. This would include such items as: supervision and oversight of the personnel, training programs, contract administration and oversight; a portion of the overhead for storing equipment and materials, and a portion of the equipment "standby" that is needed to address the occasional conditions we know we will face.

Material usage is often a point of focus in any snow and ice program. This is not only due to the fact that material costs account for one third of the overall winter expenditure, but also because materials can have a direct and lasting impact on the environment.

Like MaineDOT's snow and ice program as a whole, material selection and use is a delicate balance between cost, safety (level-of-service), and the environment. Unfortunately, every material has its drawbacks. We strive to minimize what we need to use to keep the roads safe and passable. Fortunately, we have several partners and resources to help us achieve this goal.



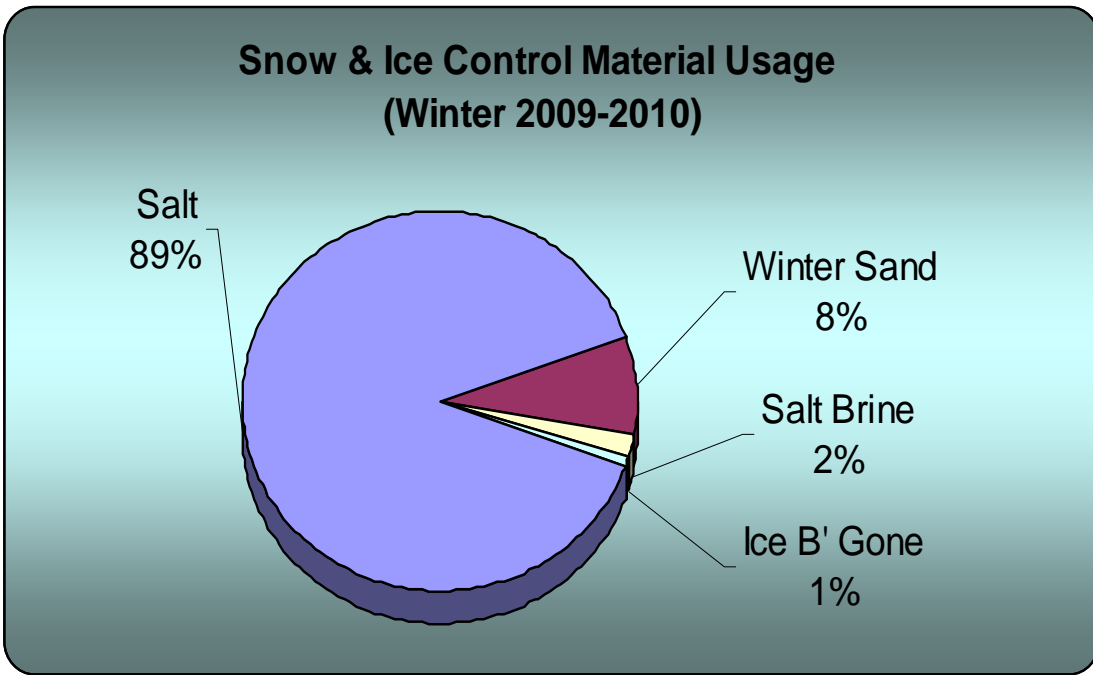
From an environmental standpoint, the EPA has offered guidance and advice through its Design for the Environment program and through publications such as EPA 901-F-05-

When winter storms fall into the lower temperatures (below roughly 20 degrees F), rock salt becomes less effective at controlling the buildup of snow and ice on the highways and greater amounts are required to keep the roads safe. To help offset this increased use of salt, MaineDOT will “pre-wet” its rock salt with a small amount of a product known as Ice B’ Gone. Ice B’ Gone is not only more effective at lower temperatures, but it is one of the few snow and ice control products that has been recognized by the EPA as being “Designed for the Environment” (DfE). For more information on the DfE program, please visit <http://www.epa.gov/dfe/>

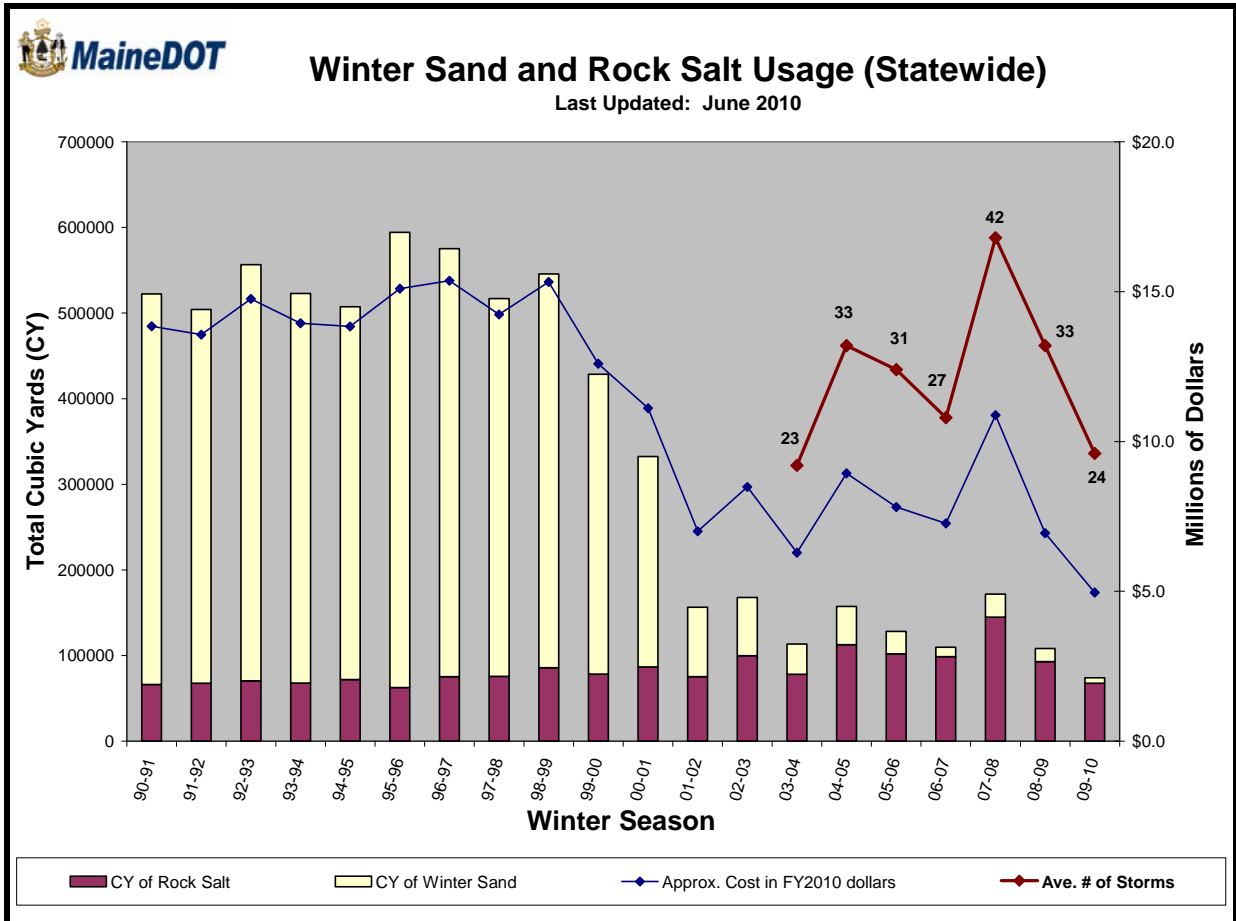
020, which discuss the various material trade-off's and the responsible steps that snow and ice agencies can take to assure that they are being good stewards of the environment. In addition, the National Cooperative Highway Research Program (NCHRP) produced Report 577, *Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts*, which compiled the available research and produced a comprehensive decision tool that allows agencies to weigh various competing concerns, such as cost and performance against several considerations associated with corrosion, and environmental impacts to obtain a final material recommendation. Efforts of this type do not focus on a single aspect of the balance triangle and attempt to treat them as an independent consideration.

Instead, they address the complexity of the overall issue, which provides tremendous practical value for the public agencies tasked with providing a balanced service.

The chart below demonstrates the distribution of MaineDOT's material usage, expressed as a percentage of the total cubic yards used for the winter of 2009-2010 (for comparison purposes, a cubic yard of salt is taken to be roughly equivalent to one ton of salt):



The following graph indicates how overall material usage has changed since 1990, how that relates to current-day material costs and, in recent years, how the average number of storms has varied. It is interesting to note that, while the storms themselves vary widely, if one could predict the number of times the transportation system would be impacted by winter events, the material resources required to provide our current level of service standards could be fairly accurately identified.



I

### III. Continuous Improvement

MaineDOT works closely with its multi-state snow belt northern tier counterparts to ensure that we are making the most of the latest technologies, equipment and strategies. Participation in the Clear Roads organization – a pooled fund winter highway operations research group consisting of 18 member states - has been an essential link to the national and global snow and ice knowledge base. The Clear Roads web site may be visited at: [www.clearroads.org](http://www.clearroads.org). As a result of the interactions within this group, and others such as the Tri-state group of Maine, New Hampshire and Vermont, we are able to make comparisons to see how our choices of operational strategy and level-of-service affect the overall resources required. The following table compares the overall salt usage for MaineDOT with that of its neighboring states for the winter 2009-2010:

**WINTER 2009-2010**

<b>STATE</b>	<b>ME</b>	<b>NY</b>	<b>NH</b>	<b>VT</b>	<b>MA</b>
<b>Lane Miles</b>	8,200	43,000	8,300	3,400	20,000
<b>Salt Used</b>	68K	680K	124K	57K	372K
<b>Tons/LM</b>	<b>8</b>	<b>16</b>	<b>15</b>	<b>17</b>	<b>19</b>

Again, since 2009-2010 was a lighter winter than average, an overview of the previous winter is also provided for some additional perspective:

**WINTER 2008-2009 (More of an "Average Winter")**

<b>STATE</b>	<b>ME</b>	<b>NY</b>	<b>NH</b>	<b>VT</b>	<b>MA</b>
<b>Lane Miles</b>	8,200	43,000	8,300	3,400	20,000
<b>Salt Used</b>	92K	950K	160K	72K	610K
<b>Tons/LM</b>	<b>11</b>	<b>22</b>	<b>19</b>	<b>21</b>	<b>38</b>

MaineDOT's drive to continuously improve its snow and ice program spurs numerous research projects during the winter months, and this past winter was no exception. Previous winters have brought European technology and strategies to Maine that are now widespread throughout the country (e.g. the Schmidt Stratos spreader and "slurry spreading" techniques). This past winter MaineDOT evaluated high-performance carbide blades, an underbody spring tooth plow that conforms to misshapen roads, and a TowPlow that has been used successfully in many other states. Many of these have been formally captured and documented on the Transportation Research section of MaineDOT's web site and can be accessed at the following web address:  
<http://www.maine.gov/mdot/tr/reports/wintermaintenance.htm>

**MaineDOT’s TowPlow**

Maine is one of several northern states that have been utilizing a new piece of equipment technology known as the TowPlow. The TowPlow offers the ability to clear a much wider swath of highway in a single pass, while still using only a single plow truck and operator. Initial results have been positive and we will continue to experiment with this technology to identify its most efficient use.



More information is available on MaineDOT’s snow and ice program at the following web site: <http://www.maine.gov/mdot/snowandice/>

**Expenditures:**

The following tables lists the costs associated with each activity for 2010 as compared to a three year average.

	<b>07-09</b>	
	<b>3 year ave</b>	<b>2010</b>
<b>WINTER MAINTENANCE</b>	<b>\$27,973,877</b>	<b>\$22,148,144</b>
THAWING MINOR DRAIN STRUCTURE	\$241,927	\$29,791
PRODUCING WINTER SAND/SALT BRI	\$210,412	\$220,258
SNOW & ICE CONTROL	\$26,285,717	\$21,192,126
ANTI ICING	\$339,652	\$20,537
NIGHT PATROL/RADIO OPERATIONS	\$896,169	\$685,433
ADM		\$7,321,679
CREW		\$4,652,180
CP		\$191,520

## VIII. System Operations

M&O's obligations consist of managing and operating different services. This primarily consists of operating the Ferry Service, moveable bridges, Traffic Engineering services, and handling emergencies situations. Some of these activities generate revenue to offset operating costs, however, there is no net profit and typically they run at a loss.

Responding to emergencies is an unplanned activity that can negatively impact budgets. When natural disasters reach certain monetary thresholds, FEMA and ER reimburse the State, offsetting a portion of the costs to infrastructure damages. That money is captured in the Administration Category.

The Traffic Engineering Division (TE) is a multi-disciplinary unit within M&O, dealing with safety and mobility aspects of the roadway system. TE staff delivers information to staff in M & O and other Bureaus, consultants, municipalities, other state agencies and the regular traveling public. The information given and issues resolved cover the aspects of signing, striping, stenciling, speed zones, driveway/entrance permits, traffic/movement permits, traffic counts, classifications, crash data, OBDS program, electrical, vegetation management, weigh-in-motion, developer review and the traffic project development section. For the complete traffic report see appendix F

### Expenditures:

	<b>3 year ave.</b>	<b>2010</b>
<b>SYSTEMS OPERATIONS</b>	<b>\$3,350,878</b>	<b>\$3,805,902</b>
TOWN PAYMENTS*		
PLANNING AND TECH ASSISTANCE*		
OPERATING TRAVELER FACILITIES*		
FERRY SERVICE OPERATIONS*		
ADMINISTRATIVE ASSISTANCE*		
OPERATING ASSISTANCE*		
RESPONDING TO EMERGENCIES	\$652,505	\$807,963
ENGINEERING-TRAFFIC	\$780,909	\$913,932
ENGINEERING TECHNICIANS-TRAFFI	\$118,777	\$197,430
MOVEABLE BRIDGE-OPERATIONS	\$1,217,788	\$1,439,314
PROCURING EQP - EXT OPERATORS		
CONDUCTING TRAFFIC STUDIES	\$52,546	\$36,112
OPERATIONAL COMMUNICATIONS		
REVIEWING ENTRANCES	\$528,352	\$411,151
NEW ACTIVITIES FOR 2011*		

### Accomplishments:

- Responding to emergencies costs over \$800,000. Natural disasters reaching the minimum threshold for FEMA reimbursements offset these charges by \$400,000.

