
2006 Sustainability Plan and Progress Report Update

October 15, 2006



**Washington State
Department of Transportation**

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FOREWARD

Executive Orders (EO) 05-01, 04-01, and 02-03 direct the Washington State Department of Transportation (WSDOT) to develop an action plan that incorporates sustainable business practices through a prescribed planning and reporting system. The 2006 WSDOT Sustainability Plan reports on the application of sustainability and efficiency goals set forth by the executive orders.

This report shares a common value with the tenets of sustainability and sustainable development whereby:

- Maintaining the long term integrity of human practices impacts three fundamental conditions: social, economic and environmental, all of which are interrelated.
- Sustainable development, as instituted by the 1987 Brundtland Report, is the creed that business practices need to provide for current needs without compromising the needs of future generations.

The vision of the Washington State Transportation Plan, a plan which guides long-term transportation investments in a manner that serves citizens' safety and mobility, the state's economic productivity, the communities' livability, and the ecosystems' viability is aligned with these conditions, this report, and the principles of sustainability.

Dynamic Tenets of Sustainability



The 1987 Brundtland Commission Report

The World Commission on Environment and Development published a report in 1987 titled “Our Common Future.” Named after commission chair Gro Harlem Brundtland of Norway, the Brundtland Report developed the principles and guidelines for sustainable development as we know today.

The report declared that critical global environmental problems resulted from the tremendous poverty of the Southern Hemisphere, and the unsustainable patterns of consumption and production in the Northern Hemisphere. Commonly referred to as sustainable development, the report called for an approach that advances development and the environment together. It contained two key concepts: the concept of meeting “needs” relevant to the limitations of human and natural systems. In the Commission’s words, “sustainable development is... a process of change in which the exploitation of resources, direction of investment, the orientation of technological development, and institutional change are made consistent with the future, as well as present needs.”

Sustainable development is defined as, “development that meets the needs of the present, without compromising the ability of future generations to meet their own needs.”

I. INTRODUCTION

A. Overview

This report builds on WSDOT's 2003 and 2005 Interim Sustainability Plan: Annual Progress Report by providing an updated accounting of sustainability trends. Moreover, it expands upon agency wide sustainable practices with the provision of more detailed data and by bringing activities into greater focus.

Section I sets the operational framework that guides this report. With the objective that WSDOT adapts to changing needs, Section II of this report improves upon stated sustainability policies, goals, and strategies as appropriate. Also, this update complies with Washington State sustainability directives by updating policy guidance and reporting on sustainability measures related to petroleum, paper, energy, and persistent toxic chemicals usage as outlined in Section III.

In addition, one of the goals for this update includes a comprehensive assessment of sustainability activities beyond the minimum requirements of existing statute. Section IV begins to illustrate the full range of WSDOT activities related to improving the long-term health of the state's environment, economy, and citizens. Section V addresses transportation and its role in emerging sustainability and climate change discussions. A plan to expand data collection, reporting, and communication procedures is also provided. This is a critical step in helping to ensure that established targets are responsibly met.

The 2006 update combines both the Sustainability Plan and the Progress Report into one comprehensive report. It will be submitted to the Office of Financial Management by Fall, 2006.

B. Summary of Sustainability Practices

Executive Order or Statute	Topic	Requirement	Target Date	2003 Base Year	2005 First year for required measures	2006 Update		WSDOT Focus Area	Row and Columns
						Status	Action		
A	B	C	D	E	F	G	H	I	
EO 05-01 and ESSB 5509	Construction	Incorporate green building practices (LEED Silver) to projects costing more than 50% of facility's assessed value	2005-2007 biennium and thereafter	N/A	NOT REPORTED	COMPLIANT	CONTINUE PRACTICE	Statewide	1
				N/A	NOT REPORTED	INCOMPLETE: unidentified construction timeline	INVESTIGATE: funding availability and timeline	WA State Ferries	2
EO 05-01, SSB 6514 (B2), HB 1242 and SSL 6508 (B2)	Petroleum	20% Reduction in Petroleum Use	9/1/2009	3,099,424 gals.	INCOMPLETE: increase in petroleum use	INCOMPLETE: increase in petroleum use	INVESTIGATE: verify target application	Statewide	3
				19,215,419 gals.	NOT REPORTED	INCOMPLETE: due to service reduction	INVESTIGATE: verify target application	WA State Ferries	4
		Freeze purchase of 4WD vehicles	9/1/2009	N/A	NOT REPORTED	COMPLIANT	CONTINUE PRACTICE	Statewide	5
		Give priority to hybrid or other fuel efficient/low emission vehicle purchases	9/1/2009	N/A	NOT REPORTED	COMPLIANT	CONTINUE PRACTICE	Statewide	6
		Replace standard diesel use with B20 blend (Begin use of B5 as soon as practicable)	9/1/2009	N/A	Northwest Region B5 Pilot Project	INCOMPLETE	INVESTIGATE: status and use	Statewide	7
				N/A	WA State Ferries B20 Pilot Project	INCOMPLETE: project suspended	INVESTIGATE: project timeline and B20 availability	WA State Ferries	8
		Priority to replace pre-1996 light duty vehicles driven more than 2,000 miles/year	January, 2008	N/A	COMPLIANT	COMPLIANT	CONTINUE PRACTICE	Statewide	9
		Employ professional fleet management and planning practices	9/1/2005 and thereafter	N/A	COMPLIANT	COMPLIANT	CONTINUE PRACTICE	Statewide	10
				N/A	COMPLIANT	COMPLIANT	CONTINUE PRACTICE	WA State Ferries	11
		Establish clear direction on rental vehicle use	3/1/2005	N/A	COMPLIANT	COMPLIANT	CONTINUE PRACTICE	Statewide	12
EO 05-01 and EO 02-03	Paper	Reduce use of office paper by 30%	9/1/2009	64,289 reams (8.5x11) HQ only	INCOMPLETE: data not comparable to 03	INCOMPLETE: 110,709 reams (8.5x11) = not comparable to 03 data	INVESTIGATE: develop consistent measurement	Statewide	13
		Increase % of environmentally preferred paper by 50%	9/1/2009	0	COMPLIANT	COMPLIANT	INVESTIGATE: develop consistent measurement	Statewide	14
		Recycle 100% of used office paper	9/1/2009	0	NOT REPORTED	INCOMPLETE: no comparable data	INVESTIGATE: develop consistent measurement	Statewide	15
		Increase use of post consumer recycled products for janitorial paper products	9/1/2009	N/A	NOT REPORTED	INCOMPLETE: no comparable data	INVESTIGATE: develop consistent measurement	Statewide	16
EO 05-01 and EO 02-03	Energy	Reduce energy purchases by 10% from 2003 by 9/1/2006	9/1/2009	108,825,431 kwh 719,190 btu	N/A	INCOMPLETE: increase natural gas usage by 37%	INVESTIGATE: cause and appropriate action, compare to sq. ft.	Statewide	17
		Report annual energy use to GA	9/1 annually	N/A	NOT REPORTED	COMPLIANT	CONTINUE PRACTICE	Statewide	18
EO 05-01	Additional Information Needed	Annual petroleum use, vmt on state business, number and type of vehicles used	9/1 annually	N/A	COMPLIANT	COMPLIANT	CONTINUE PRACTICE	Statewide	19
		Number of exception purchase of 4WD vehicles		N/A	COMPLIANT	COMPLIANT	CONTINUE PRACTICE	Statewide	20
		Amount and type of janitorial paper products purchased		N/A	COMPLIANT	COMPLIANT	CONTINUE PRACTICE	Statewide	21
		Quantity of office paper recycled		N/A	COMPLIANT	COMPLIANT	INVESTIGATE: develop consistent measurement	Statewide	22
		Justification of virgin paper purchased		N/A	COMPLIANT	COMPLIANT	CONTINUE PRACTICE	Statewide	23
EO 04-01	Persistent Toxic Chemicals	Adopt measures to reduce the use of equipment, supplies, and other products that contain persistent, toxic chemicals	9/1 annually	N/A	COMPLIANT	COMPLIANT	CONTINUE PRACTICE	Statewide	24
EO 02-03	Long Term Sustainability Goals	Institutionalize sustainability as an agency value	9/1 biennially	N/A	NOT REPORTED	COMPLIANT	CONTINUE PRACTICE	Statewide	25
		Raise employee awareness of sustainable practices in the workplace	9/1 biennially	N/A	COMPLIANT	COMPLIANT	CONTINUE PRACTICE	Statewide	26
		Minimize energy and water use	9/1 biennially	N/A	NOT REPORTED	COMPLIANT	CONTINUE PRACTICE	Statewide	27
		Shift to clean energy for both facilities and vehicles	9/1 biennially	N/A	NOT REPORTED	COMPLIANT	CONTINUE PRACTICE	Statewide	28
		Shift to non-toxic, recycled and remanufactured materials in purchasing and construction	9/1 biennially	N/A	NOT REPORTED	COMPLIANT	CONTINUE PRACTICE	Statewide	29
		Expand markets for environmentally preferable products and services	9/1 biennially	N/A	NOT REPORTED	COMPLIANT	CONTINUE PRACTICE	Statewide	30
		Reduce or eliminate waste as an inefficient or improper use of resources	9/1 biennially	N/A	NOT REPORTED	COMPLIANT	CONTINUE PRACTICE	Statewide	31

C. WSDOT Facts

Our Mission:

“To keep people and business moving by operating and improving the state’s transportation systems vital to our taxpayers and communities”

Just as each state agency is unique in its mission and function, there are valuable and inherent considerations distinct to WSDOT. It is important to keep several issues in mind when reviewing this report:

- Washington State Department of Transportation is one of the state’s largest agencies
- The WSDOT mission concerns the safe and efficient flow of goods and services
- WSDOT manages approximately 20,000 lane-miles of interstate and state highways including the largest public ferry system in the nation (Washington State Ferries)
- With the Nickel funding package in 2003 and additional funding provided in the Transportation Partnership Act approved in 2005, WSDOT is in the midst of a significant construction program for the next 16 years. Consequently, this results in an increase in all phases of project delivery and operational demands
- Safety is WSDOT’s highest priority. Thus, certain activities will remain necessary in order to support traveler safety, and
- Severe weather conditions fluctuate significantly from year to year thereby causing variability in vehicle miles and fuel use for highway operations.

D. Agency Information

Agency Number: 405

Agency: Washington State Department of Transportation
Address: 310 Maple Park Avenue, SE
Olympia, WA 98504-7370

Division/Office: Strategic Planning and Programming
Policy Development & Regional Coordination

Sustainability

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Executive Order



Number: E 1018.00

/s/ Douglas B. MacDonald
Secretary of Transportation

Date: September 26, 2001

Environmental Policy Statement

The WSDOT acknowledges the state's vital interests in protecting and preserving natural resources and other environmental assets and its citizens' health and safety. These interests must be integrated with other vital interests committed to the Department, including the cost-effective delivery and operation of transportation systems and services that meet public needs.