- Expended over \$1,4m on maintaining and operating moveable bridges for coastal navigation.
- Approximately 1000 routine crash data requests were processed for users within MaineDOT, other state, federal and local government agencies, consultant firms, legal firms, and private individuals.
- The crash data from 2009 (20,432 reports) and 2010 (12,465 reports) were reviewed, located, edited and exported to the Crash Analysis System, CAS.
- ITS finished installing radar, camera units and 45 mph variable speed signs along the interstate from Scarborough to Houlton.
- Reviewed, adjusted and issued approximately 40 traffic movement permits.
- Advertised fifteen federal traffic projects totaling over \$6.3m.

### **Utility Permitting:**

Utility permitting along and within Maine's transportation corridors is an essential activity that assures the highway corridors can continue to operate efficiently and that the public's investment is protected.

There are two primary types of permits involved:

- Location Permits
- Highway Opening Permits

**Location Permits:** Grant the legal right for a utility or utility like entity to occupy a specific location within the right-of-way. Title 35-A, MRSA Chapter 23 identifies the various types of utilities/entities that may be permitted within highway corridors subject to the terms and conditions of MaineDOT (as the licensing authority for state aid and state highway corridors). In FY 2010, MaineDOT processed over 450 Location Permits.

**Highway Opening Permits:** Highway Opening Permits are somewhat related to Location Permits in that they often go hand-in-hand, however the purpose of a Highway Opening Permit is to assure that any excavation within the highway corridor includes the necessary provisions to adequately protect the traveling public and to properly restore the highway structure and any impacted abutting properties. In FY 2010, MaineDOT issued over 400 Highway Opening Permits.

## IX. Department Building and Lot Maintenance

M&O manages its 150 facilities with hundreds of buildings across the state. Many of these facilities have buildings that are 40 to 50 years old and in need of constant maintenance. There are two funding mechanisms to maintain these facilities. Regions address the everyday maintenance responsibilities, whereas the Facilities Fund was designed to address the capitol expenditures that add value to the building.

The Facility Fund was created to help manage the Department's facilities on a statewide basis. The funds are intended to address deficiencies in MaineDOT buildings and to capture the true cost of maintaining, rehabilitating or replacing our buildings, but have not met that objective due to the limited resources and financial cutback experienced over the last few years. The initial infusion of \$10.26m, allocated from the FY -05 Balance Forward account in 9055, has not been sustained with additional biennial funding. In 2007, planned projects were cancelled to stretch the limited funding that remained, after acknowledging the extreme financial constraints the State and MaineDOT were experiencing. In FY 09-10, the only completed work addressed critical safety issues, leaking roofs and additional ceiling insulation

### Expenditures:

The following tables lists the costs associated with each activity for 2010 as compared to a three year average.

<b>M&amp;O - 9055</b>	<b>3 Year Ave</b>	<b>2010</b>
<b>DEPARTMENT BUILDING AND LOT MAINTENANCE</b>	<b>\$7,849,463</b>	<b>\$7,672,027</b>
MAINTAINING BUILDINGS	\$5,202,691	\$5,190,294
BUILDING CONSTRUCTION	\$395,822	\$298,629

<b>FACILITY FUND -3010</b>	<b>3 Year Ave</b>	<b>2010</b>
<b>DEPARTMENT BUILDING &amp; LOT MAINTENANCE</b>	<b>\$3,687,899</b>	<b>\$416,272</b>
NEW BUILDING	\$3,084,543	\$96,336
MAJOR REHABILITATION	\$254,740	\$240,262
MAJOR MAINTENANCE	\$341,631	\$79,671

**Accomplishments:**

- Expended \$7,400,000 on operational and routine maintenance of our 595 buildings and 450 lots.
- Renovated two salt sheds.

**Challenges:**

The current Facility Fund Plan demonstrates the need to re-establish the non-lapsing biennial funding mechanism required to meet the critical needs of our buildings. The priorities for funding are:

- Addressing safety issues
- Providing appropriate working conditions
- Adequately maintaining and repairing buildings
- Addressing environmental issues
- Implementing recommendations for consolidation of crews
- Providing garage space for heavy equipment

## X. Infrastructure Inspections and Inventory

The challenges to our transportation system continue to intensify: high user demand, stretched budgets, declining staff resources, increasing complexity, more stringent accountability requirements, rapid technological change, and a deteriorating transportation infrastructure. To address these challenges Transportation Asset Management has been the key to finding the most effective and cost-efficient balance of preserving, upgrading, and replacing transportation system assets in this environment.

Transportation Asset Management relies on accurate inventories and data collection. Programs have to be directed toward defined performance goals and performance measures. The data for each performance measure must be collected and analyzed. Targets are then set and tracked throughout the year. Good data is the foundation of performance measurement.



To do this MaineDOT must continue to collect information through inspections and inventories. Good data allows managers the ability to analyze different alternatives and select a preferred alternative to maximize the benefit for infrastructure management.

Maintenance currently relies heavily on our Maintenance Accountability Tracking System better known as MATS.

Through routine inspections, emergency repairs can also be identified and completed before critical damage is done to the infrastructure. Whether it is flooding, change in traffic patterns or vandalism, work requests can be developed to ensure asset serviceability under a wide array of changing conditions.

M&O has its own trained Dive Team. This year the Dive Team’s Training included completion of a two day water diver rescue course by a PADI instructor and a bridge inspection review course.

**Expenditures**

The following tables lists the costs associated with each activity for 2010 as compared to a three year average.

	<b>3 year ave.</b>	<b>2010</b>
<b>INFRASTRUCTURE INSPECTIONS AND INVENTORY</b>	\$61,997	\$425,155
ASSET INVENTORY & DOC	\$13	\$386,653
UNDERWATER INSPECTION	\$7,808	\$7,774
BRIDGE INSPECTION	\$54,184	\$30,728

**Accomplishments:**

Below are the accomplishments for 2007 through 2010

ASSET INVENTORY & DOC	N/A	N/A	34	39,904 Each
UNDERWATER INSPECTION	278	178	178	164 Each
BRIDGE INSPECTION	1,296	4,692	3,113	1,285 Each

**The following activities were performed:**

- 140 underwater bridge inspections, four underwater Ferry Terminal inspections, inspected the sewer for Lincolnville Ferry Terminal and inspected the construction on the Isleboro Ferry Terminal, tower pier cofferdam.
- 2,300 bridges were inspected this past year by six full time and two part time NBI-certified bridge inspectors.

## **XI. Crew Operations**

Crew Operations consist of activities to support a planned operation, to maintain equipment and to process paperwork. They are generally operational, but could be assigned to other work activities. They are tracked separately, which enables us to monitor cost and efficiency.

Standby (SBY) was created to measure the utilization of our fleet, by tracking the amount of time heavy equipment is idle and not reportable to an activity. We are capturing the cost of idle equipment during some activities, like snow and ice control. A higher SBY cost is a reflection of a mild winter, when specialty equipment, similar to a fire truck, may not be needed today, but might be needed tomorrow. In other situations, tracking SBY cost may indicate equipment that could be reassigned or is being under-utilized.

The “Transporting Equipment for Repairs” activity tracks the cost associated with transporting equipment for repairs or service. The “Equipment Service and Repair” activity captures the cost of maintenance crews performing daily and/or routine 50 hour maintenance on fleet equipment.

Crew Supervision, along with Patrolling and Inspecting, are typically activities to which the Crew Supervisors charge their time. These activities include the time to plan, implement and document the work for the crews, along with answering complaints and managing the crew issues.

Transporting and Stockpiling Material is an activity designed to track the cost associated with moving material to meet operational needs. An example of this is the distribution of salt from central locations to outlying camps for future storms. Now, most of the work completed under this activity includes handling recycled asphalt, stockpiling supplies and stock piling gravel.

**Expenditures:**

The following tables lists the costs associated with each activity for 2010 as compared to a three year average.

	<b>3 Yr Ave</b>	<b>2010</b>
<b>CREW OPERATIONS</b>	<b>\$18,917,174</b>	<b>\$17,846,108</b>
EQUIPMENT STANDBY	\$2,309,140	\$3,981,216
PROCESSING AGGREGATES	\$299,624	\$3,280
PRODUCING BITUMINOUS MATERIAL	\$291,204	\$869
STOCKPILING/TRANSPORTING MAT	\$2,023,570	\$1,526,204
SIGN SHOP OPERATIONS	\$759,535	\$553,535
CREW SUPERVISION & DOCUMENTATI	\$9,235,687	\$7,591,859
INSTALL/REPAIR RADIOS	\$236,666	\$90,009
TRANSPORTING EQUIP FOR REPAIRS	\$1,151,959	\$1,332,594
MTS/PVT/M&O EQUIP SERV & REPAI	\$3,331,199	\$2,766,541

**Accomplishments:**

Below are the accomplishments for 2008 through 2010

<b>CREW OPERATIONS</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>Units Of Measure</b>
EQUIPMENT STANDBY				
PROCESSING AGGREGATES	72,716	34,139	110	Tons
PRODUCING BITUMINOUS MATERIAL	98,841	45,003	78	Tons
STOCKPILING/TRANSPORTING MAT	1,708,648	1,364,810	552,106	Units
SIGN SHOP OPERATIONS	9,139	8,035	8,157	Hour
CREW SUPERVISION & DOCUMENTATI	210,166	186,231	158,155	Hour
INSTALL/REPAIR RADIOS	555	76	1	Each
TRANSPORTING EQUIP FOR REPAIRS	2,938	2,759	3,037	Each
MTS/PVT/M&O EQUIP SERV & REPAI	76,876	82,738	67,915	Hour

- Standby, the fixed cost of equipment not used for a week or more, was higher than average this year. The increase was primarily due to the mild winter. Even though the cost was high, we saved a considerable amount of money on the hourly rate, less gas, repairs and personnel costs. (Refer to snow and ice grouping.)
- Due to a lack of funding, the Department's light capital program (pug-mill and state-aid program) was reduced substantially. This reduction is reflected in the minimal amounts of processed aggregate and produced bituminous material and reductions in stockpiling and transporting materials.
- Crew Supervision was reduced by \$1.5m due to efficiencies realized by crew consolidation, increased crew size, less overtime hours and more accurate coding.
- Crew Operations is distributed among all the Work Groupings

## **XII. Department, Bureau and Office Administration**

Administration grouping covers the overhead required to support the Bureau, both within the headquarters staff and regional offices. This grouping covers the direct and indirect administrative charges of the staff, along with training, other miscellaneous, and related traffic-planning studies/programs. This grouping also includes the cost for overseeing force account construction work (activity 919).

The Admin activity collects the largest portion of “errant” coding and is therefore the easiest activity to use as a “catch-all.” This coming year, the Bureau will be focusing on better reporting to more accurately capture the real costs of activities and projects. With targeted training and new review practices, errant coding will be reduced to ensure that actual costs are charged to the appropriate activities.

### **Other (OTH)**

A primary activity noted within the Admin Grouping is OTH (Miscellaneous Other) which is really not an actual work activity. OTH is an internal budget category that allows M & O to combine a number of activities that have relatively low cost, and/or are unpredictable expenses, into one category for Work Plan purposes. This OTH budget category also contains the activity in which various financial reimbursements are received, such as Federal FEMA and FHWA credits against eligible claims and insurance reimbursements for damage to state property.

### **Expenditures:**

The following lists the costs associated with each activity for 2010 as compared to the three year average.

	<b>2010</b>
<b>MISCELLANEOUS EXPEND</b>	\$2,402,712
REIMBURSEMENTS FOR FEMA, FHWA, ETC	-\$6,393,269

- Collected over \$400,000 in FEMA and insurance reimbursements

### **Training and Meetings:**

With a Bureau as large, diverse and specialized as M&O, training, meetings and conferences are essential to maintain a safe, skilled, certified and informed staff. As we implement the Transportation Worker series, training will remain a key to a smaller, highly skilled, and diversified work force. To help defer costs, employees will utilize on-line training, webinars, and videoconferencing, rather than sending large groups of

individuals to workshops. Coaches and mentors will also play a key role. The coaches will formally mentor peers for the hands-on training necessary to meet certification requirements for various equipment and systems.

**Expenditures and Accomplishments:**

The following tables lists the costs associated with each activity for 2010 as compared to the three year average.

	<b>07-09</b>	
	<b>3 year Ave</b>	<b>2010</b>
	<b>\$3,371,083.89</b>	<b>\$3,876,122.44</b>
<b>MEETINGS &amp; CONFERENCES</b>	\$1,159,836.61	\$1,201,069.18
<b>TRAINING</b>	\$2,211,247.28	\$2,675,053.26

**Planning and Traffic Studies/Programs:**

The Bureau supports the whole Department by collecting traffic and crash data for planning and studies. The primary purpose of the Crash Records System is to maintain a database of all crashes statewide. Crash data is constantly being added as the information is received. The information gathered is used by Department personnel for choosing potential safety projects and spot improvements by the Department.

**Expenditures and Accomplishments:**

The following tables lists the costs associated with each activity for 2010 as compared to the three year average.

	<b>3 year ave.</b>	<b>2010</b>
<b>PLANNING &amp; STUDIES</b>	\$ 1,427,652.31	\$1,233,545.59

**Highlights:**

- Planning activity budget is trending downward.
- We processed 716 applications in 2009 under the Official Business Directional Sign Program.
- We collected 24 hour volume counts at 3,299 locations and collected 48 hour control counts at 314 sites.
- We processed 1,000 routine crash data requests.

**Force Account Work:**

At times, it makes more financial sense for M&O to perform construction type work. This is called Force Account or Alternate Construction Methods. Justification needs to be presented before these types of projects are performed. They typically fall under a few categories, such as small or hard-to-bid projects, research and development projects or other specialized projects. Each Region has a small specialty or state-aid crew that typically uses hired equipment and small contract bidding to complete these projects. The benefit for M&O performing this work versus contractors is that no profit payout and materials are purchased on state contracts and no sales tax is included.

**Expenditures and Accomplishments:**

The following tables lists the costs associated with each activity for 2010 as compared to the three year average.

	<b>3 yr ave</b>	<b>FY 2010</b>
<b>FORCE ACCOUNT CONSTRUCTION</b>	\$904,045	\$1,086,869

- Force account work was reduced in FY 2010/2011 due to budget cuts. In FY 2011, force account funding was reinstated.

**Administration:**

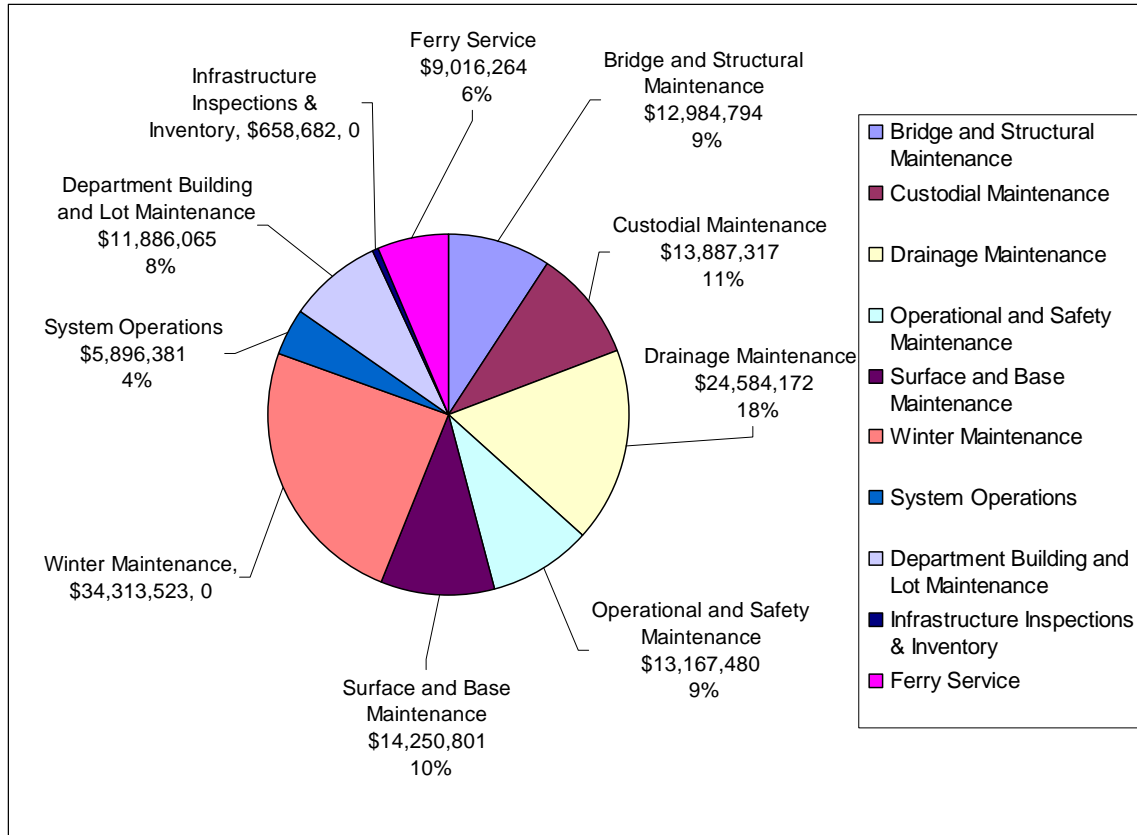
The total monies spent in FY 2010 were \$140.5m. The gross bureau and office administrative cost was nearly \$19.5m. A breakdown of administrative expenditures consists of four categories in the general report: Office of Information Technology, Fleet Administration, and Direct Work Activity Administration. The net General Administration cost for Maintenance and Operations was \$6m.

The other areas that were lumped into the gross administrative cost heading accumulate to \$13.5m. A large portion of the gross administrative cost was direct work activity Administration. That total was approximately \$5.8m. The Direct Work Activity groupings include:

- Winter maintenance
- System operations
- Surface and base maintenance
- Operational and safety maintenance
- Infrastructure inspections and inventory
- Drainage maintenance
- Building and lot maintenance
- Custodial maintenance
- Bridge and structural maintenance

The other two administrative costs broken out were OIT payments and Fleet Administration. The OIT expenditures are made up from OIT services provided for computers, software, networks, two-way radios, cell phone, e-mail, etc. This cost is nearly \$3.7m. Fleet Administration is largely the unfunded gap between depreciation schedules and replacement costs for equipment. It also includes insurances, fuel & oil, parts, and training. It totals nearly \$4m.

### 2010 Total Expenditure distributed by Major Work Groupings



### **XIII. Fleet Services**

Fleet Services (Fleet) has an internal service fund within the Bureau of Maintenance and Operations. Fleet has its own appropriation and budget, which is legislatively approved. Fleet Services provides oversight of MaineDOT's equipment, from the purchasing process through the cost associated with maintaining the equipment. As part of these functions, they oversee the stockrooms and fuel services units. Having a central headquarters in Augusta and regional facilities statewide ensures proper maintenance and repairs are performed to keep equipment in a reasonably serviceable condition.

Fleet's revenue comes from charging the Regions, Units and other Bureaus fees for the equipment they purchase and service. The rates are split into a daily rate or fixed charge and hourly rate or variable rate. The daily fee rate is established by depreciating the vehicles over periods of 3 to 15 years, with insurance and administrative charges divided by the typical use, either 260, 160 or 100 days a year. The hourly rate recoups the cost of the parts and labor for the maintenance, fuel cost and overhead burden.

In fiscal year 2009, Highway Maintenance and Fleet agreed to increase the fiscal year 2010 replacement of wheelers (dual axle plow trucks) and patrol trucks (single axle plow trucks) by 20 units, at a cost of \$2.5m, and to eliminate all plow truck replacement in fiscal year 2011. This management decision resulted in the avoidance of purchasing trucks in the first year of a significant engine emissions change which was projected to have an increase of upwards of \$10,000.00 per unit. It also pushed the purchase of 25-30 units out to fiscal years 2012 and 2013 which gives truck manufacturers time to perfect the emissions changes before MaineDOT commits to a purchase.

During fiscal year 2010, all other costs to Fleet decreased by \$8.7m. Transfer of light fleet to Central Fleet Management eliminated costs to Fleet of \$1.8m. There was also a significant reduction in the use of the heavy fleet, attributable to the very light winter we experienced, which when combined with a management decision to lock in on the cost of diesel fuel, reduced our cost by \$1.9m.

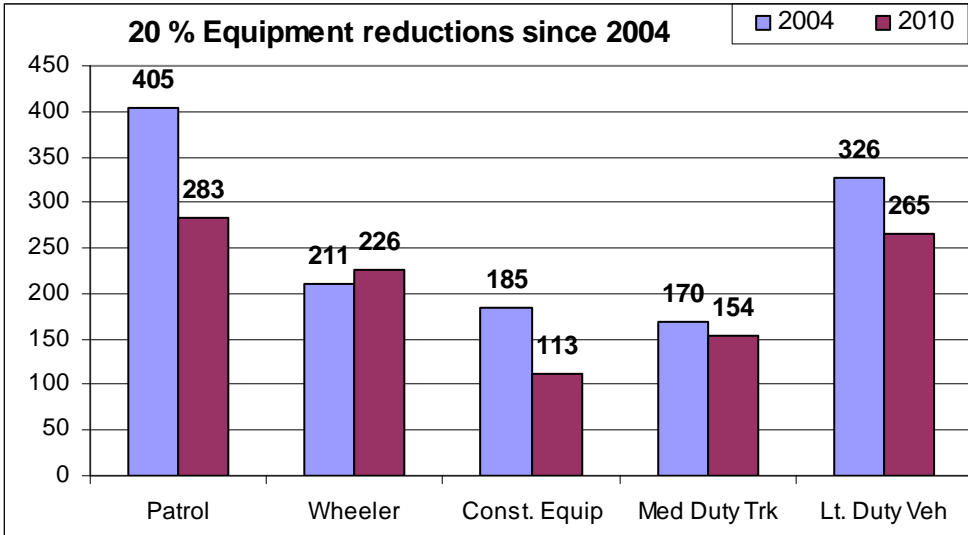


Replacing a significant number of wheelers and patrol trucks in fiscal year 2010 gave Fleet the opportunity to make sound management decisions for repair or replacement on units that had significant failures throughout the year. The result was a decrease of \$3.6m in the cost of repairs for Fleet Services.

The cost of highway garage materials for Fleet decreased by \$1.5m. That is attributable to a management decision to have the Highway Fund pay for plow steel directly. The cost to the Highway Fund was also reduced somewhat by the participation in the tri-state contract for plow blades.

#### **Accomplishments:**

- **Focused on Heavy Fleet:** MaineDOT transferred our light fleet (cars and pick ups) to Central Fleet Management under the Department of Administrative and Financial Services (DAFS). This allows Fleet Services to focus on its primary function, supporting heavy fleet and specialty equipment. This resulted in increased productivity and a savings of over a half million dollars since October of 2009.
- **Regionalized Central Warehouse:** Fleet Services changed the management strategy of a central warehouse to shipping orders directly to Regions and crews. By closing Fleet's central warehouse, the Bureau was able to gain efficiencies by implementing just-in-time deliveries that eliminated redundant handling and warehousing of product and minimized internal transportation costs. This has resulted in an estimated savings of nearly a half million dollars.
- **Standardizing the Heavy Fleet:** Fleet has partnered with the Bureau of Purchases to make every attempt to standardize the heavy fleet while keeping within proper procurement procedures. To date, MaineDOT's plow truck fleet is primarily comprised of International and Volvo trucks. This standardization has enabled Fleet to carry parts and provide training on two manufacturers instead of multiple suppliers.
- **Continued Equipment Replacement Plan:** Fleet has projected replacement need for equipment over the next 10 years, which was determined by the ratio of cumulative annual Capital investment versus annual maintenance costs and the cumulative annual usage of similar equipment. The level of replacement need is based on estimated annual hourly usage over the next 10 years.
- **Refurbished Equipment Program:** Fleet Services continued with the removal and refurbishment of components from trucks scheduled for disposal for use on new equipment. This resulted in savings of approximately \$1.2m in fiscal year 2010.
- **Purchasing Passenger Busses:** M&O has partnered with the Office of Passenger Transport to provide technical expertise utilizing existing Fleet staff in order to provide a more efficient process. This has resulted in faster and more accurate delivery to our passenger bus customers.
- **Forming Partnerships:** Fleet has formed a partnership with Maine Center for Disease Control becoming the key delivery service to meet critical distribution needs. Fleet also has partnered with the Maine Army National Guard to provide heavy vehicle and equipment training and maintenance for their non- military employees and equipment. Constantly working with numerous municipalities and other state and quasi state agencies for the purchase of fuel in an effort to reduce overall cost for all.



## **XIV. Ferry Services**

The Maine State Ferry Service (MSFS) provides a vital link between the mainland and the island communities of Islesboro, North Haven, Swans Island, Vinalhaven, Frenchboro and Matinicus. MaineDOT is committed to operating a safe and reliable service that links the island communities to the mainland. There are seven boats to provide this service. MaineDOT is also concerned about the impacts of rising fares, surcharges and fees on island residents, and is committed to working closely with the Ferry Service Advisory Board to develop alternatives to rate increases. The Maine Department of Transportation (MaineDOT) owns, operates and maintains the ferries and the associated infrastructure including transfer bridges, terminal buildings and crew quarters. MaineDOT also employs all Maine State Ferry Service personnel. By law, at least 50% of the costs of operating the Ferry Service must come from its users. The role of the Ferry Service Advisory Board is to advise the Department on Ferry Service issues and ensure communication between MaineDOT and the island communities.

Since 2005, the costs of operating the Ferry Service have increased substantially, resulting in annual double-digit rate increases. The last increase was a surcharge that went into effect on July 1, 2009. The Ferry Service Advisory Board recommended the surcharge as a temporary increase that could be eliminated by cost savings and/or revenue enhancements identified in the Business Plan.

Operating costs are projected to continue to increase over the next five years. Unless there are significant cuts (\$300,000 to \$500,000 annually) and/or additional revenues from other sources, the surcharge will become permanent and additional fare and parking fee increases will likely be needed by July 1, 2011.