The WSDOT shall conduct all its affairs in accordance with the dictates of sound environmental protection practices, including pollution prevention wherever reasonably possible. The Department shall also avoid, minimize and appropriately mitigate adverse environmental impacts. These undertakings extend to the construction, maintenance and operation of its systems and facilities. Legal obligations in these matters are established by applicable laws and regulations; this policy statement is not intended to create further or additional legally-enforceable requirements.

To support the performance of the Department's responsibilities and undertakings, the Secretary of Transportation, commits the Department:

- To implement and maintain an environmental management system that embraces all the Department's program functions;
- To establish, maintain and make available to the public appropriate performance indicators of the Department's exercise of its environmental stewardship and to consistently review these indicators as a basis to improve the Department's performance;
- To comply with all environmental laws and regulations applicable to our business and activities;
- To assure that employees of the Department receive training appropriate to their functions concerning the Department's environmental responsibilities;
- To communicate to contractors, designers, consultants and other participants in the Department's work the management practices and compliance requirements established to further the aims of this Policy Statement;
- To encourage employees and all other citizens to communicate with the Department about ways to increase the effectiveness of Department's practices supporting its mission of environmental stewardship;
- To make every reasonable effort to also protect the cultural and historic resources of the state.

Each employee of the Department is charged to exercise his or her responsibility on behalf of the Department to assure that the intentions of the Policy Statement are diligently carried out.

II. SUSTAINABILITY GUIDELINES

A. Sustainability Policy

WSDOT supports the sustainable practices required of state agencies as acknowledged in the preamble of Executive Order 02-03 establishing:

- The state is committed to the mutually compatible goals of economic vitality, a healthy environment, and strong communities;
- Sustainable practices require decisions based on systematic evaluation of the long-term impacts of an activity or product on health, safety, communities, the environment, and the economy of Washington;
- Reversing the steady decline in the natural resources and ecosystems on which people and economic vitality depend is critical to our future;
- Regional and global implications of climate change, loss of biological diversity, and threats to resources such as clean water require us all to examine and change behaviors;
- State governments should model sustainable business practices that contribute to the long-term protection and enhancement of our environment, our economic, and the health and quality of life of current and future generations.

B. Long-Range Goals

1. Save money by reducing resource consumption on a variety of levels agency-wide.

Action Steps - Develop a quarterly tracking method for demonstrating savings realized by each sustainability practice deployed.

2. Minimize energy and water use.

Action Steps - Document statewide activities and use related to water consumption and conservation in administrative buildings, at safety rest areas, in maintenance facilities, construction sites and other facilities. Define targets for reduction appropriate to primary functions at all WSDOT facilities. Develop additional water and energy use policies. Track performance.

3. Shift to clean energy for both facilities and vehicles.

Action Steps - Determine feasibility for retrofitting existing fleet to alternative fuels. Consider alternative energy sources for existing facilities, especially Leadership in Energy, Efficiency and Design (LEED) built facilities. In particular, determine the cost and conduct testing of pilot applications for solar power generation at facilities in eastern Washington where appropriate. Evaluate potential benefits of enrolling in clean energy programs through energy utilities. Identify and consider other alternative energy programs and applications as they become available.

4. Reduce or eliminate waste as an inefficient or improper use of resources.

Action Steps - Examine other state-wide resources consumed on day-to-day operations, as well as for seasonal maintenance and operations. Evaluate application for construction projects built by WSDOT and contractors/others.

5. Shift to non-toxic, recycled, and remanufactured materials in purchasing and construction.

Action Steps - Amend appropriate manuals and conduct training to educate the workforce on practices that shift consumption to non-toxic, recycled and remanufactured materials in purchasing and construction. Encourage professional certification and training in the field of purchasing to achieve sustainability goals. Work with the Washington State Department of General Administration to make non-toxic, recycled, and remanufactured products more available for state agency use.

-
6. Support and encourage expansion of markets for environmentally preferable products and services.

Action Steps - Participate in education of WSDOT workforce through internal and external conferences and research to support and encourage expansion of markets for environmentally preferable products and services.

7. Institutionalize sustainability as an agency value.

Action Steps - Implement an employee awareness program to institutionalize sustainability as an agency value. Develop a Sustainability Resources Web site. Write periodically for the intranet Web page.

8. Raise employee awareness of sustainable practices in the workplace.

Action Steps - Develop simple applications and supportive materials for sharing information to raise employee awareness and culture of sustainable practices.

III. PERFORMANCE MEASURES

This section reports WSDOT trends aimed at specific sustainability topics and targets as required by Executive Orders 05-01 and 04-01.

A. Fleets and Transportation

Background

The Fleet & Equipment Program of the Maintenance and Operations (M&O) Programs Division is responsible for the operational management of WSDOT fleet equipment. This encompasses the purchase, maintenance, logistical support, and disposal of the department's array of vehicles and equipment. In 2006, the program encompassed 11,000 items valued at \$222 million dollars and includes:

- Medium- & heavy-duty on- & off-road equipment
- Passenger carrying vehicles
- Laboratory equipment
- Surveying equipment
- Wireless equipment

The program also provides logistical support for 35 equipment repair facilities and 130 fuel facilities state-wide. The fuel facilities are also used by the Washington State Patrol (WSP). In addition, vehicle repair services and fuel are provided to other organizations and government agencies upon request and on a fee basis.

Since 1992, the Maintenance and Operations Division has implemented several business practices aligning with and supporting today's sustainability goals. These actions improve productivity and reduce long-term cost. They include:

- Maximize equipment standardization to improve inventory, lower acquisition, and operational cost;
- Systematically replace vehicles and equipment at the end of established life cycles to keep inventory productive, and to progressively take advantage of new operational and environmentally friendly technology.

The following benefits decreased the program's financial burden on the department and clients. These include:

- More modern vehicles, equipment, improved operational design, and reliability;
- Reduction in paper transactions, eliminating several time-consuming processes;
- State-of-the-art vehicle fueling infrastructure that provides WSDOT and WSP with greater logistical support that improves fuel accountability.

The vehicle and equipment inventory for WSDOT is divided into several distinct classes, each having a specific use. The inventory includes replacement, as well as units retained for a period of extended use.

Passenger-carrying vehicles (Class 01) are used primarily for administrative transportation e.g., transportation of office staff to meetings and other state business. Other classes of vehicles are considered "task-oriented" or "on-demand" vehicles. These vehicles have specific and specialized uses that deliver various public services such as small aircraft, bulldozers, snowplows, and other light duty vehicles. Fuel consumption by these vehicles varies annually based upon weather conditions and construction activities.

The Maintenance and Operations Programs Division implemented the statewide Fleet and Equipment Management System (FEMS) in 1999. This client-server based system has enabled the division to more effectively manage its business by interfacing with WSDOT's Financial Accounting system, and effectively collecting and reporting data related to inventory management, including vehicle and fuel use. The FEMS also provides an effective tool in fleet operations, decision-making, and measurement of program performance.

**Figure 1
WSDOT Fleet Inventory**

Class	Type Units	Inventory			FY 2004			FY 2005			FY 2006		
		Active	Retained	Total	Active	Retained	Total	Active	Retained	Total	Active	Retained	Total
1	Passenger Carrying Vehicles	526	117	643	581	80	661	624	29	653			
2	Light Cargo Carrying Vehicles	116	42	158	127	27	154	155	12	167			
3	Incident Response Vehicles	49	17	66	57	12	69	48	7	55			
4	Light Vehicles w/Special Bodies	195	83	278	211	46	257	248	20	268			
5	Pickup Trucks	844	267	1,111	984	165	1,149	1,098	92	1,190			
6	Dump / Plow / Sander Trucks	407	84	491	421	74	495	492	13	505			
7	Man lift & Digger / Derrick Trucks	79	22	101	89	15	104	98	0	98			
8	Trucks w/Special Bodies	163	76	239	180	71	251	203	58	261			
9	Earth Drilling Equipment	19	7	26	20	5	25	23	3	26			
10	Trailers	227	38	265	242	23	265	256	14	270			
11	Motor Graders	42	7	49	45	1	46	44	1	45			
12	Cranes and Shovels	27	1	28	29	0	29	30	0	30			
13	Front End Loaders	172	31	203	178	24	202	198	10	208			
14	Rollers	33	3	36	33	2	35	30	0	30			
15	Sweepers	59	11	70	60	8	68	63	1	64			
16	Bulldozer	1	0	1	1	0	1	1	0	1			
17	Tractors	74	18	92	83	8	91	85	2	87			
19	Asphalt Equipment	47	8	55	49	3	52	47	0	47			
20	Other Self-Propelled Equipment	129	23	152	138	19	157	141	14	155			
21	Other Non-Self-Propelled	623	80	703	728	40	768	934	15	949			
22	Snow Blowers	24	1	25	25	0	25	24	0	24			
23	Ice & Snow Removal Attachments	380	48	428	431	36	467	540	6	556			
25	Power Generation Equipment	188	19	207	193	9	202	193	2	195			
50	Attachments for Graders & Front Loaders	34	1	35	40	0	40	42	0	42			
	Total	4,458	1,004	5,462	4,945	668	5,613	5,617	309	5,926			

Source: WSDOT Fleet and Equipment Operations
 Note: Due to changes in vehicle classification codes, FY 2003 data is not available.

Most WSDOT fleet vehicles serve the state's interest in maintaining the safe and efficient flow of goods and services that promotes our economic vitality. As such, the following sections details fleet fuel consumption and focuses on Class 01 passenger carrying vehicle data because of its relative function in applying any changes necessary in meeting executive order targets.