### **Business Plan highlights include:**

- Rising operating costs. The Maine State Ferry Service's (operating costs have grown from \$6.3m in FY 2005 to \$8.6m in FY 2009, and are expected to increase to \$9.2m in FY 2010.
- Additional maintenance and capital costs. Each year, MaineDOT invests in maintenance the capital needs (over \$3m annually since FY 2007; over \$7m just in FY 2008).
- Future fare increases. In the absence of significant cost cutting or substantial revenue enhancement, future fare increases of 10% or more are likely to begin on July 1, 2011.
- Cost cutting and revenue enhancement options. There are a number of cost-cutting and revenue enhancement steps that can be taken, as outlined in MSFS business plan dated July 1, 2010
- Needed actions. the MaineDOT estimates that it will have to implement many of the major cost-cutting options, as well as rely on major revenue enhancements, to minimize fare and parking fee increases.

- Municipal contributions. Municipal contributions constitute a potential source of new revenue, and would have a minor impact on each \$100,000 of assessed value.
- Comparison to other systems. The passenger fares charged by the MSFS are generally lower than those of other systems.
- Island financial management priorities. The MSFS Business Plan contains island by island ratings of the financial management options for ensuring the long-range viability of the Ferry Service.

## **XV. Intelligent Transportation Systems (ITS)**

What are the transportation problems facing the surface transportation system, as we enter the 21st century? There are many, and they are similar across the world in industrial nations. One set of problems centers on the growing congestion of highways and roads. It is common knowledge that the U.S. surface transportation system is increasingly congested, and that many hours are lost simply sitting in slow or nonmoving traffic. This congestion results in a waste of energy, contributes to the air pollution associated with the burning of fossil fuels, causes disruption to scheduled public transportation services and generates untold thousands of unproductive hours that negatively affect the nation's economy, and the personal activity time of drivers and passengers alike. Another set of problems relates to safety. Each year there are thousands of vehicle crashes on U.S. highways and streets that cause injuries, deaths and property damage and that can result in incidents that slow or stop the orderly flow of traffic. These conditions are concerns for all transportation systems and remedies are being explored using ITS applications.

The intent of ITS is to assist in the common goals of all transportation agencies. These goals are intended to:

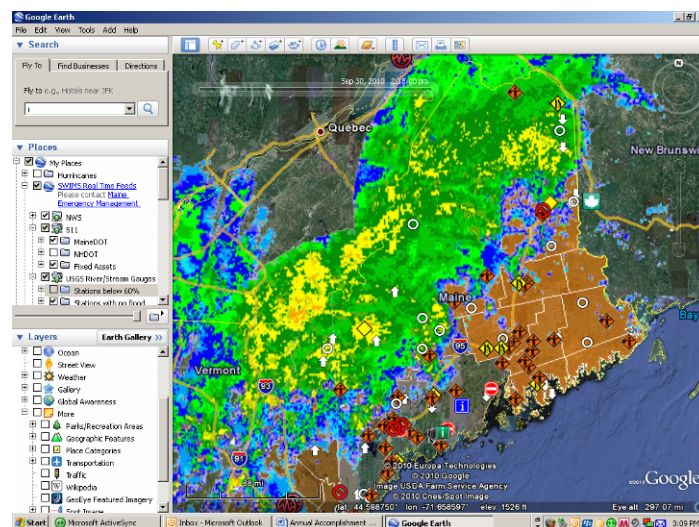
- Achieve and maintain an acceptable mobility level to satisfy local, regional, and national needs for the movement of people and things to their desired destinations;
- Achieve and maintain an acceptable mobility level to satisfy local, regional, and national needs for the movement of people and things to their desired destinations;
- Minimize the time delays caused by congestion, and the accompanying waste of fuel, reduction of pollutants to the atmosphere and loss in productivity;
- Maximize the safety of surface transportation by reducing the opportunities and propensities for crashes to a minimum and supporting rescue services to maximize their effectiveness.
- Establish institutional relationships that will clear traffic incidents as rapidly as possible, so that normal traffic flow can be restored;
- Consider traffic demand reduction techniques, to help reduce vehicular traffic;
- Support intermodal connectivity, to maximize the movement of people and things from one mode of transportation to another;
- Effectively manage public transportation vehicle movements, to minimize travel times and meet schedules; and
- Provide meaningful travel information to consumers, to help them better meet their mobility needs.

In Maine, devices and programs have been deployed at known problem areas. As a rural state, Maine has several additional goals that include surface transportation system monitoring. Whether it is monitoring known flooding area, installing devices in winter microclimates or deploying systems at key locations to detour traffic, these ITS applications are providing a benefit for the public good. Because of Maine's unique surface transportation system needs, many applications have been developed internally. This is primarily due to no applications being available on the market, or the ones that are available are extremely expensive.

Internally developed systems allow MaineDOT to easily incorporate new technology to gain further efficiencies and provide better levels of service. Volunteers have taken on this challenge above their normal jobs. These dedicated individuals also have taken upon themselves to maintain these systems while continually tweaking performance, enhancing our level of service.

The overarching architecture to MaineDOT efforts is operating a virtual traffic management center. The suite of applications used to monitor and provide services to customers is accessible remotely with an internet connection. This provides the flexibility for situational awareness and quick actions to be taken. It also allows rapid expansion to operations by many trained individuals to stay on top of different scaled situations. This approach works very well with regional traffic information by giving partners the ability to monitor and add value to their systems for a more global approach to meeting MaineDOT's goals.

The frontier for MaineDOT is developing better real-time traffic reporting at work zones and congested locations. A robust system, that integrates various devices, working in concert with one another, provides better information to the traveling public, so they are able to make informed driving decisions. This effort is off to a good start by developing cameras and radar systems that are easily deployed. Message signs are placed at key locations and when different thresholds are met, different messages are sent to the signs remotely. More in this arena can be done and looks promising for the future.



## APPENDIX A – ACCOMPLISHMENTS

<b>BRIDGE AND STRUCTURAL MAINTENANCE</b>	<b>FY 07</b>	<b>FY 08</b>	<b>FY 09</b>	<b>FY 10</b>	<b>Unit of Measure</b>
511 REPAIRING MAIN SUPPORT MEMBERS	14,541	30,997	21,841	3,705	Linear Feet
512 REPAIRING DECK	8,175	15,921	17,806	19,267	Square Feet
513 REPAIRING JOINTS AND DRAINS	4,688	10,659	4,869	3,000	Linear Feet
514 REPAIRING ABUTMENTS	19,546	14,295	13,267	9,589	Square Feet
515 REPAIRING RETAINING WALLS	24,334	16,747	3,117	12,897	Square Feet
516 REPAIRING PIERS	24,619	16,580	33,605	15,196	Square Feet
517 REPAIRING DRAINS	N/A				
521 MAINTAINING WEARING SURFACES	27,916	25,023	26,607	628,898	Square Feet
531 REPAIRING/REPLACING BRIDGE RAI	13,795	17,978	15,283	17,360	Linear Feet
532 MAINTAINING BRIDGE CURB/SIDEWA	20,302	12,388	11,056	58,670	Square Feet
541 PAINTING BRIDGES	11,919	14,834	8,117	6,541	Square Feet
551 MAINTAINING CHANNELS	906	1,247	4,745	12,145	Square Feet
570 DOCK MAINTENANCE	N/A	N/A	173	44	Each
571 MOVEABLE BRIDGE-MAINTENANCE	12,214	10,268	13,010	10,943	Each
583 ELECTRICAL MAINTENANCE	829	394	267	18	Each
552 REPAIRING FENDER SYSTEMS	N/A	N/A	N/A	66	Each

**ACCOMPLISHMENTS CONTINUED**

<b>CUSTODIAL MAINTENANCE</b>	<b>FY 07</b>	<b>FY 08</b>	<b>FY 09</b>	<b>FY 10</b>	<b>Unit of Measure</b>
191 PATROLLING & INSPECTING	501268	400036	393182	357037	Center Line Mile
311 REMOVING LITTER & DEBRIS	19673	19627	22365	20954	Shoulder Mile
312 SWEEPING	11100	7227	9861	14849	Shoulder Mile
321 MOWING	12165	10123	8744	9694	Shoulder Mile
331 CHEMICAL BRUSH SPRAYING	6857	1810	5929	3746	Shoulder Mile
332 REMOVING TREES	7917	9402	12795	9376	Each
334 REMOVING BRUSH	157	149	297	178	Shoulder Mile
351 MAINT REST/PICNIC AREA	7074	4921	3958	678	Each
582 CLEANING BRIDGES	13303	4692	4552	4245	Each
742 RAILROAD MAINTENANCE	N/A	N/A			

**DRAINAGE MAINTENANCE**

211 MAINTAINING DITCHES-SUMMER	463	319	229	272	Shoulder Mile
212 MAINTAINING DITCHES-WINTER	23533	27522	32580	16416	Hour
213 MAINTAINING DITCHES-GRADER	N/A	267	215	475	Shoulder Mile
221 CLEANING DRAINAGE STRUCTURE	19010	19944	19502	19240	Each
222 REPAIRING DRAINAGE STRUCTURE	1594	2197	1378	945	Each
223 REPLACE/NEW INSTALL DRAIN STRU	N/A	N/A	152	1163	Each

## ACCOMPLISHMENTS CONTINUED

<b>OPERATIONAL AND SAFETY MAINTENANCE</b>	<b>FY 07</b>	<b>FY 08</b>	<b>FY 09</b>	<b>FY 10</b>	<b>Unit of Measure</b>
137 MAINTAINING GUARDRAIL/FENCES	23138	63973	59908	44000	Linear Feet
138 INSTALLING GUARDRAIL	8030	9821	8416	11166	Linear Feet
139 MAINTAIN ROADSIDE SAFETY DEVIC	1020	712	1429	168	Each
341 LANDSCAPING	489	881	182	192	Hour
611 STRIPING	19162	18073	17268	17100	Center Line Mile
621 MARKING PAVEMENT LEGENDS	258494	151808	226570	174148	Square Feet
631 INSTALLING SIGNS	21751	19801	18631	10827	Each
632 MAINTAINING SIGNS	14217	12310	14158	14897	Each
641 MAINTAINING STREET LIGHTING/TR	7052	8138	7263	6706	Hour
642 MAINTAINING OTHER ELECTRICAL E	535	602	259	494	Hour
<b>SURFACE AND BASE MAINTENANCE</b>					
102 ROADWAY BASE CUT AND FILLS	N/A	N/A			
104 ROADWAY BASE GRAVEL	N/A	N/A			
111 SEALING CRACKS	N/A	N/A		0	
112 REPAIRING SURFACE	13110	20763	18995	15476	Tons
113 SHIMMING	45301	84458	17836	3032	Tons
114 PLACING HOT MIX					
121 MST LAY DOWN	561086	574476	543249	160724	Tons
122 MST TRUCKING	N/A	N/A	N/A	104530	Tons
131 GRADING SHOULDER & GRAV RDS	10837	10214	9234	5520	Shoulder Mile
132 REBUILD/REPAIR SHOULDER	434	251	263	299	Shoulder Mile

**ACCOMPLISHMENTS CONTINUED**

<b>WINTER MAINTENANCE</b>	<b>FY 07</b>	<b>FY 08</b>	<b>FY 09</b>	<b>FY 10</b>	<b>Unit of Measure</b>
224 THAWING MINOR DRAIN STRUCTURE	2043	200	530	66	Each
411 PRODUCING WINTER SAND/SALT BRI	594803	796915	894574	691824	Units
412 SNOW & ICE CONTROL	8200	8200	8200	8200	
413 ANTI ICING	7523	5068	3599	1333	Ln/Mi
421 NIGHT PATROL/RADIO OPERATIONS	21506	20533	54353	78478	Hour
 <b>CREW OPERATIONS</b>					
<b>SBY EQUIPMENT STANDBY</b>					
133 PROCESSING AGGREGATES	73721	72716	34139	110	Tons
134 PRODUCING BITUMINOUS MATERIAL	5725	98841	45003	78	Tons
171 STOCKPILING/TRANSPORTING MAT	2078609	1708648	1364810	552106	Units
651 SIGN SHOP OPERATIONS	9064	9139	8035	8157	Hour
711 CREW SUPERVISION & DOCUMENTATI	228885	210166	186231	158155	Hour
723 INSTALL/REPAIR RADIOS	673	555	76	1	Each
					Vehicles
726 TRANSPORTING EQUIP FOR REPAIRS	27008	2938	2759	3037	Transported
727 MTS/PVT/M&O EQUIP SERV & REPAI	79640	76876	82738	67915	Hour

9 TOWN PAYMENTS				
93 PLANNING AND TECH ASSISTANCE				
94 OPERATING TRAVELER FACILITIES				
96 FERRY SERVICE OPERATIONS				
123 ADMINISTRATIVE ASSISTANCE				
129 OPERATING ASSISTANCE				
151 RESPONDING TO EMERGENCIES	1783	1958	2261	2588 Events
422 ENGINEERING-TRAFFIC				
423 ENGINEERING TECHNICIANS-TRAFFI				
572 MOVEABLE BRIDGE-OPERATIONS	44815	46198	44341	39314 Each
640 PROCURING EQP - EXT OPERATIONS				
661 CONDUCTING TRAFFIC STUDIES	1434	224	787	976 Hour
712 OPERATIONAL COMMUNICATIONS				
731 REVIEWING ENTRANCES	2456	1617	961	982 Each

**DEPARTMENT BUILDING & LOT MAINTENANCE**

BDG MAINTAINING BUILDING	96371	84213	104932	93694 Hour
725 BUILDING CONSTRUCTION	15811	7664	5697	7903 Hour
728 FACILITY MAINTENANCE	49100	46244	37438	41026 Hour

**ACCOMPLISHMENTS CONTINUED**

<b>DEPARTMENT, BUREAU &amp; OFFICE ADMIN</b>	<b>FY 07</b>	<b>FY 08</b>	<b>FY 09</b>	<b>FY 10</b>	<b>Unit of Measure</b>
ADM ADMINISTRATION	313046	285300	50114	39970	Hour
OTH MISCELLANEOUS OTHER					
980 MEETINGS & CONFERENCES	24631	26044	23965	23490	Hour
981 TRAINING	57985	53545	52313	61920	Hour
PLN PLANNING & STUDIES					
919 FORCE ACCOUNT CONSTRUCTION	74373	31172	39002	36974	Hour
<b>INFRASTRUCTURE INSPECTIONS &amp; INVENTORY</b>					
192 ASSET INVENTORY & DOC	N/A	N/A	34	39904	Each
561 UNDERWATER INSPECTION	278	178	178	164	Each
562 BRIDGE INSPECTION	1296	4692	3113	1285	Each

**9055 EXPENDITURES**

	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>	<b>3 yr ave</b>	<b>FY 2010</b>
	<b>\$133,946,269.05</b>	<b>\$ 142,925,921.98</b>	<b>\$141,252,300.96</b>	<b>\$139,374,830.66</b>	<b>\$131,629,214.27</b>
<b>BRIDGE &amp; STRUCTURAL MAINTENANCE</b>	<b>\$ 9,804,928.19</b>	<b>\$ 10,492,291.13</b>	<b>\$ 9,509,139.35</b>	<b>\$ 9,935,452.89</b>	<b>\$8,381,217.16</b>
511 REPAIRING MAIN SUPPORT MEMBERS	\$ 672,585.24	\$ 1,424,843.11	\$ 747,467.11	\$ <b>948,298.49</b>	\$712,020.87
512 REPAIRING DECK	\$ 382,320.79	\$ 779,533.70	\$ 838,154.16	\$ <b>666,669.55</b>	\$440,478.86
513 REPAIRING JOINTS AND DRAINS	\$ 235,392.31	\$ 516,989.84	\$ 207,258.21	\$ <b>319,880.12</b>	\$359,307.26
514 REPAIRING ABUTMENTS	\$ 1,130,261.08	\$ 686,633.47	\$ 676,284.33	\$ <b>831,059.63</b>	\$490,265.63
515 REPAIRING RETAINING WALLS	\$ 926,450.73	\$ 731,813.55	\$ 235,370.91	\$ <b>631,211.73</b>	\$394,084.37
516 REPAIRING PIERS	\$ 1,087,377.72	\$ 981,245.02	\$ 1,402,518.32	\$ <b>1,157,047.02</b>	\$1,242,161.26
517 REPAIRING DRAINS	\$ 1.96		\$ 849.53	\$ <b>425.75</b>	\$1,376.83
521 MAINTAINING WEARING SURFACES	\$ 1,513,923.96	\$ 1,468,194.04	\$ 1,343,834.49	\$ <b>1,441,984.16</b>	\$934,024.22
531 REPAIRING/REPLACING BRIDGE RAIL	\$ 547,324.77	\$ 803,169.51	\$ 870,619.30	\$ <b>740,371.19</b>	\$753,190.40
532 MAINTAINING BRIDGE CURB/SIDEWA	\$ 852,905.42	\$ 538,736.29	\$ 606,004.05	\$ <b>665,881.92</b>	\$609,250.59
541 PAINTING BRIDGES	\$ 555,540.44	\$ 682,523.09	\$ 518,700.12	\$ <b>585,587.88</b>	\$548,253.49
551 MAINTAINING CHANNELS	\$ 136,668.89	\$ 61,574.24	\$ 126,765.03	\$ <b>108,336.05</b>	\$86,688.61
570 DOCK MAINTENANCE	\$ 29,228.48	\$ -	\$ 12,365.32	\$ <b>13,864.60</b>	\$2,470.33
571 MOVEABLE BRIDGE-MAINTENANCE	\$ 1,599,562.57	\$ 1,703,956.11	\$ 1,780,912.09	\$ <b>1,694,810.26</b>	\$1,718,005.61
583 ELECTRICAL MAINTENANCE	\$ 135,383.83	\$ 113,079.16	\$ 142,036.38	\$ <b>130,166.46</b>	\$86,249.59
552 REPAIRING FENDER SYSTEMS					\$3,389.24
dist ADM					2,770,642.02
CREW					1760460.46
CP					72,474

**9055 EXPENDITURES CONTINUED**

	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>	<b>3 yr ave</b>	<b>FY 2010</b>
<b>CUSTODIAL MAINTENANCE</b>	<b>\$ 11,958,198.41</b>	<b>\$ 9,252,398.78</b>	<b>\$ 10,692,456.17</b>	<b>\$ 10,634,351.12</b>	<b>\$8,963,763.36</b>
				\$ -	
191 PATROLLING & INSPECTING	\$ 2,806,965.24	\$ 1,792,081.91	\$ 2,288,047.55	\$ 2,295,698.23	\$2,311,022.12
311 REMOVING LITTER & DEBRIS	\$ 600,860.89	\$ 476,291.11	\$ 511,182.53	\$ 529,444.84	\$472,359.11
312 SWEEPING	\$ 2,006,596.33	\$ 1,649,318.63	\$ 1,551,806.27	\$ 1,735,907.08	\$1,336,892.44
321 MOWING	\$ 949,211.50	\$ 788,146.86	\$ 851,792.14	\$ 863,050.17	\$652,573.84
331 CHEMICAL BRUSH SPRAYING	\$ 442,429.53	\$ 206,559.79	\$ 486,756.82	\$ 378,582.05	\$370,259.72
332 REMOVING TREES	\$ 905,565.08	\$ 595,002.53	\$ 781,796.79	\$ 760,788.13	\$715,453.82
334 REMOVING BRUSH	\$ 1,264,395.12	\$ 717,739.28	\$ 1,090,016.78	\$ 1,024,050.39	\$1,136,268.84
351 MAINT REST/PICNIC AREA	\$ 2,171,590.24	\$ 2,178,382.23	\$ 1,959,458.67	\$ 2,103,143.71	\$993,389.54
582 CLEANING BRIDGES	\$ 810,584.48	\$ 848,876.44	\$ 1,171,598.62	\$ 943,686.51	\$975,543.93
742 RAILROAD MAINTENANCE					2,963,218.70
dist ADM					1882823.302
CREW					77,512
CP					
<b>DRAINAGE MAINTENANCE</b>	<b>\$ 12,296,619.71</b>	<b>\$ 13,359,004.41</b>	<b>\$ 13,865,863.86</b>	<b>\$ 13,173,829.33</b>	<b>\$15,868,198.07</b>
211 MAINTAINING DITCHES-SUMMER	\$ 6,094,468.61	\$ 5,337,921.22	\$ 5,430,980.28	\$ 5,621,123.37	\$5,809,039.55
212 MAINTAINING DITCHES-WINTER	\$ 921,580.99	\$ 1,060,782.42	\$ 1,281,862.23	\$ 1,088,075.21	\$735,015.97
213 MAINTAINING DITCHES-GRADER		\$ 918,419.51	\$ 997,130.55	\$ 957,775.03	\$1,730,261.95
221 CLEANING DRAINAGE STRUCTURE	\$ 1,207,126.30	\$ 978,294.33	1,339,933	\$ 1,175,117.82	\$1,493,888.72
222 REPAIRING DRAINAGE STRUCTURE	\$ 4,069,270.19	\$ 5,030,875.45	4,761,453	\$ 4,620,532.83	\$1,906,136.10
223 REPLACE/NEW INSTALL DRAIN STRU	\$ 4,173.62	\$ 32,711.48	54,505	\$ 30,463.40	\$4,193,855.78
dist ADM					5,245,669.64
CREW					3333088.111
CP					137,216

**9055 EXPENDITURES CONTINUED**

	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>	<b>3 yr ave</b>	<b>FY 2010</b>
<b>OPERATIONAL &amp; SAFETY MAINTENANCE</b>	<b>\$8,256,443.83</b>	<b>\$ 8,132,137.79</b>	<b>\$ 8,875,395.01</b>	<b>\$ 8,421,325.54</b>	<b>\$8,499,134.60</b>
137 MAINTAINING GUARDRAIL/FENCES	\$ 754,072.13	\$ 905,389.96	\$ 974,582.46	\$ <b>878,014.85</b>	\$938,675.32
138 INSTALLING GUARDRAIL	\$ 83,714.50	\$ 139,803.77	111,228	\$ <b>111,582.11</b>	\$98,687.71
139 MAINTAIN ROADSIDE SAFETY DEVIC	\$ 46,723.55	\$ 36,099.08	79,467	\$ <b>54,096.47</b>	\$18,657.46
341 LANDSCAPING	\$ 50,380.51	\$ 23,557.46	2,685	\$ <b>25,540.86</b>	\$36,637.35
611 STRIPING	\$4,184,154.76	\$ 4,020,446.62	\$ 4,169,776.95	\$ <b>4,124,792.78</b>	\$4,151,869.79
621 MARKING PAVEMENT LEGENDS	\$ 733,658.31	\$ 442,356.17	\$ 348,298.08	\$ <b>508,104.19</b>	\$258,013.32
631 INSTALLING SIGNS	\$ 870,202.78	\$ 881,749.97	\$ 840,957.35	\$ <b>864,303.37</b>	\$515,694.20
632 MAINTAINING SIGNS	\$ 701,111.82	\$ 628,890.06	\$ 835,740.00	\$ <b>721,913.96</b>	\$928,770.37
641 MAINTAINING STREET LIGHTING/TR	\$ 789,540.94	\$ 996,066.27	\$ 1,503,716.46	\$ <b>1,096,441.22</b>	\$1,537,184.42
642 MAINTAINING OTHER ELECTRICAL E	\$ 42,884.53	\$ 57,778.43	\$ 8,944.28	\$ <b>36,535.75</b>	\$14,944.66
dist ADM					2,809,622.88
CREW					1785228.818
CP					73,494
<b>SURFACE &amp; BASE MAINTENANCE</b>	<b>\$15,181,352.82</b>	<b>\$ 15,957,634.50</b>	<b>\$ 16,516,804.89</b>	<b>\$ 15,885,264.07</b>	<b>\$9,198,379.14</b>
102 ROADWAY BASE CUT & FILLS					
104 ROADWAY BASE GRAVEL					
111 SEALING CRACKS	\$ 21,760.94	\$ 3,509.97		\$ <b>12,635.46</b>	\$180.00
112 REPAIRING SURFACE	\$3,776,836.22	\$ 4,944,808.12	\$ 4,924,732.01	\$ <b>4,548,792.12</b>	\$6,049,104.98
113 SHIMMING	\$ 842,622.49	\$ 1,418,738.07	\$ 519,152.09	\$ <b>926,837.55</b>	\$200,148.57
114 PLACING HOT MIX	\$ 73,389.72		\$ 5,258.21	\$ <b>39,323.97</b>	
121 MST LAY DOWN	\$5,844,708.71	\$ 6,135,151.20	\$ 6,102,457.54	\$ <b>6,027,439.15</b>	\$109,866.38
122 MST TRUCKING					\$2,913.63
131 GRADING SHOULDER & GRAV RDS	\$1,420,232.51	\$ 1,345,664.05	\$ 1,758,584.06	\$ <b>1,508,160.21</b>	\$953,914.11
132 REBUILD/REPAIR SHOULDER	\$3,201,802.23	\$ 2,109,763.09	\$ 3,206,620.98	\$ <b>2,839,395.43</b>	\$1,882,251.47
dist ADM					3,040,777.41
CREW					1932103.949

**9055 EXPENDITURES CONTINUED**

<b>WINTER MAINTENANCE</b>	<b>\$ 22,489,288.81</b>	<b>\$ 33,067,321.69</b>	<b>\$ 28,365,021.08</b>	<b>\$ 27,973,877.19</b>	<b>\$22,148,144.48</b>
224 THAWING MINOR DRAIN STRUCTURE	\$ 484,339.87	\$ 59,924.63	\$ 181,515.82	\$ <b>241,926.77</b>	\$29,790.57
411 PRODUCING WINTER SAND/SALT BRI	\$ 161,178.92	\$ 251,898.62	\$ 218,158.52	\$ <b>210,412.02</b>	\$220,258.33
412 SNOW & ICE CONTROL	\$ 20,535,644.61	\$ 31,206,502.58	\$ 27,115,003.36	\$ <b>26,285,716.85</b>	\$21,192,125.57
413 ANTI ICING	\$ 228,529.06	\$ 655,117.89	\$ 135,310.25	\$ <b>339,652.40</b>	\$20,537.27
421 NIGHT PATROL/RADIO OPERATIONS	\$ 1,079,596.35	\$ 893,877.97	\$ 715,033.13	\$ <b>896,169.15</b>	\$685,432.74
dist ADM					7,321,679
CREW					4,652,180
CP					191,520
<b>CREW OPERATIONS</b>	<b>\$ 19,998,946.86</b>	<b>\$ 17,233,282.82</b>	<b>\$ 19,519,291.14</b>	<b>\$ 18,917,173.61</b>	<b>\$17,846,107.61</b>
SBY EQUIPMENT STANDBY	\$ 1,964,626.52	1,873,026	\$ 3,089,768.42	\$ <b>2,309,140.28</b>	\$3,981,215.74
133 PROCESSING AGGREGATES	\$ 319,074.80	\$ 376,180.79	\$ 203,616.79	\$ <b>299,624.13</b>	\$3,279.82
134 PRODUCING BITUMINOUS MATERIAL		\$ 272,137.62	\$ 310,270.52	\$ <b>291,204.07</b>	\$869.06
171 STOCKPILING/TRANSPORTING MAT	\$ 2,431,685.30	\$ 2,048,325.07	\$ 1,590,698.93	\$ <b>2,023,569.77</b>	\$1,526,204.43
651 SIGN SHOP OPERATIONS	\$ 1,089,352.71	\$ 604,224.04	\$ 585,027.19	\$ <b>759,534.65</b>	\$553,535.18
711 CREW SUPERVISION & DOCUMENTATI	\$ 9,812,591.77	\$ 8,990,499.83	\$ 8,903,968.78	\$ <b>9,235,686.79</b>	\$7,591,859.11
723 INSTALL/REPAIR RADIOS	\$ 323,092.82	\$ 263,636.74	\$ 123,267.13	\$ <b>236,665.56</b>	\$90,009.32
726 TRANSPORTING EQUIP FOR REPAIRS	\$ 1,201,032.94	\$ 1,045,851.05	\$ 1,208,993.67	\$ <b>1,151,959.22</b>	\$1,332,594.02
727 MTS/PVT/M&O EQUIP SERV & REPAI	\$ 2,857,490.00	\$ 3,632,427.68	\$ 3,503,679.71	\$ <b>3,331,199.13</b>	\$2,766,540.93