Examples of WSDOT Vehicles and Equipment:



De-Icer



Hopper with Wing Plow



Incident Response Truck



Snow Plows



Snowblower

Section Summary

Executive Order or Statute	Topic	Requirement	Target Date
EO 05-01, SSB 6514 (B20), HB 1242 and SSL 6508 (B2)	Petroleum	20% Reduction in Petroleum Use	9/1/2009
		Freeze purchase of 4WD vehicles	9/1/2009
		Give priority to hybrid or other fuel efficient/low emission vehicle purchases	9/1/2009
		Replace standard diesel with B20 blend (Begin use of B5 as soon as practicable)	9/1/2009
		Priority to replace pre-1996 light duty vehicles driven more than 2,000 miles/year	January, 2008
		Employ professional fleet management and planning practices	9/1/05 & thereafter
		Establish clear direction on rental vehicle use	3/1/2005

Petroleum Use Reduction

Target: Reduce Fossil Fuel Use by 20 percent in the Operation of State and Privately Owned Vehicles Used for State Business

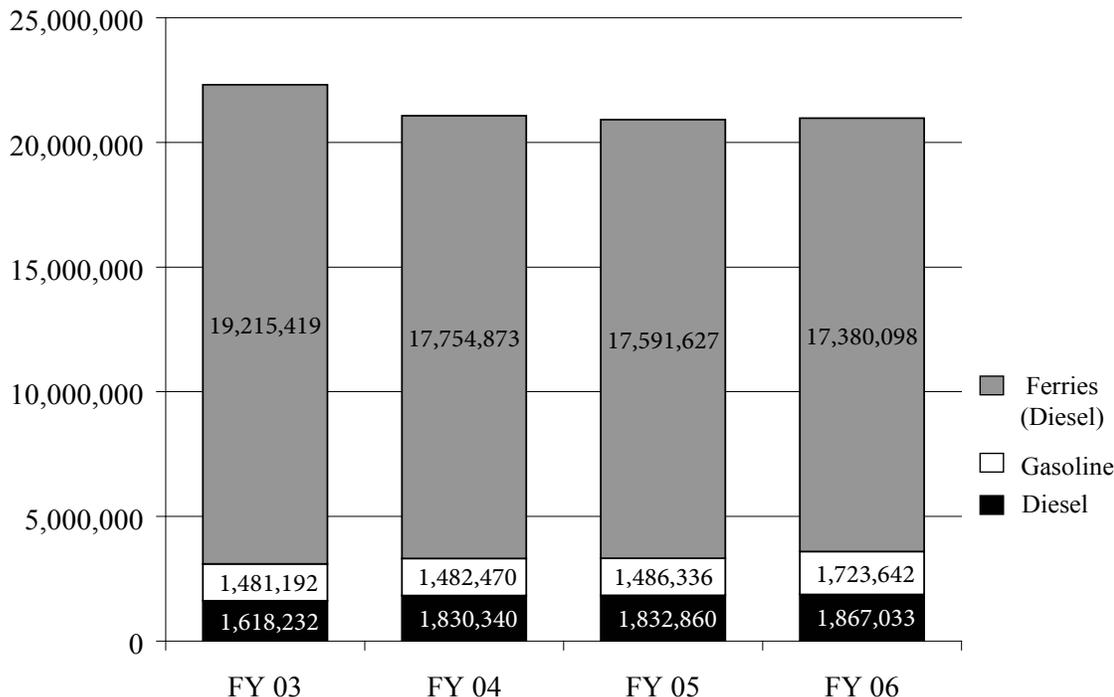
Timeline: September 1, 2009

Washington State Ferries and WSDOT Fuel Consumption

Fuel consumption by Washington State Ferries and WSDOT is illustrated in Figure 2 by fiscal year and by fuel type; gasoline and diesel. This includes all fleet fuel purchases purchased through WSDOT Green or Voyager fuel cards.

Overall, fuel consumption is comprised of fuel use, largely by Washington State Ferries, and to a smaller extent, fuel use by vehicles and equipment with specific functions. Figure 2 shows an overall reduction in fleet fuel consumption by six percent (1,344,070 gallons) from FY03 to FY06. However, it is important to note that reductions are influenced by the elimination of ferry service.

Figure 2
WSDOT Fuel Consumption (Gallons)



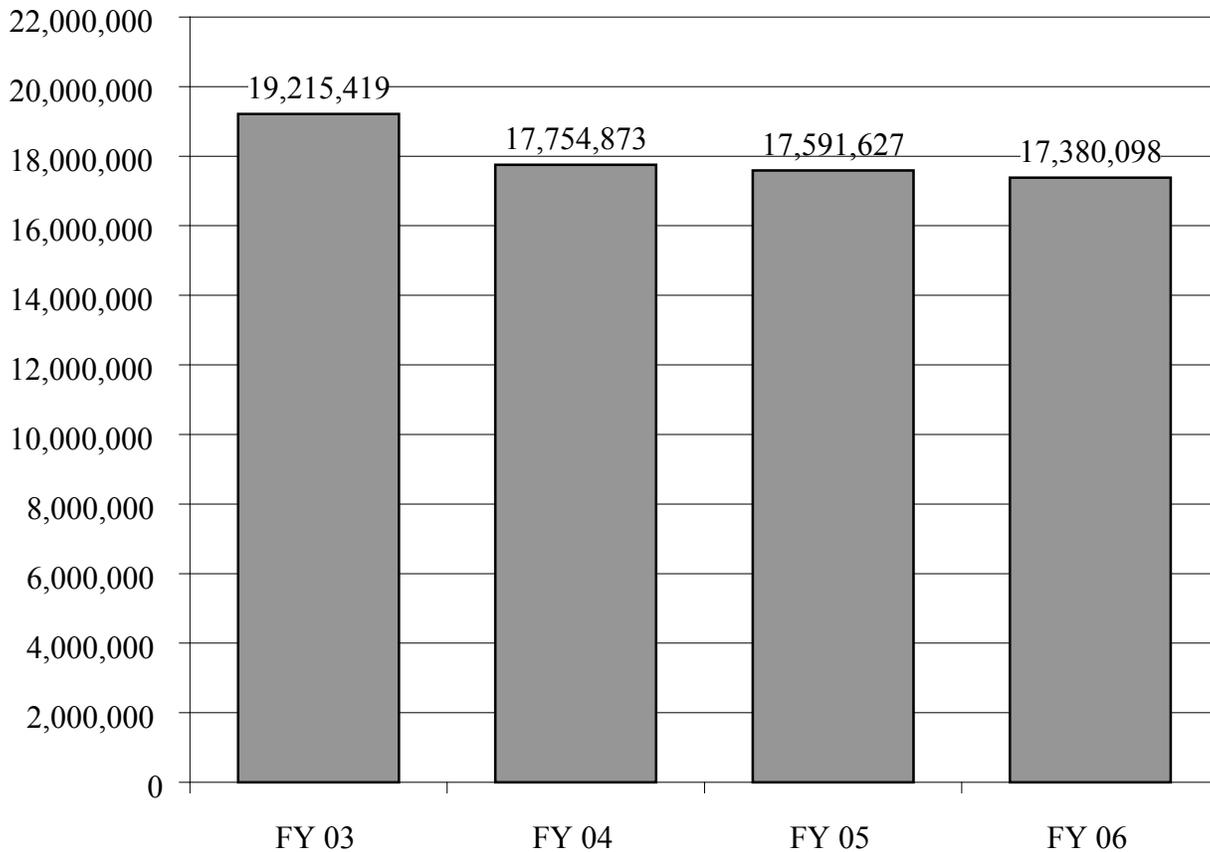
Source: WSDOT Fleet and Equipment Operations; Washington State Ferries

Washington State Ferries

Washington State Ferries fuel consumption is separated to highlight the different trends in fuel consumption. Washington State Ferries provides marine transportation services, rather than maintaining the transportation system's infrastructure. Reduction in fuel use was the result of eliminating passenger-only ferry service in 2004. Service from the Kitsap Peninsula to downtown Seattle was terminated as a result of an in-depth ferry service analysis.

The analysis found duplication in passenger-only ferry service, which could easily be absorbed by the car-passenger ferry service and reduce operational costs. Currently, Washington State Ferries and WSDOT do not have an adopted policy that specifies service reduction as a means of fuel conservation. Figure 3 illustrates the decline in fuel consumption from FY03 to FY06 by nine and one half percent (1,835,321 gallons).

Figure 3
WSDOT Petroleum Usage: Ferries Only



Source: Washington State Ferries

Task-Oriented and On-Demand Vehicles and Equipment

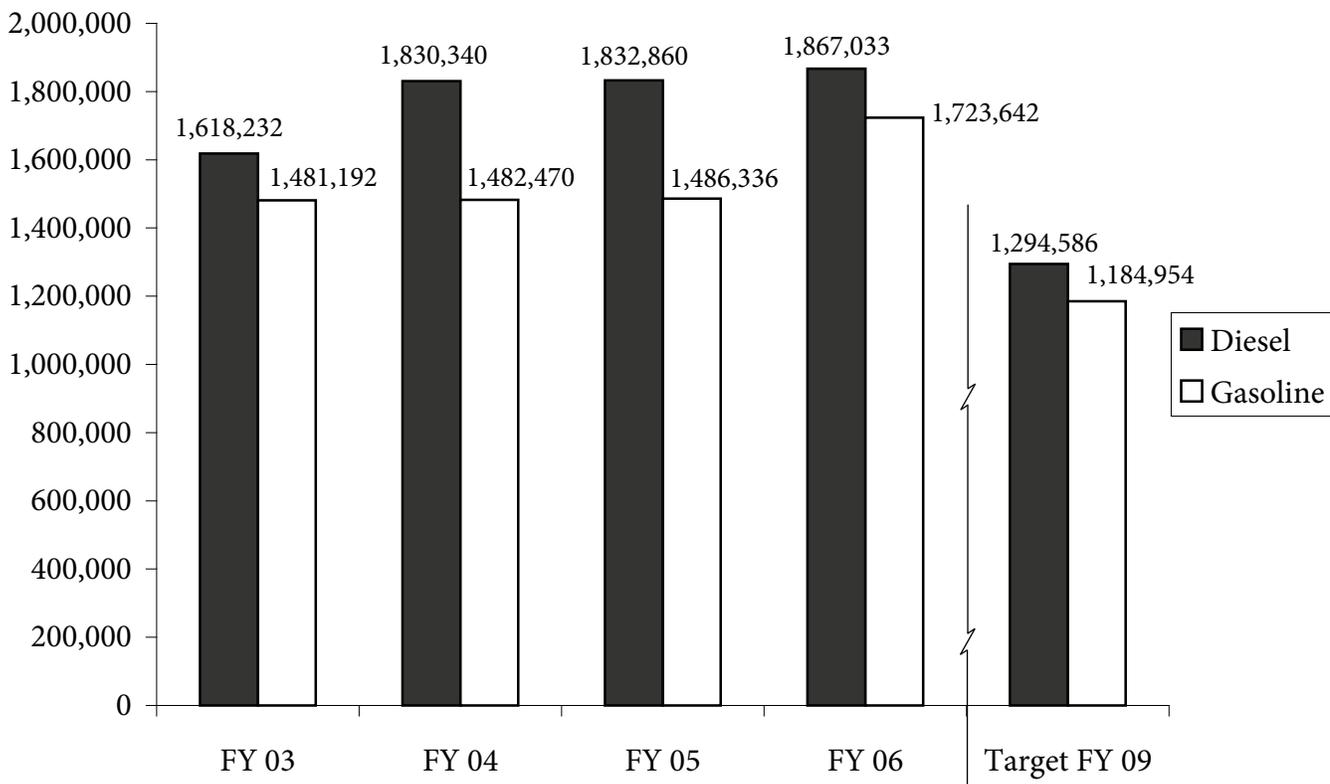
The majority of vehicles in the WSDOT fleet are classified as “task-oriented” or “on-demand.”

This includes vehicles such as bulldozers, snowplows and light duty delivery vehicles. Fuel consumption by these vehicles varies annually based upon weather conditions and construction activities.

Figure 4 details the fuel consumption by WSDOT fleet vehicles, including passenger-carrying vehicles. Fleet fuel consumption (excluding ferries) increased by 15.8 percent (491,071 gallons) between FY03 and

FY06 as shown in Figure 4. The increase on average equals 231,057 gallons per year. Several factors may explain the increase in fuel use. One factor could be due to the reclassification of the WSDOT vehicle fleet in 2003, and how fuel consumption was recorded. This also involved the replacement of the M-4 System. Fuel consumption under the M-4 system database was reported up-to-the-moment, or as a snapshot. The snapshots were then tallied for fiscal year recording. This may have affected the actual fuel consumption reported for 2003.

Figure 4
WSDOT Petroleum Usage (Ferries Excluded)



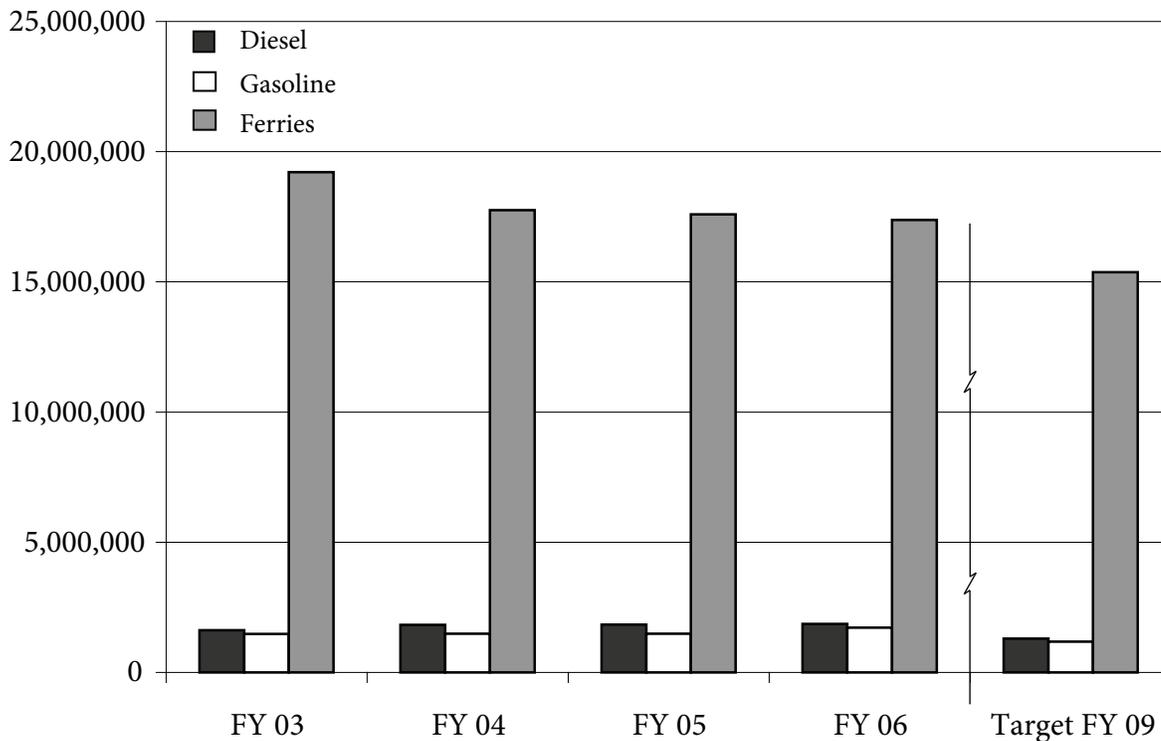
Source: WSDOT Fleet and Equipment Operations

Further Discussion

Under EO 05-01, agencies need to achieve a 20 percent reduction in petroleum use from base year 2003 by September 1, 2009. In order to meet this target, average fuel reduction of nearly 600,000 gallons per year would be needed. Figure 5 illustrates the current fuel consumption trend, and the FY 2009 target.

A possible explanation for the increase in fleet fuel consumption and vehicle miles traveled is the dramatic increase in highway capital programs. Initiative 912, which proposed the repeal of the Nickel Revenue Package, was defeated in 2004. This enabled the programs proposed by the Nickel Revenue Package to move forward on design and construction initiating major construction activities.

Figure 5
Fuel Consumption Trends

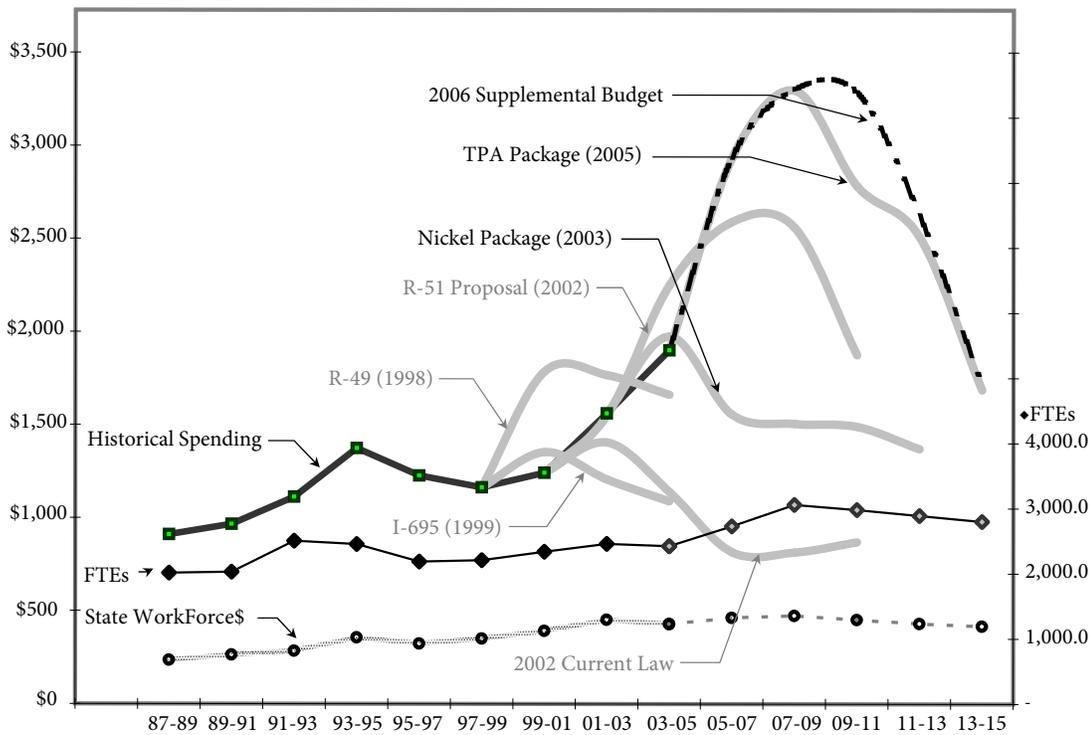


Source: WSDOT Operations Transportation Equipment Fund; Washington State Ferries

The increase in FTEs and highway capital programs correlates with the increase in fleet fuel use (excluding ferries) as well as vehicle miles traveled

of passenger carrying administrative vehicles (Figure 10). Figure 6 plots historical and projected trends of several highway capital programs.

Figure 6
Highway Capital Program Trends
Historical and Projected dollars and FTEs for 1987 - 2015
 \$ in millions



Source: WSDOT Systems Analysis and Program Development

However, the increase in highway capital programs alone does not completely substantiate the increase in fuel consumption. The rise in fuel use is also largely attributable to delivery of the agency's mission and maintenance operations. Figure 7 details where the bulk of WSDOT fuel is consumed. Operation and Maintenance of the Statewide Transportation System and Preservation programs together constitute 83.1 percent of the fuel used by the department in FY06. On-demand vehicles such as snow plows, sweepers,

graders, and other equipment used to maintain the state's roadway infrastructure are included in these two categories.

As such, the importance of the highway capital programs, and the maintenance and operations of our roadway infrastructure to the economic vitality of the state will make it difficult for WSDOT to meet the 20 percent fuel reduction target. However, despite the anticipated increase in fuel consumption, WSDOT is taking positive steps.

Figure 7

Fuel Consumption by Program				
Program	Quantity (Gallons)	Percentage	Cost	Product
M&O	1,702,296	49.10%	\$3,693,081	Diesel
M&O	633,380	18.30%	\$1,407,043	Gas
Preservation	544,806	15.70%	\$1,250,297	Gas
Traffic	225,973	6.50%	\$506,129	Gas
Preservation	60,461	1.70%	\$132,283	Diesel
TEF	50,948	1.50%	\$113,167	Gas
WSF O&M	40,828	1.20%	\$105,241	Gas
TEF	32,784	0.90%	\$70,511	Diesel
Capital Facilities	31,720	0.90%	\$70,522	Gas
Program Delivery	31,541	0.90%	\$71,679	Gas
Planning, Data & Research	28,741	0.80%	\$65,320	Gas
Improvements	27,347	0.80%	\$65,777	Gas
Information Technology	8,418	0.20%	\$19,088	Gas
Local Programs	7,957	0.20%	\$19,276	Gas
WSF Construction	7,346	0.20%	\$18,581	Gas
Capital Facilities	6,988	0.20%	\$14,968	Diesel
Planning, Data & Research	5,542	0.20%	\$11,584	Diesel
Traffic	5,433	0.20%	\$11,814	Diesel
Transp Mgmt & Support	3,474	0.10%	\$7,939	Gas
WSF O&M	3,468	0.10%	\$8,544	Diesel
Aviation	1,974	0.10%	\$4,750	Diesel
Aviation	1,540	0.00%	\$3,725	Gas
Rail Programs	940	0.00%	\$2,250	Gas
Urban, Rural Public Transp.	888	0.00%	\$2,149	Gas
Improvements	483	0.00%	\$1,050	Diesel
Local Programs	4.65	0.00%	\$14	Diesel
Total Gas	1,645,846			
Total Diesel	1,819,433			
Total All Fuels	3,465,279	Total Cost	\$7,676,781	

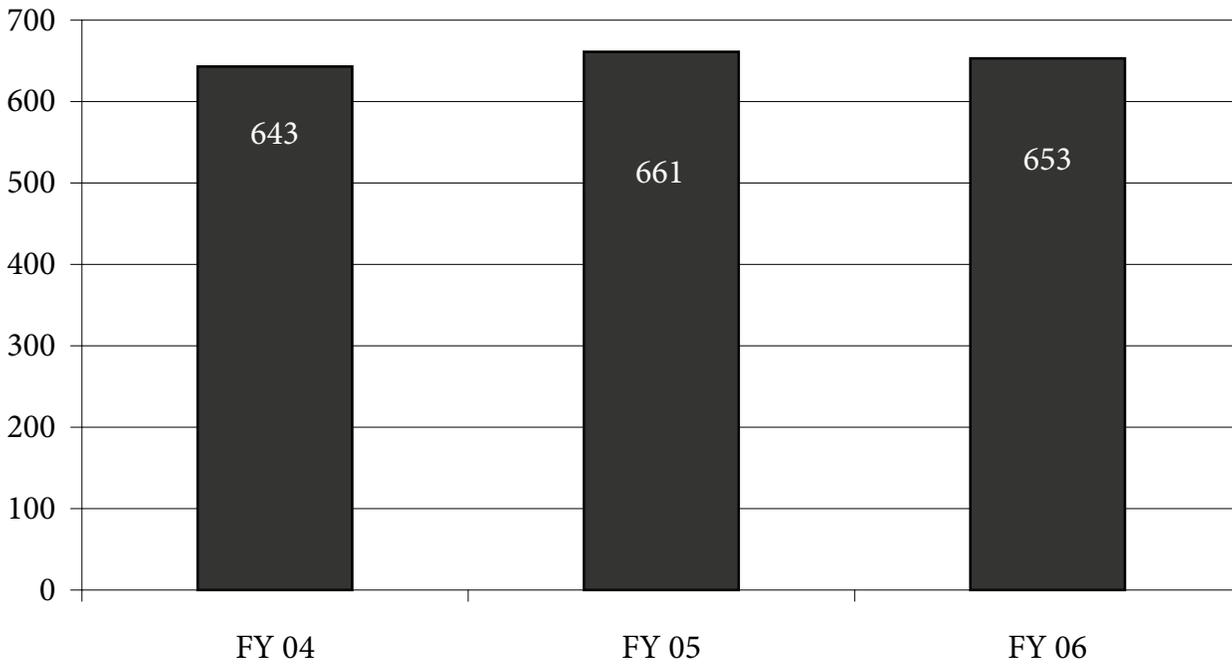
Source: WSDOT Operations Transportation Equipment Fund

Passenger-Carrying Vehicles

The passenger carrying vehicle fleet is comprised of those vehicles that are used by administrative staff. These vehicles are used for various assignments, such

as transporting staff to meetings, inspections, and business oriented errands. Figure 8 illustrates trends in the Class 01 passenger carrying vehicles inventory.