**9055 EXPENDITURES CONTINUED**

<b>SYSTEMS OPERATIONS</b>	<b>\$ 3,428,849.40</b>	<b>\$ 3,248,776.03</b>	<b>\$ 3,375,008.00</b>	<b>\$ 3,350,877.81</b>	<b>\$3,805,902.01</b>
9 TOWN PAYMENTS					
93 PLANNING AND TECH ASSISTANCE					
94 OPERATING TRAVELER ASSISTANCE					
96 FERRY SERVICE OPERATIONS					
123 ADMINISTRATIVE ASSISTANCE					
129 OPERATING ASSISTANCE					
151 RESPONDING TO EMERGENCIES	\$ 828,389.24	\$ 607,202.50	\$ 521,923.67	<b>\$ 652,505.14</b>	\$807,963.14
422 ENGINEERING-TRAFFIC	\$ 670,697.37	\$ 768,748.88	\$ 903,279.93	<b>\$ 780,908.73</b>	\$913,932.40
423 ENGINEERING TECHNICIANS-TRAFFI	\$ 96,706.93	\$ 119,377.47	\$ 140,245.56	<b>\$ 118,776.65</b>	\$197,430.30
572 MOVEABLE BRIDGE-OPERATIONS	\$ 1,104,564.70	\$ 1,244,725.37	\$ 1,304,075.41	<b>\$ 1,217,788.49</b>	\$1,439,313.57
640 PROCURING EQP - EXT OPERATIONS					
661 CONDUCTING TRAFFIC STUDIES	\$ 96,192.94	\$ 11,201.26	\$ 50,244.73	<b>\$ 52,546.31</b>	\$36,112.05
712 OPERATIONAL COMMUNICATIONS					
731 REVIEWING ENTRANCES	\$ 632,298.22	\$ 497,520.55	\$ 455,238.70	<b>\$ 528,352.49</b>	\$411,150.55
dist ADM					1,258,145.66
CREW					799423.2668
CP					32,910
<b>DEPARTMENT BUILDING &amp; LOT MAINTENANCE</b>	<b>\$ 7,222,288.43</b>	<b>\$ 8,018,306.18</b>	<b>\$ 8,307,793.36</b>	<b>\$ 7,849,462.66</b>	<b>\$7,672,027.38</b>
BDG MAINTAINING BUILDINGS	\$ 4,650,825.15	\$ 5,201,959.86	\$ 5,755,286.91	<b>\$ 5,202,690.64</b>	\$5,190,293.59
725 BUILDING CONSTRUCTION	\$ 411,200.13	\$ 395,245.45	\$ 381,020.37	<b>\$ 395,821.98</b>	\$298,628.88
728 FACILITY MAINTENANCE	\$ 2,160,263.15	\$ 2,421,100.87	\$ 2,171,486.08	<b>\$ 2,250,950.03</b>	\$2,183,104.91
dist ADM					2,536,199.82
CREW					1611496.348
CP					66,342

**9055 EXPENDITURES CONTINUED**

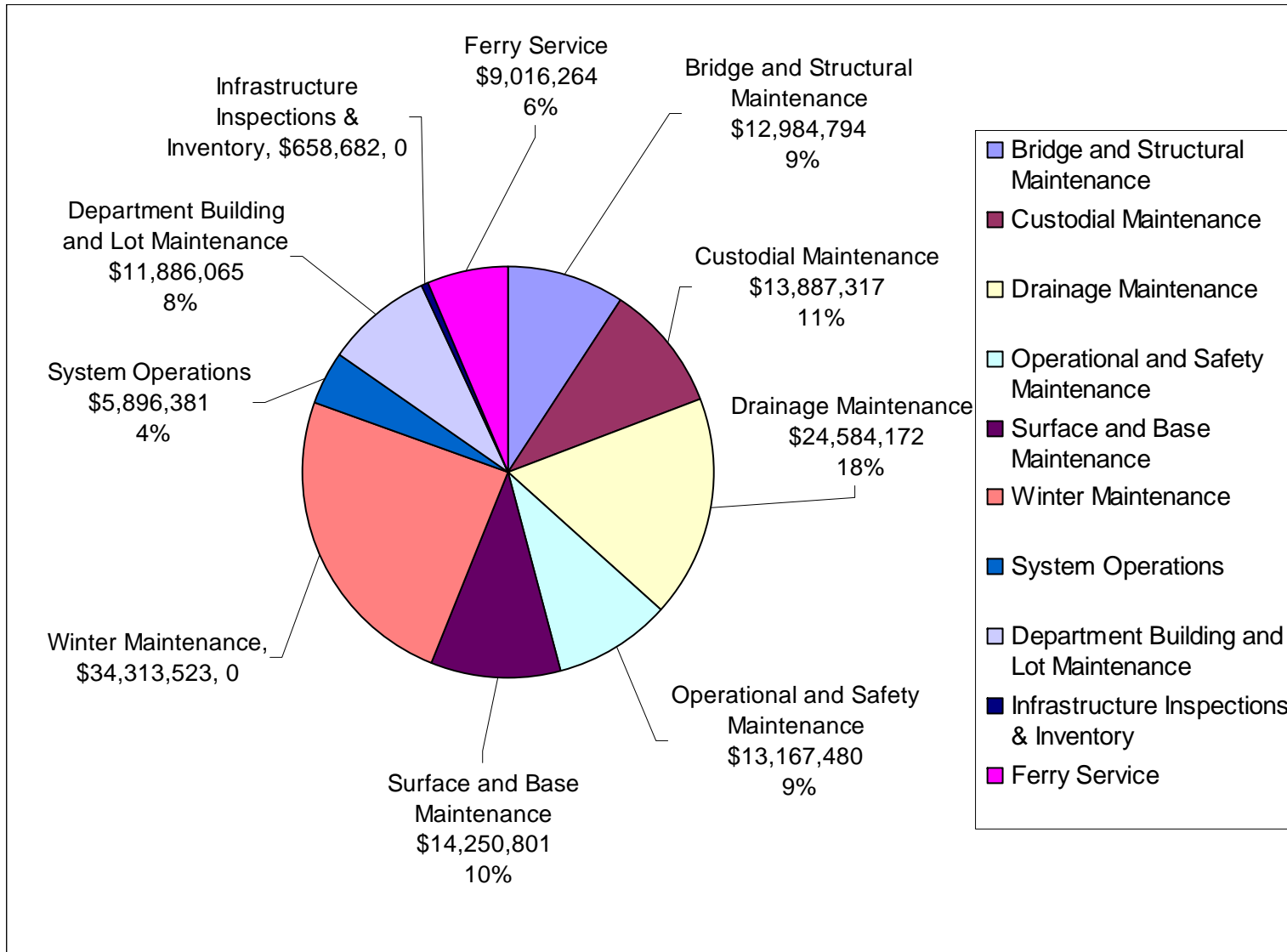
ADM ADMINISTRATION	\$ 16,449,787.82	\$ 18,943,248.02	\$ 17,012,279.31	\$ <b>17,468,438.38</b>	\$19,487,251.50
OTH MISCELLANEOUS OTHER					\$2,402,712
980 MEETINGS & CONFERENCES	\$ 1,162,205.32	\$ 1,172,206.54	\$ 1,145,097.97	\$ <b>1,159,836.61</b>	\$1,201,069.18
981 TRAINING	\$ 2,257,903.23	\$ 2,141,811.17	\$ 2,234,027.44	\$ <b>2,211,247.28</b>	\$2,675,053.26
PLN PLANNING & STUDIES	\$ 1,529,026.14	\$ 1,384,398.95	\$ 1,369,531.84	\$ <b>1,427,652.31</b>	\$1,233,545.59
919 FORCE ACCOUNT CONSTRUCTION	\$ 1,858,224.53	\$ 487,850.52	\$ 366,059.91	\$ <b>904,044.99</b>	\$1,086,869.25
<b>INFRASTRUCTURE INSPECTIONS &amp;     INVENTORY</b>	<b>\$ 52,205.55</b>	<b>\$ 35,253.45</b>	<b>\$ 98,531.63</b>	<b>\$ 61,996.88</b>	<b>\$425,155.28</b>
192 ASSET INVENTORY & DOC			\$ 13.46	\$ <b>13.46</b>	\$386,653.11
561 UNDERWATER INSPECTION	\$ 9,694.02	\$ 5,064.00	\$ 8,665.73	\$ <b>7,807.92</b>	\$7,774.45
562 BRIDGE INSPECTION	\$ 42,511.53	\$ 30,189.45	\$ 89,852.44	\$ <b>54,184.47</b>	\$30,727.72
dist ADM					140,546.78
CREW					89303.14599
CP					3,676
<b>CP CAPITOL SMALL EQUIPMENT</b>		<b>\$ 653,870.00</b>	<b>\$ 247,901.00</b>	<b>\$ 450,885.50</b>	<b>\$734,684.00</b>
<b>OTH</b>					
<b>Reimbursement REIMBURSEMENTS</b>					<b>-\$7,460,765</b>

**MAJOR CATEGORIES FY 2010**

	<b>FY 2010</b>		
BRIDGE & STRUCTURAL MAINTENANCE	\$ 8,381,217.16	\$ 8,381,217.16	
CUSTODIAL MAINTENANCE	\$ 8,963,763.36	\$ 8,963,763.36	
DRAINAGE MAINTENANCE	\$ 15,868,198.07	\$ 15,868,198.07	
OPERATIONAL & SAFETY MAINTENANCE	\$ 8,499,134.60	\$ 8,499,134.60	
SURFACE & BASE MAINTENANCE	\$ 9,198,379.14	\$ 9,198,379.14	
WINTER MAINTENANCE	\$ 22,148,144.48	\$ 22,148,144.48	
CREW OPERATIONS	\$ 17,846,107.61	\$ 17,846,107.61	
SYSTEM OPERATIONS	\$ 3,805,902.01	\$ 3,805,902.01	
DEPARTMENT BUILDING & LOT MAINTENANCE	\$ 7,672,027.38	\$ 7,672,027.38	
INFRASTRUCTURE INSPECTIONS & INVENTORY	\$ 425,155.28	\$ 425,155.28	
DEPT, BUREAU & OFFICE ADMIN	\$ -		
ADM ADMINISTRATION		\$ 19,487,252.00	
ADM OTH		\$ 11,099,039.00	
FLEET		\$ 4,015,243.00	
OIT		\$ 3,697,453.00	
STATE DIST		\$ 675,517.00	
OTH MISCELLANEOUS OTHER EXP		\$ 2,402,712.40	EXPENSES
980 MEETINGS & CONFERENCES		\$ 1,201,069.18	
981 TRAINING		\$ 2,675,053.26	
PLN PLANNING & STUDIES		\$ 1,233,545.59	
919 FORCE ACCOUNT CONSTRUCTION		\$ 1,086,869.25	
CP CAPITOL SMALL EQUIPMENT		\$ 734,684.00	
	\$ 734,684.00	\$ (7,460,764.80)	
OTH REIMBURSEMENTS			REIMBURSEMENTS
TOTAL WITHOUT REIMBURSEMENTS	#REF!	\$ -	
TOTAL WITH REIMBURSEMENTS		\$ 9,016,264.00	
FERRY SERVICE EXPENDITURES		\$ 4,950,400.00	
REVENUE FROM FARES, PARKING INVESTMENTS		\$ 4,575,715.00	