Figure 8
Inventory Trend Passenger Carrying Vehicles



Source: WSDOT Operations Transportation Equipment Fund

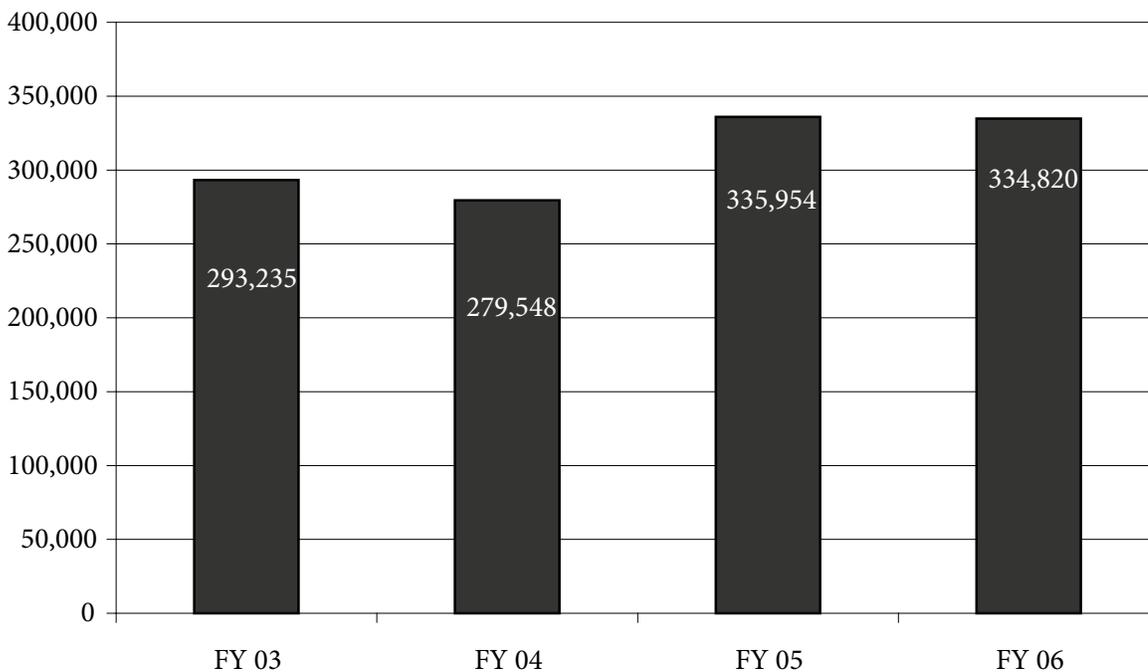
Fuel Use: Passenger-Carrying Vehicles

Fuel consumption of passenger carrying vehicles has increased since FY03 as well. The trend in fuel consumption by passenger carrying vehicles is detailed in Figure 9.

Fuel consumption increased in FY06 by 43,585 gallons (about 14 percent) from FY03, consumption has virtually flattened in FY06 with a minor decrease in fuel use of 1,134 gallons compared to FY05.

Figure 9

Passenger Carrying Vehicles Fuel Use (Gallons)



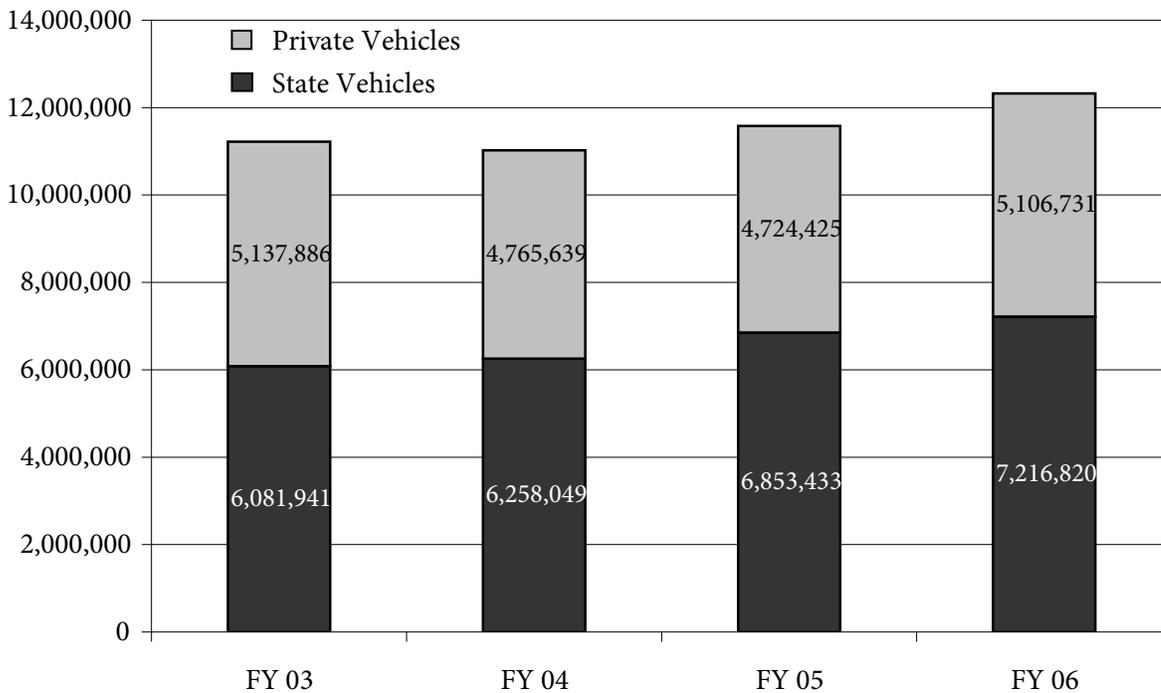
Source: WSDOT Operations Transportation Equipment Fund

Vehicle Miles Traveled: Passenger-Carrying Vehicles

WSDOT's inventory has 653 passenger-carrying vehicles. The limited fleet size means state vehicles are not always available for all business needs. In some instances, private vehicles are used for state business. Mileage is recorded for state vehicles and employees' private vehicles used for state business. WSDOT employees are reimbursed for the mileage incurred on private vehicles while performing state business. Vehicle miles for both state and private

vehicles are detailed in Figure 10. Since FY03, combined vehicle miles traveled increased by a total of 1,103,724 miles (nearly nine percent). The largest increase has been in the use of state vehicles, which increased from FY03 totaling 1,134,879 miles. During the same reporting period, the use of private vehicles for state business declined from FY03 by 31,152 miles.

Figure 10
Miles Traveled by Passenger Carrying Vehicles



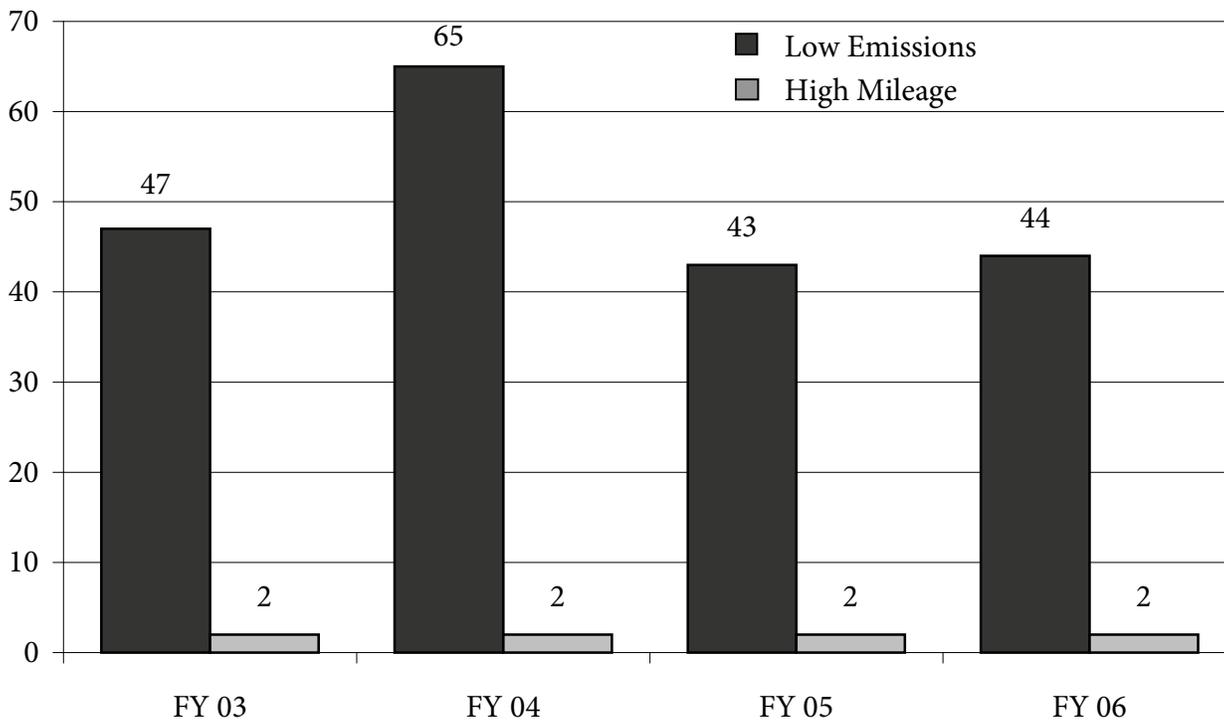
Source: WSDOT Operations Transportation Equipment Fund

Fuel Efficiency: Passenger Carrying Vehicles

The federal Energy Policy Act (EPA) State and Alternative Fuel Provider Rule requires that 75% of a state fleet's light-duty vehicle acquisitions must comprise of alternative fuel vehicles. The Executive Order 05-01 follows the EPA, which specifies the purchase of high-mileage, fuel-efficient, low-emission vehicles when vehicle replacement occurs.