<b>2010 TOTAL EXPENDITURE/DISTRIBUTION</b>							
<b>MAJOR WORK GROUPINGS</b>	<b>MAJOR ACTIVITY GROUPING EXPEND</b>	<b>WORK ACTIVITY GROUPING</b>	<b>% WORK FOR GROUPING</b>	<b>DISTRIBUTION ADMIN</b>	<b>DISTRIBUTIO N CP</b>	<b>CP</b>	<b>TOTAL EXPEND W/ DISTRIBUTION</b>
	<b>\$131,629,215</b>						
<b>WORK BRIDGE &amp; STRUCTURAL MAINTENANCE</b>	<b>\$8,381,217</b>	\$8,381,217	10%	\$2,770,642	\$1,760,460	\$72,474	<b>\$12,984,794</b>
<b>WORK CUSTODIAL MAINTENANCE</b>	<b>\$8,963,763</b>	\$8,963,763	11%	\$2,963,219	\$1,882,823	\$77,512	<b>\$13,887,317</b>
<b>WORK DRAINAGE MAINTENANCE</b>	<b>\$15,868,198</b>	\$15,868,198	19%	\$5,245,670	\$3,333,088	\$137,216	<b>\$24,584,172</b>
<b>WORK OPERATIONAL &amp; SAFETY MAINTENANCE</b>	<b>\$8,499,135</b>	\$8,499,135	10%	\$2,809,623	\$1,785,229	\$73,494	<b>\$13,167,480</b>
<b>WORK SURFACE &amp; BASE MAINTENANCE</b>	<b>\$9,198,379</b>	\$9,198,379	11%	\$3,040,777	\$1,932,104	\$79,540	<b>\$14,250,801</b>
<b>WORK WINTER MAINTENANCE</b>	<b>\$22,148,144</b>	\$22,148,144	26%	\$7,321,679	\$4,652,180	\$191,520	<b>\$34,313,523</b>
<b>WORK SYSTEMS OPERATIONS</b>	<b>\$3,805,902</b>	\$3,805,902	4%	\$1,258,146	\$799,423	\$32,910	<b>\$5,896,381</b>
<b>WORK DEPARTMENT BUILDING &amp; LOT MAINTENANC</b>	<b>\$7,672,027</b>	\$7,672,027	9%	\$2,536,200	\$1,611,496	\$66,342	<b>\$11,886,065</b>
<b>WORK INFRASTRUCTURE INSPECTIONS &amp; INVENTOR</b>	<b>\$425,155</b>	\$425,155	1%	\$140,547	\$89,303	\$3,676	<b>\$658,682</b>
		\$84,961,921	100%	\$28,086,502	\$17,846,108	\$734,684	<b>\$131,629,215</b>
<b>DIST Dept, Bureau &amp; Office Admin</b>	<b>\$28,086,502 support</b>						
<b>DIST Crew Operations</b>	<b>\$17,846,108 support</b>						
<b>DIST CP</b>	<b>\$734,684 support</b>						
	<b>\$46,667,293</b>						
<b>FERRY SERVICE EXPENDITURES</b>	<b>\$9,016,264</b>						
<b>REVENUE FROM FARES, PARKING INVESTMENTS</b>	<b>\$4,950,400</b>						
	<b>\$4,575,715</b>						
	<b>\$140,645,479</b>						

## 2010 EXPENDITURES FOR MAJOR WORK GROUPINGS



## APPENDIX B – EQUIPMENT AND FTE COUNTS

FLEET SERVICES EQUIPMENT TALLY SHEET				2011 Variable Rate	Average Hours / Miles**	2004 Ave Variable Cost	2011 Ave Variable Cost	2011 Fixed Rate	2004 at 2011 Fixed Cost	2011 at 2011 Fixed Cost
<b>NUMBER OF UNITS</b>										
				\$ 25.90	635	\$ 6,660,833	\$ 4,654,360	\$ 48.20	\$ 5,075,460	\$ 3,546,556
<b>YEAR</b>	<b>1990</b>	<b>2004</b>	<b>11/8/2010</b>	\$ 24.05	767	\$ 3,892,180	\$ 4,168,875	\$ 59.33	\$ 3,254,844	\$ 3,486,231
PATROL	450	405	283	\$ 28.04	418	\$ 1,043,144	\$ 562,595	\$ 48.30	\$ 1,117,662	\$ 602,784
WHEELER	263	211	226	\$ 20.92	431	\$ 486,892	\$ 297,545	\$ 32.04	\$ 449,842	\$ 274,903
BACKHOE	81	89	48	\$ 17.36	608	\$ 443,305	\$ 337,756	\$ 48.64	\$ 531,149	\$ 404,685
LOADER	76	54	33	\$ 0.42	15,961	\$ 1,139,615	\$ 1,032,357	\$ 24.75	\$ 1,093,950	\$ 990,990
GRADER	77	42	32							
1 TON	*	170	154							
<b>TOTALS</b>		971	776			<b>\$ 13,665,969</b>	<b>\$ 11,053,488</b>		<b>\$ 11,522,907</b>	<b>\$ 9,306,149</b>

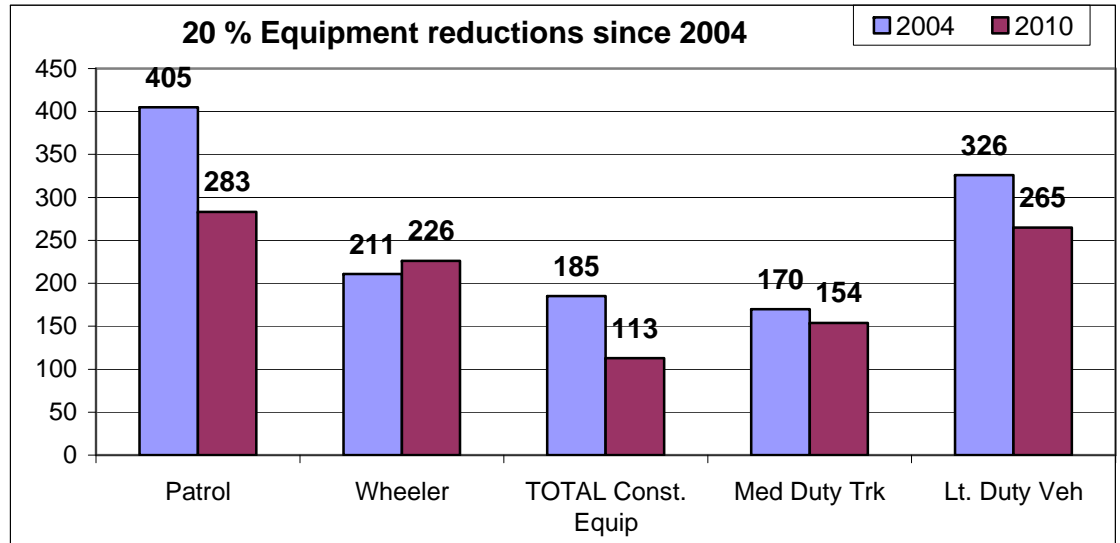
\* Data is unclear

\*\* Average hours and miles are calculated using a three year moving average.  
The severity of the winter season can have significant impact on use.

Note: Out of the 509 wheelers and patrol trucks to daye (11/18/10), 471 are plow trucks.  
The remaining trucks are tractors, tank trucks, and wreckers.

**NUMBER OF UNITS**

YEAR	1990	2004	11/8/2010
Patrol	450	405	283
Wheeler	263	211	226
BACKHOE	81	89	48
LOADER	76	54	33
GRADER	77	42	32
TOTAL Const.	234	185	113
Med Duty Trk	*	170	154
Lt. Duty Veh		326	265
TOTALS	947	1,297	1,041



**FTE COUNT**

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
<b>Highway</b>	1075	1075	1075	1075	1314	1326	1316	1316	1263
<b>Traffic</b>	80.519	80.519	80.519	80.519					
<b>Bridge</b>	184	184	184	184					
<b>Fleet</b>	240	240	240	240	213	200	196	196	187
<b>Sum</b>	1580	1580	1580	1580	1527	1526	1512	1512	1450
<b>Difference</b>		0	0	0	52	1	14	0	63
							Reduction Since 200		130 Positions
<b>Ferry</b>									82 *
<b>Total</b>									<b>1532</b>

**Eliminated 89 positions or 35 FTE's**

**Froze or Down graded 26 positions or 21 FTE's**

**Retirement Incentive 39 positions or 33 FTE for 2010-11**

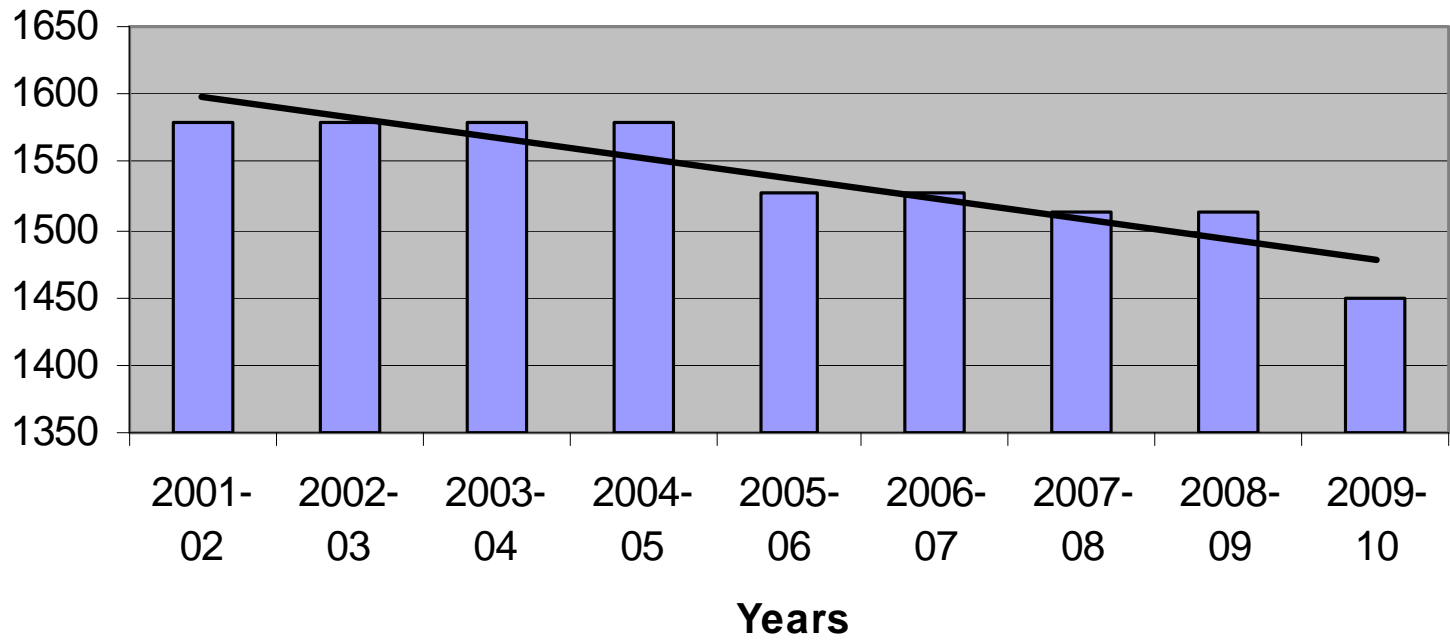
**\* Ferry Service is being managed under M&O so FTE's are being added**

**FTE count includes project positions**

**FTE includes 198 non crew (exception) positions**

**FTE count is based on appropriation 72, 55 and 57**

Personnel Count per FTE for TW and Fleet



## **Appendix C Importance of Maintenance**

### **1. Why is Maintenance Important?**

A transportation system is among the most important public assets in many countries. Asset improvements bring immediate and sometimes dramatic benefits to users through improved access to hospitals, schools, and markets; improved comfort, speed, and safety; and lower vehicle operating costs. For these benefits to be sustained, improvements must be followed by a well-planned program of maintenance. Without regular maintenance, transportation asset can rapidly fall into disrepair, preventing realization of the longer term impacts of road improvements.

Postponing maintenance results in high direct and indirect costs. If defects are repaired promptly, the cost is usually modest. If defects are neglected, an entire road section may fail completely, requiring full reconstruction at three times or more the cost, on average, of maintenance costs. Many reports have been compiled that generally estimates repair costs rise to six times maintenance costs after three years of neglect and to 18 times after five years of neglect. To avoid such escalating costs, timely routine and preventative maintenance needs to be performed to realize the full useful life benefit from the systems.

Delayed maintenance has indirect costs as well. Neglected roads steadily become more difficult to use, resulting in increased vehicle operating costs (more frequent repairs, more fuel use) and a reluctance by transport operators to use the roads. This imposes a heavy burden on the economy: as passenger and freight services are curtailed. There is also a consequent loss of economic and social development opportunities.

Maine needs to ensure that it protects its core transportation network that carries approximately 80 percent of traffic. The transportation system includes key roads in urban areas and they provide sufficient access to rural areas. Some part of the overall road budget thus has to be spent on construction and some part on maintaining the core network. Trying to just favor new construction, rehabilitation, or reconstruction of roads over maintenance becomes unsustainable. Lessons can be learned from others who have chosen this option as it has led to a steady increase in the backlog of road repairs and a loss of development impact. Financing capital cost of road construction by borrowing also has an impact. It has a low perceived impact but has high real costs by diminishing available future funding through the need to make payments on loan. Maintenance is a key practice to realizing the full potential of initial transportation network capital investments.

#### **Operations Systems:**

#### **The major objectives of a maintenance program include the following:**

- Maintain all highway features and assets to the best possible condition
- Improve substandard features, with the ultimate goal to at least meet minimum standards
- Provide proper maintenance for a minimum of traffic disruptions and/or hazards to traffic
- Inspecting and reporting of asset conditions

- Identify needs
- Establish priorities
- Establish procedures
- Establish and maintain a regular program of maintenance for all aspects of transportation network

When maintenance activities are determined to be necessary and are carried out, they are completed on a priority basis. The establishments of priorities are based, to a large extent, upon the objective of promoting transportation system preservation. A high priority is given to the improvement or correction of situations that may result in premature asset failure. Preservation of Maine’s transportation system investment and promotion of efficient traffic operations are important maintenance objectives. Every effort is made to ensure the highest return on investment is spent from each maintenance dollar.