A percentage of the vehicle fleet is replaced annually based upon funding and the number of vehicles at the end of their service. As detailed in Figure 11, the majority of replacement vehicles purchased by the agency meets this requirement. Additional vehicle replacement information is available on page 24.

Figure 11
High Mileage & Low Emission Passenger Carrying (Class 01) Vehicles Purchased



Source: WSDOT Operations Transportation Equipment Fund

Note: Low-Emission = vehicles that meet current state DOE clean-burn standards

High-Mileage = vehicles whose EPA fuel efficiency rating is at least 30 miles per gallon of fuel.

Fuel Efficiency: Passenger Carrying Vehicles

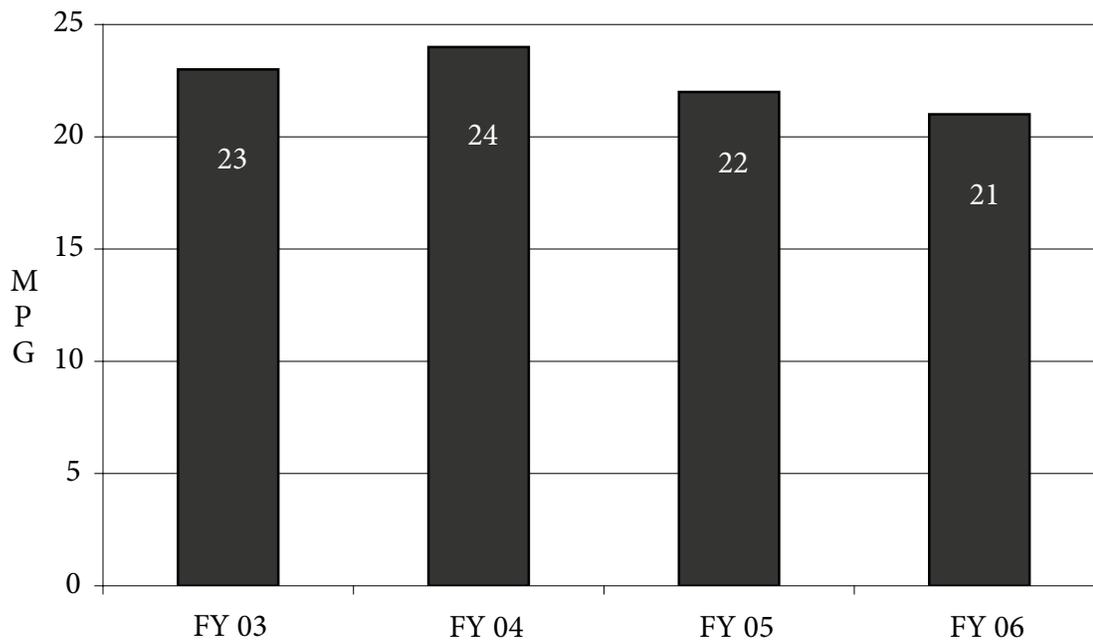
The information in Figure 12 reflects the average fuel efficiency of the agency's passenger carrying vehicles, during the fiscal years indicated.

Fuel efficiency is based upon the vehicle manufacturer's estimated fuel consumption set by the United States Environmental Protection Agency. Several extenuating factors also affect fuel efficiency. Some of these factors are topography, weather, travel

speed, highway versus city driving, including the driving abilities and habits of operators. In Figure 12, the average fuel efficiency of passenger carrying vehicles is measured by the fleet's composition. The Ford Taurus comprises the majority of the passenger carrying vehicle fleet. Class 01 inventory also includes 15 passenger vans resulting in lower average fuel efficiency ratings.

Figure 12

Average Fuel Efficiency of Passenger-Carrying (Class 01) Vehicles



Source: WSDOT Operations Transportation Equipment Fund

Freeze Four Wheel Drive Purchases

Target: Freeze Four Wheel Drive (4WD) Purchases (Exempting Those With Fuel Economy Greater Than 30 MPG or Those Purchased for Law Enforcement or Emergency Response Purposes).

Timeline: September 1, 2009

The purchase of four-wheel drive sport utility vehicles (SUV) has been significantly reduced. As detailed in Figure 13, no four-wheel drive SUV purchase exemptions were granted by WSDOT. There was only one four-wheel drive SUV purchase exemption granted in FY06. It is anticipated, that unless exemptions are granted by the agency director, no future purchases of four-wheel drive vehicles that obtain less than 30 miles per gallon will be procured by WSDOT.

Figure 13

4WD Sports Utility Vehicle Purchase Exceptions Granted	
FY05	0
FY06	1

Source: WSDOT Operations Transportation Equipment Fund

Vehicle Purchase Priorities

Target: Give Priority to Hybrid or Other Fuel Efficient/Low Emission Vehicle Purchases

Timeline: September 1, 2009

Vehicle Purchases

Consequent to the federal EPA requirement, vehicle replacement with the purchase of hybrid vehicles is prioritized. The United States Environmental Protection Agency considers hybrid vehicles as meeting the high mileage, fuel efficient, and low emissions requirements. Figures 11 and 14 illustrate information associated with the WSDOT agency fleet replacement.

Figure 14

Light Gas-Electric Hybrid Purchases			
Fiscal Year	Total Passenger Vehicles Purchased	Hybrids Purchased	Percent Hybrids
FY03	47	2	4.3%
FY04	65	2	3.1%
FY05	43	2	4.7%
FY06	44	3	6.8%

Source: WSDOT Operations Transportation Equipment Fund

Biodiesel Use

Target: Replace Standard Diesel Use With 20 percent Biodiesel Blend. As Soon as Practicable, Begin Use of Five Percent Biodiesel Blend

Timeline: September 1, 2009

In 2004, Washington State Ferries, in partnership with the City of Seattle participated in a biodiesel pilot project. The project utilized biodiesel to fuel ferry vessels on the Fauntleroy-Southworth-Vashon service route. Approximately 142,000 gallons of biodiesel was consumed in the course of the four-month pilot project. The project was suspended due to mechanical problems incurred through the use of biodiesel in the ferry boats. Currently, the mechanical problems from using biodiesel are being studied.

Bio-Fueling Stations

In 2005, WSDOT started using five percent biodiesel (B5) mixed with regular diesel in maintenance vehicles in the Central Puget Sound area. In order

to meet the demand and goal of replacing standard and B5 diesel with 20 percent bio-diesel blend (B20), bio-fueling stations are made available statewide. Currently, bio-fueling stations are for state agency use only. Figure 15 details biodiesel availability and the quantity of biodiesel sold at WSDOT facilities.

Currently, a limiting factor to more widespread installation and use of bio-fueling stations is the market availability of bio-fuels. As availability of these fuels increase, more fueling stations will be converted to biodiesel facilities statewide.

Figure 15

BIODIESEL: Facilities and Quantity Sold		
Site	Region	Gallons
173- Ballinger	Northwest	575
170- Bellevue	Northwest	1,765
100- Corson	Northwest	2,363
143- Geneva	Northwest	725
140- Kent	Northwest	1,245
103- Signals	Signals	435
142- Renton	Northwest	160
401- Vancouver	Southwest	690
411- Kelso	Southwest	195
312- Lakewood	Olympic	200
319- Mottman	Olympic	210
326- Shelton	Olympic	70
301- Tumwater	Olympic	401
310- Yelm	Olympic	40
Total Gals Average		9,074

Source: WSDOT Operations Transportation Equipment Fund

Vehicle Replacement Priority

Target: Replace Pre-1996 Light Duty Vehicles Driven More Than 2,000 Miles/Year

Timeline: January, 2008

Vehicle Replacement: Passenger Carrying Vehicles

Vehicle life cycles for each class of equipment have been established at WSDOT. The replacement of individual units is based upon the individual vehicle life cycle completion.

A level-purchasing methodology is used to determine the number of vehicle units to be replaced annually. The total number of units in a particular class is divided by the class life cycle. For example, an equipment class with 100 units in inventory, on a 10-year life cycle, means 10 units are replaced annually to replace the entire inventory in the 10-year period.

(100 units ÷ 10 years life cycle = 10 units replaced annually)

Level purchasing makes replacement planning easier, provides a high degree of operational and funding consistency, and is easily understood by interested parties. This methodology also ensures the inventory is turned on a cyclical basis resulting in a reliable fleet that requires less maintenance, and operational costs. This method has been proven successful for more than 10 years.

Within the next two years, all pre-1996 light vehicles currently in the WSDOT fleet will be replaced, according to this schedule, thus meeting the intent of the executive order.

Figure 16

Pre-1996 Light Vehicle Replacement Schedule				
Fiscal Year	Qty In-Inventory At Beginning of FY	Qty Scheduled For Replacement	Replacement Percent	Qty Remaining
FY06	135	132	98%	3
FY07	23	22	96%	1
FY08	9	9	100%	0