The maintenance activities have been grouped into categories to help meet goals and priorities. This list of grouping is outlined below:

- Dept, Bureau & Office Admin
- Winter Maintenance
- Crew Operations
- Drainage Maintenance
- Custodial Maintenance
- Surface and Base Maintenance
- Operational and Safety Maintenance
- Bridge and Structural Maintenance
- Department Building and Lot Maintenance
- System Operations
- Infrastructure Inspections & Inventory
- Fleet

## **2. What is Maintenance**

The goal of maintenance is to preserve the asset, not to upgrade it. Unlike major road construction, maintenance must be done on a regular basis. Road maintenance comprises of “activities to keep pavement, shoulders, slopes, drainage facilities and all other structures and property within the road right of way as near as possible to their as-constructed or renewed condition”. It includes minor repairs and improvements to eliminate the cause of defects and to avoid excessive repetition of maintenance efforts. For management and operational convenience, road maintenance is categorized as routine, preventative (light capital), and emergency.

### **Routine maintenance:**

Routine maintenance is generally the most cost-effective use of funds. If at all possible, all routine maintenance needs should be funded each year. Routine maintenance usually includes local patching, crack sealing, snow and ice control and other relatively low costs actions. Localized distresses, such as isolated severe bumps or potholes are incorporated in this maintenance strategy.

### **Highway and Bridge Light Capital:**

This effort would highlight the work being performed by Maintenance and Operations that goes beyond just maintenance and adds value to the transportation system. It also consists of repair strategies that typically has less than a 10 year useful life and therefore, should not be bonded. Such activities include Maintenance Surface Treatment, PUG Mill, Capital Improvement Project's, excavator rental, and much of the Maintenance and Operations work to be listed newly named Unified Transportation Improvement Plan (UTIP) Other possible activities could include asset inventory, bridge maintenance work being done on decks and painting, GIS implementation, certain traffic projects, extra ordinary maintenance, emergency type work such as repairing flood damage, and other work that is generally not bondable and that requires close coordination between Bureau of Project Development and Bureau of Maintenance and Operations for project delivery.

### **Emergency Maintenance:**

Emergency maintenance is undertaken for repairs that cannot be foreseen but require immediate attention, such as collapsed culverts or landslides that block a road. Many times this is related to storm events with heavy flows or high winds.

## **3. How to Incorporate Maintenance into Capital Projects**

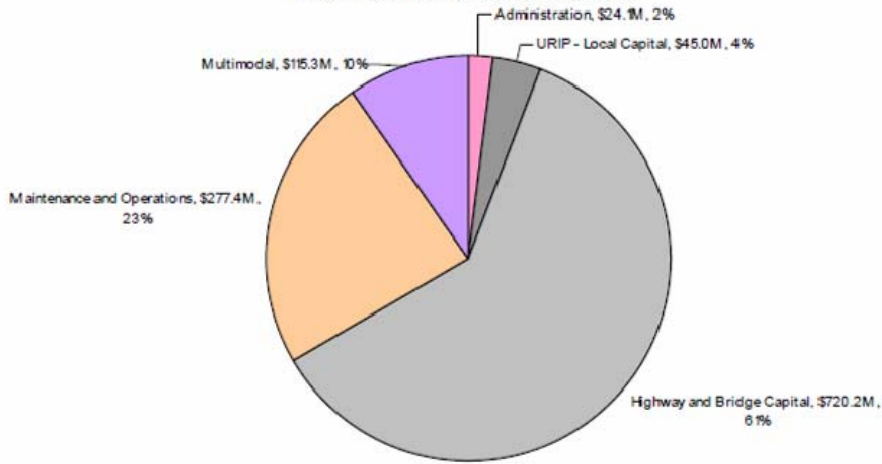
To be sure that maintenance is not neglected; it needs to be incorporated into MaineDOT's projects and sector strategies. This requires identifying the strategy for highway infrastructure management. MaineDOT is aligning its maintenance activities with corridor needs and Department plans. This is being added to maintenance's work plan and developing into a Unified Transportation Improvement Program (UTIP). A UTIP will include typical Work Plan projects and "able to be planned" maintenance activities, such as significant ditching, corridor-based brush cutting, or cross pipe replacement. The Capital Work Plan contains specific projects, most of which have established scopes of work with at least preliminary cost estimates and are anticipated to be under construction within two to four years of work program publication.

## **4. What will it Cost to Maintain the Transportation System**

SAFTEA-LU regulations require that the STIP demonstrate that appropriate funds are available to adequately operate and maintain the transportation system as a whole. MaineDOT originally programmed \$277m in FY 2010 - 11 available for operating and maintaining Maine's transportation system. Actual budget funding was less due to reduced state budget, shut downs, retirement incentives, overhead increases such as health insurance etc. The adjusted funding is used to pay operating and maintenance costs are State funds and included in the State of Maine's biennial budget for state fiscal years 2010 and 2011.

## MaineDOT Only - All Funds - 2 Years (FY10-11) Uses of All Funds - More Detail

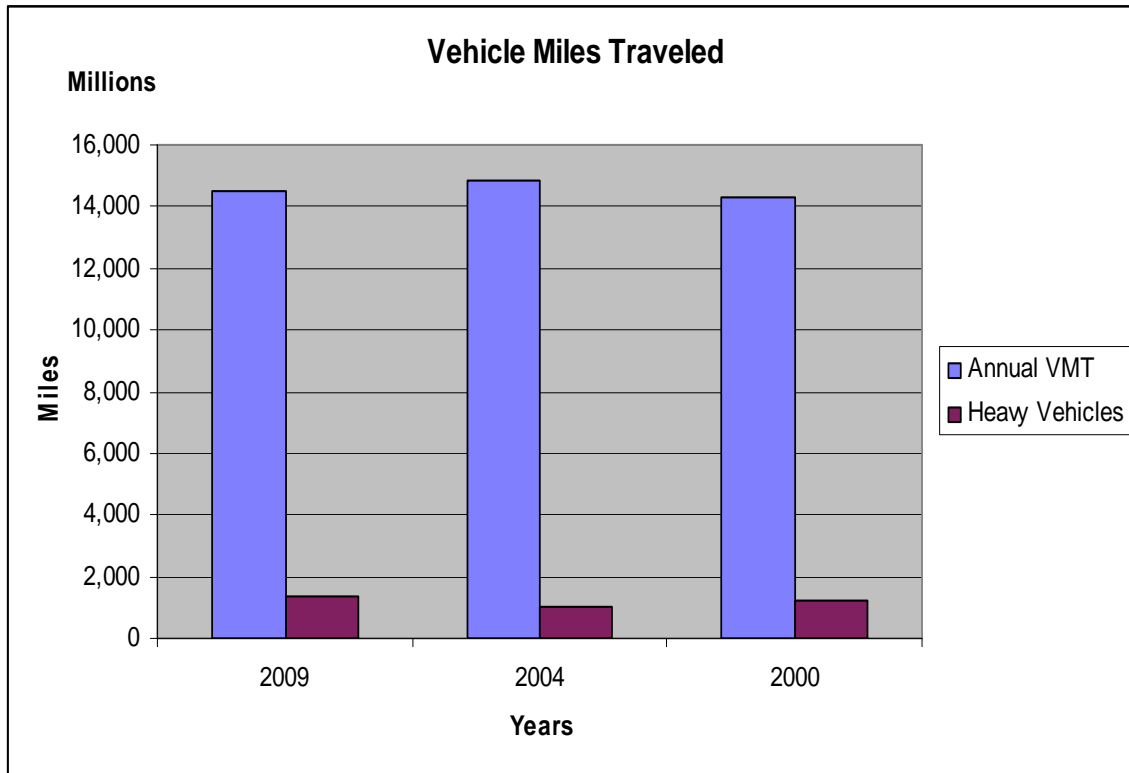
PL 2009, c 413 & 414  
\$1,183 Million (reduced by est. statewide admin cuts)



## 5. Funding

### 5.1 Erosion of Buying Power

Looking at the last decade, vehicle-miles of travel in Maine has a net increase of 1.5 %. This does not tell the whole story. Several market changes have taken place which has changed the yearly vehicle miles traveled. Predominant change has been the economic slow down. Prior to this vehicle miles traveled was increasing at a rate nearly 20% that included increases in the numbers of registered motor vehicles and licensed drivers, and sprawling land development patterns. Also, there was growing economy and demand for “just-in-time delivery” of goods has increased the percentage of goods transported by commercial vehicles traveling on Maine’s highways from 65% in the early 1980s to 87% in 2008. Increased congestion in some of Maine’s urban and recreational areas also indicates a growing need for new and expanded capacity and transportation services. The global economic downturn has resulted in stabilization of vehicle miles traveled. This trend is not expected to continue as the economy continues to recover.



While the percentage of Maine state revenues expended on transportation infrastructure has decreased in recent decades, the long-term transportation needs in Maine are growing. A financial gap of \$2.6 to \$3.8 billion will need to be found if Maine is to fulfill the strategic investment needs identified in the 20 year transportation plan. Current revenues provided by all levels of government are not sufficient to maintain existing transportation infrastructure, let alone to provide adequate funds to invest in expansion or enhancements necessary to meet the growing demands on the system.

## 5.2 Inflation of Construction Costs

Construction-cost inflation and significant increases in energy costs have also reduced the purchasing power of the motor-fuels tax. The cost of construction materials has significantly outpaced the rate of consumer inflation, due to increased asphalt and fuel costs plus worldwide demand for construction materials. Increasing fuel prices will stimulate new technologies and innovations, such as hybrid vehicles. Sales of hybrid vehicles are growing and as many as 1,000,000 hybrid vehicles may soon be produced annually. As oil prices continue to rise and production declines, a transition to alternative energy sources will occur. As alternative fuels and more efficient vehicles come into greater use, motor-fuel tax revenues will be a less viable option to support transportation improvements. While these changes create cost savings for motorists and benefit the environment by reducing greenhouse gas emissions, they also create reduced revenues needed for transportation financing.

### **5.3 Dwindling Fuel Tax Revenues**

The existing motor-fuels tax is no longer adequate to meet current and future multimodal transportation needs. These shortfalls will be exacerbated by decreases in motor-fuels tax revenue from more stringent fuel economy standards, a probable increase in the market share for alternative fuel and hybrid vehicles, the declining purchasing power of motor-fuel tax revenues, and new environmental and energy regulations.

In Maine the dedicated Highway Fund is constitutionally dedicated only to highway and bridge improvements, thereby leaving non-highway modes underdeveloped due to insufficient financial support. However, recent Maine legislative actions are beginning to balance funding for non-highway activities. Examples include P.L. 2007, Chapter 470 (aka LD-1790). In 2005, MaineDOT contracted with the Margaret Chase Smith Policy Center (MCSPC) to research the viability of the motor-fuels tax for funding long-term transportation needs and to identify alternatives to the tax. The MCSPC determined that there is a potential for state motor-fuels tax revenues to decrease by as much as 10% due to improved fuel economy over the next decade. Long-term inflationary trends have not only caused Highway Fund revenue growth to lag behind that of other state revenues, but it has greatly reduced the user contribution to Maine's transportation network. In 1927, Maine's motor-fuels tax was set at 4 cents per gallon. In today's dollars that would be equivalent to 42 cents per gallon. While the costs of transportation improvements continue to climb, highway users are actually paying less today to use Maine's highway system than they paid in the 1920s.

As of July 1, 2009, Maine's tax on gasoline was 29.5 cents per gallon, and on diesel fuel it was 30.7 cents per gallon. Maine taxes on internal combustion engine fuels are indexed to inflation using the Consumer Price Index, with adjustments subject to legislative review each biennium. +A 2005 Maine Better Transportation Association report entitled "Losing Ground" shows that the Highway Fund has grown at one-third the rate of other state revenues such as the General Fund, local property tax, and motor vehicle excise revenues.

### **5.4 Strategies Going Forward**

The initiatives presented are not simply about maintenance of the existing transportation system, but rather they are MaineDOT's contribution to the much larger debate over the future direction of the State of Maine. The much-discussed benefits of global trade, for example, will not accrue to the state without a much larger discussion of the potential benefits and actions needed to make it happen. Factors such as labor supply and work force education obviously are not going to be solved by transportation investments alone. But the Department's 20 year plan is focused on the movement of commerce into and through Maine, and is working to identify the infrastructure deficit that needs to be addressed to support the existing and emerging opportunities. To realize its fullest potential, it will be necessary to analyze the markets and to develop the appropriate infrastructure along with the necessary maintenance to support the niche markets that best benefit the state.

- Identify and preserve including maximization of operational efficiency in all existing transportation modes
- Develop maintenance management plans for key elements of the state’s transportation infrastructure (e.g., interstate, key bridges)
- Adhere to the Resource Allocation Policy (maintenance- and preservation-first)
- Identify new funding sources to support the capital, maintenance and operational costs of strategic transportation improvement programs and investments
- Seek and implement cost-effective innovative solutions on a life-cycle basis
- Provide an airport system that adequately serves current and forecast demand

## **5.5 Future Finances**

Maine must supplement its current transportation funding with bold, new initiatives that can provide for a transportation system that stimulates the economy and promotes sustained economic growth. Maine must take practical measures to integrate the various modes of transportation to ensure that a seamless, multimodal transportation system evolves in order to best meet the needs of an ever changing world.

The solutions are going to be costly and we know that there is no silver bullet to address these funding needs. However, several options were brought forward. These options include exploring additional cost-saving efforts by MaineDOT, increased motor-fuel taxes, long-term borrowing, new alternative financing sources, increased use of tolling, mileage and other user based fees, increased use of public-private partnerships and broadening the base from which transportation revenues are derived. “Doing more with less” is no longer the reality – it is now “doing less with less.” Connecting Maine tells the story of how Maine is losing ground in the struggle to maintain and improve the transportation system that is vital to its economic well-being.