Source: WSDOT Operations Transportation Equipment Fund

Fleet Management

Target: Employ Professional Fleet Management and Planning Practices

Timeline: September 1, 2005 and thereafter

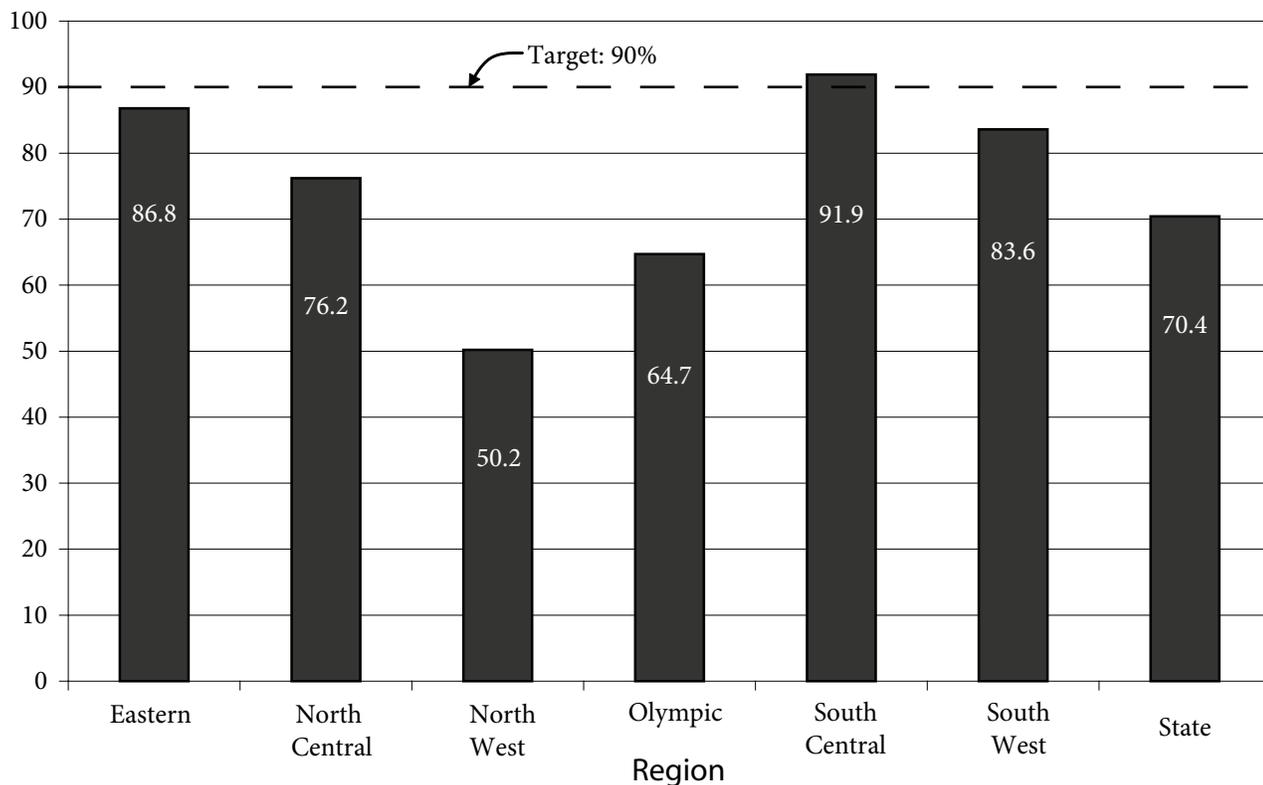
WSDOT uses a regularly scheduled Vehicle Preventive Maintenance (PM) program to increase and maximize the mechanical life, productivity, and efficiency of WSDOT's fleet. This includes both vehicles and highway maintenance equipment. PM performance is used as a primary measurement in the proper management of fleet vehicles and equipment.

The established goal is to accomplish 90 percent of all PM services within 30 days after the scheduled equipment manufacturers due date.

Figure 17 depicts the WSDOT's six regions FY06 PM performance and the average statewide percentage.

Figure 17

Percent of Preventative Maintenance Completed Within 30 Days After Date Due



Source: WSDOT Operations Transportation Equipment Fund

Direction on Rental Vehicle Use

Target: Establish Clear Direction on Rental Vehicle Use

Timeline: March 1, 2005

WSDOT rents vehicles from a single predetermined rental company unless fleet access is not possible. The Washington State Department of General Administration has executed a mandatory contract with the Enterprise Rent-A-Car Corporation. The program provides access to daily rental of automobiles from more than 4,500 airport terminals and other locations in Washington and nationwide.

In accordance with EO 05-01, a fuel-efficient, high-mileage compact or hybrid vehicle, if available, is the primary vehicle type for mandatory rental use. Four-wheel drive vehicles are available for rental during the winter months if travel involves traversing

the Cascade Range. As a part of and in cooperation with the goals set within EO 05-01, Enterprise Rent-A-Car Corporation is examining the purchase of a number of alternative fuel sports utility vehicles. Compact Jeep Liberty sports utility vehicles would be bio-diesel fueled and stationed initially at the Enterprise Rent-A-Car location in Olympia. WSDOT is pursuing identification of a fueling station within the Olympia area.

B. Purchase of Goods and Services

Section Summary

Executive Order or Statute	Topic	Requirement	Target Date
EO 05-01 and EO 02-03	Paper	Reduce use of office paper by 30%	9/1/2009
		Increase % of environmentally preferred paper by 50%	9/1/2009
		Recycle 100% of used office paper	9/1/2009
		Increase use of post consumer recycled products for janitorial paper products	9/1/2009

Paper Use Reduction

Target: Reduce Use of Office Paper by 30 Percent

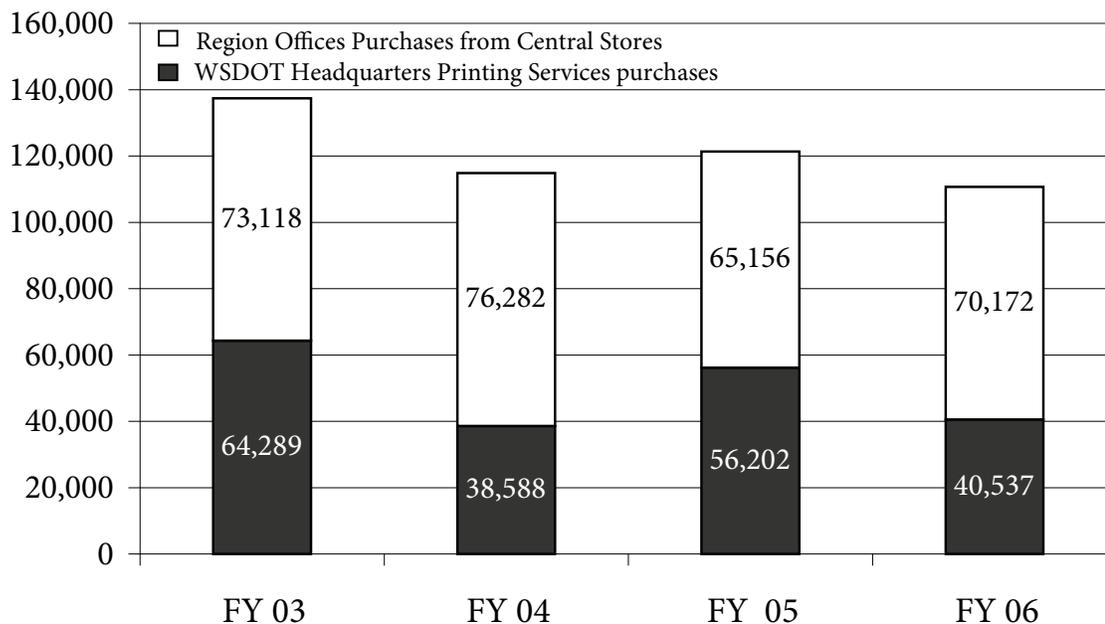
Timeline: September 1, 2009

All paper use data (except where noted) was collected through two sources: Printing Services at WSDOT Headquarters and the Department of General Administration's Central Stores, where WSDOT region offices purchase the majority of paper they

consume. Paper purchases made through local retail stores and other contract suppliers are not measured in this report. Phase Two implementation will include developing a more comprehensive state-wide tracking process.

Figure 18

WSDOT Paper Purchases in Reams (8.5 X 11)



Source: WSDOT Printing Services; Washington State Department of General Administration: Central Stores

Figure 19

WSDOT Paper Purchases in Reams

Paper Purchases	FY 03	FY 04	FY 05	FY 06
Headquarters Purchases (8.5 x 11 ream equivalents)	64,289	38,588	56,202	40,537
Region Office Purchases (8.5 x 11 only)	73,118	76,282	65,156	70,172
Total	137,407	114,870	121,358	110,709
Change from FY03	N/A	-22,537	-16,409	-26,698

Source: WSDOT Printing Services; Washington State Department of General Administration: Central Stores

According to data available for FY 03 through FY 06, WSDOT has reduced paper consumption by an estimated 19.4 percent or 26,698 reams over the three-year period. While the data may show progress towards achieving the target, agency-wide paper use fluctuates in accordance to paper demands during

legislative sessions and the increase in highway capital programs. Efforts will be made to ensure consistent agency-wide measurements of paper use in order for WSDOT to meet the 30 percent reduction target in paper use.

Environmentally Preferred Paper Use

Target: Increase Environmentally Preferred Paper Purchases by 50 Percent

Timeline: September 1, 2009

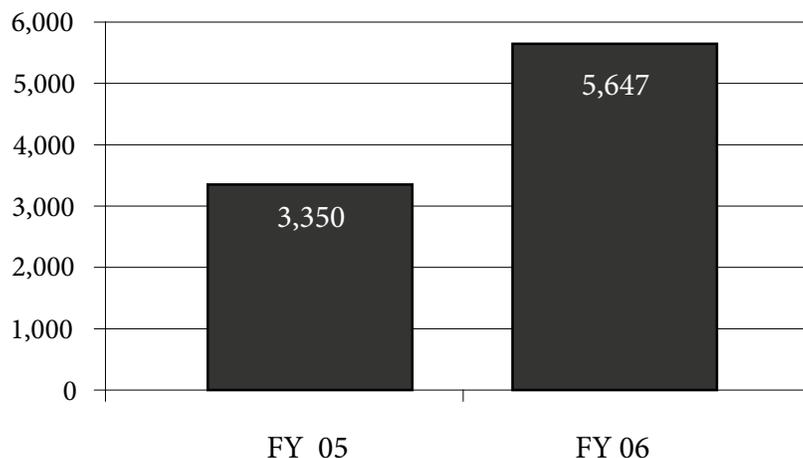
Environmentally Preferred Paper (EPP) is defined as 100 percent recycled paper with at least 50 percent post-consumer waste.

Data for paper purchases prior to FY 05 and for WSDOT Headquarters are currently unavailable. Consequently, a measurement of the change in EPP purchases since FY 03 cannot be determined. However, if only current data are examined, the trend

shows WSDOT currently meets and exceeds the target by increasing EPP purchases by 68.57 percent. Efforts will be made to ensure consistent agency-wide measurements in order for WSDOT to meet the 50 percent increase in EPP use.

Figure 20

Environmentally Preferred Paper Purchases (8.5 x 11)



Sources: WSDOT Printing Services; Washington State Department of General Administration: Central Stores

Figure 21**Environmentally Preferred Paper Purchases in Reams**

	FY05	FY06
Headquarters Purchases (8.5 x 11 ream equivalents)	0	0
Region Office Purchases (8.5 x 11 only)	3,350	5,647
Total	3,350	5,647
Change from FY05	N/A	2,297

Sources: WSDOT Printing Services; Washington State Department of General Administration: Central Stores

Janitorial Paper Products Use

Target: Increase Use of Post Consumer Recycled Products for Janitorial Paper Products

Timeline: September 1, 2009

The following table illustrates that the majority of janitorial products purchased in FY06 through Central Stores are paper-based. The majority of janitorial paper products have at least 20 percent post-consumer

content. In FY06, WSDOT purchased \$329,000 worth of janitorial paper products from Central Stores. Efforts will be made to ensure consistent agency-wide measurements of janitorial paper product use.

Figure 22**WSDOT Janitorial Paper Product Purchases FY 2006**

Product	Quantity	Unit	Post Consumer Content
TOILET TISSUE (GP 14580) 4 1/2 X 4 1/3	99	Case	20%
TOILET TISSUE (GP15590) 4-1/2X4-1/2"	132	Case	20%
TOILET TISSUE 4X4"(13102)JUMBO [2.55L]	2,460	Case	20%
TOILET TISSUE,KC 04460-50, 2 PLY	647	Case	20%
TOILET TISSUE JRT jumbo roll (KC 07805)	100	Case	N/A
TOILET TISSUE, jumbo roll, (KC 07827)	12	Case	N/A
TOILET(TJ1222)TISSUE,JUMBO ROLL,TWO PLY,6-ROLL/CS	227	Case	N/A
TOILET PAPER 4"X4" KC07805	3	Case	20%
SEAT COVER TOILET HALF FOLD 50RA	844	Case	60%
TOWEL, PAPER GP25190, C FOLD,	547	Case	40%
TOWEL(KC-01801)1P MULT-FOLD	73	Case	40%
TOWEL, GP23504,1P, SINGLE/FOLD	1,090	Case	80%
TOWEL KC01950, M-FOLD	180	Case	40%
TOWEL, paper, household, white, two ply, 11" x 9",	2	Case	40%
TOWEL, PAPER GP 26402	355	Case	40%
TOWEL GP89460 1PL FOR USE IN 4515-007-035 DISPENSE	87	Case	40%
TOWEL(20389)1-PLY, 16 PK/CS	179	Case	40%
TOWEL, GP21000, 2 PLY, MULTI FOLD	1,230	Case	45%-65%
TISSUE, 47410,FACIAL,WHITE 2 PLY	4,577	Box	20%
TOILET TISSUE,GP14448, RECY,	638	Case	21%
TOWEL(116)CLEANING CLOTH	3	Package	None
SHOP TOWEL KC05701, (12.5X14.5)	170	Case	None
TOWEL, HAND CLEANING, 6285-07	2	Each	None

Source: Washington State Department of General Administration: Central Stores

Virgin Paper Purchases

Target: Justification of Virgin Paper Purchased

Timeline: September 1, annually

Virgin paper is considered to be paper without recycled post-consumer content. The amount of virgin paper managed reams purchased has varied in recent years. The justification for virgin paper purchases is

based upon the type of project. In addition, certain printer manufacturers require virgin paper to prevent equipment damage.

Figure 23

WSDOT Virgin Paper Purchases in Reams

	FY03	FY04	FY05	FY06
Headquarters Purchases	2,819	542	1,282	1,730
Region Office Purchases from Central Stores	N/A	N/A	7,753	13,331
Total	2,819	542	9,035	15,061

Sources: WSDOT Printing Services; Washington State Department of General Administration: Central Stores

C. Facility Construction, Operation, and Maintenance

Section Summary

Executive Order or Statute	Topic	Requirement	Target Date
EO 05-01 and ESSB 5509	Construction	Incorporate green building practices (LEED Silver) to projects costing more than 50% of facility's assessed value.	2005-2007 biennium and thereafter
EO 05-01 and EO 02-03	Energy	Reduce energy purchases by 10% from 2003 by 9/1/2009	9/1/2009
		Report annual energy use to GA	9/1 annually

Energy Use

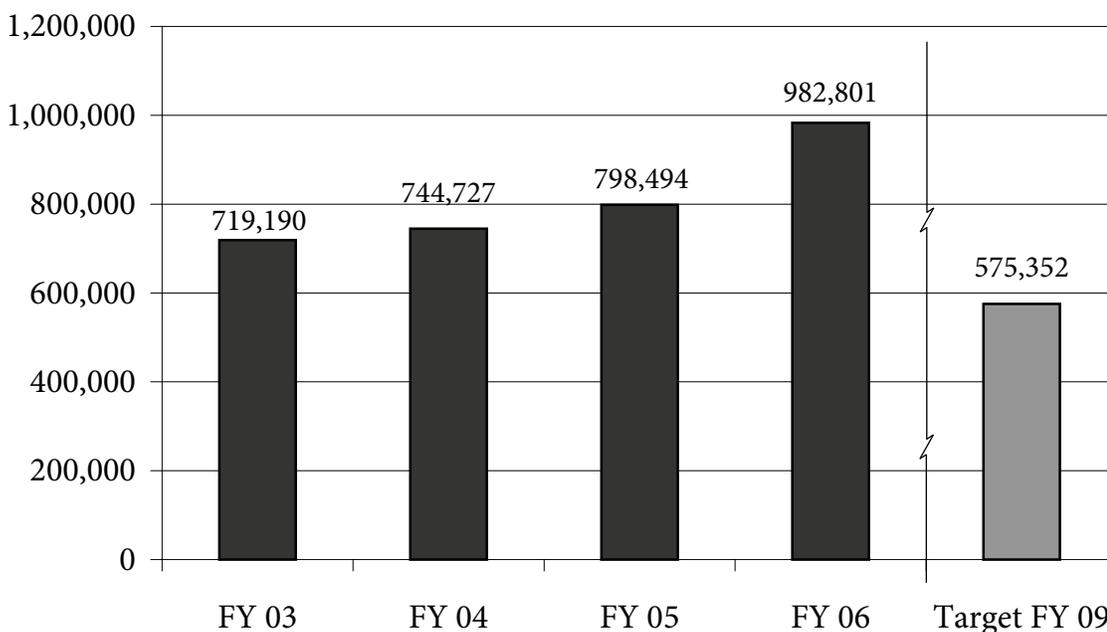
Target: Reduce Energy Purchases by 10 Percent

Timeline: September 1, 2006

Energy consumption is reported to the Department of General Administration annually. Natural gas use is reported in therms and kilowatt hours (KWH) in the use of electricity. The sustainability target aims at reducing energy purchases by 10 percent from FY03.

Figure 24 shows a 37 percent increase in the use of natural gas from FY03. The steady increase over a four-year period cannot be explained without further investigation. However, it is likely that improper use or poorly programmed thermostats are contributing factors.

Figure 24
WSDOT Natural Gas Usage (Therm)

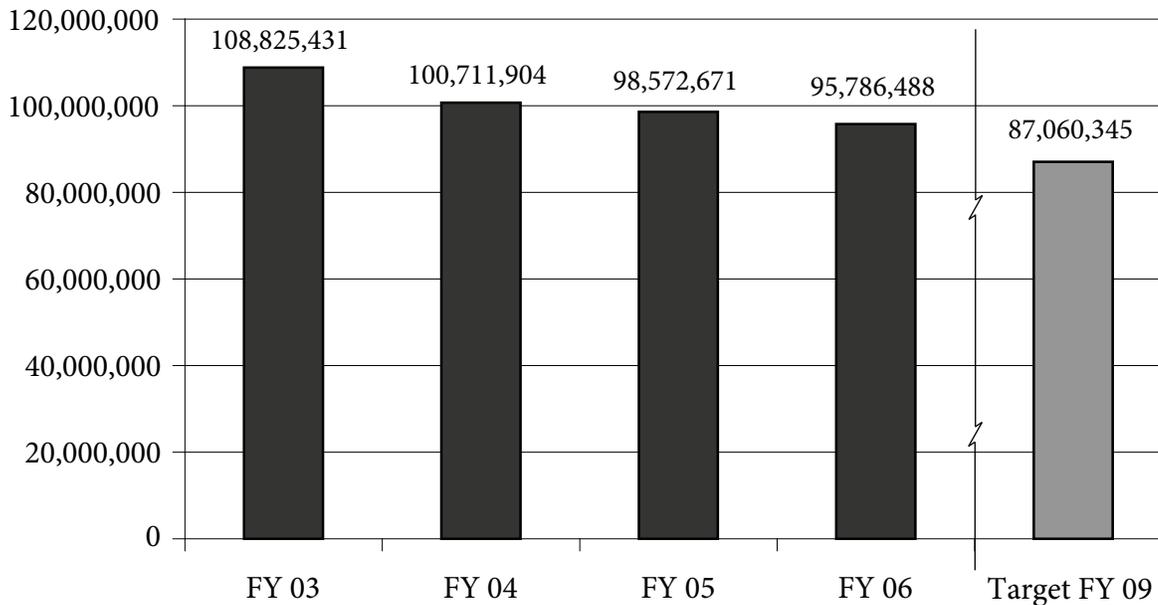


Source: Washington State Department of Transportation: Facilities Office

Figure 25 illustrates progress made towards meeting the electricity reduction target. Likely contributors to the decline in electricity use stem from newer, more energy efficient technologies, appliances, and equipment. However, greater reductions may be achieved through energy use policies pertaining

to computer, printer, and copier machine usage. Currently, these policies do not exist. It is also perceived that greater education and outreach efforts could significantly address impacts on energy conservation.

Figure 25
WSDOT Electricity Usage (KWH)



Source: Washington State Department of Transportation: Facilities Office

Incorporate Green Building Practices

Target: Construction or Remodeling Projects Larger Than 5,000 Square Feet Must Conform to LEED Silver Standards

Timeline: 2005-2007 biennium and thereafter

The Washington State Department of Transportation has adopted the Leadership in Energy and Environmental Design (LEED) Rating System for design and construction of new and renovated buildings.

The LEED rating system was developed by the United States Green Building Council to encourage

and facilitate the construction of more sustainably designed buildings. LEED certification is tiered into three categories: Silver, Gold, or Platinum. Currently, WSDOT and the Department of Corrections occupy the Edna Lucille Goodrich Building located in Tumwater, Washington (LEED Certified Gold). A detailed description of the Goodrich Building’s sustainable features is provided on the next several pages.

The Edna Lucille Goodrich Building

The Edna Lucille Goodrich Building, a new office building for state employees in Tumwater, opened in early 2006. Constructed and owned by Wright Runstad & Company of Seattle, the building houses both the Department of Transportation and the Department of Corrections. The building earned LEED 'Gold' certification based upon the assessment and credits earned. There are five defined categories in the LEED rating system; *Sustainable Sites*, *Water Efficiency*, *Energy and Atmosphere*, *Materials and Resources*, and *Indoor Environmental Quality*. The following sections highlight building features that earned it a gold certification.

Sustainable Site Selection

The site occupies 18.65 acres. Within the site, a total of 4.5 acres is devoted to native plantings, with an additional 6.2 acres preserved as open space.

The building is located near two major transit bus lines. Transit service is provided by Intercity Transit, with routes operating on 15-minute weekday service and 30-minute weekend service.

Bicycle racks have also been provided near the building. There are 56 racks installed outside the building with additional storage areas located inside the building. Lockers are provided for the storage of clothing and bicycling equipment in addition to seven shower facilities for use by the 1,065 building occupants.

Electrical power outlets were incorporated into the design of the parking lot. Exterior style power outlets were installed along the parking stalls of the parking lot. This enables vehicles to recharge their batteries while parked at the building.

Water Efficiency

The site was designed to minimize stormwater run-off and subsequent treatment. The site was graded to allow runoff from parking surfaces to flow into vegetated catch basins.

Curb cuts in the parking lot also allow stormwater to drain into catch basins that collect water and provide irrigation to the native vegetation. Other design benefits reduce the heat island effect by incorporating a "green," or vegetated roof that assists in keeping the building cooler in the summer and reduces stormwater runoff by capturing precipitation.



Native plants were used to landscape the site. Native grasses and native deciduous trees were planted along the south-facing facade of the building. These trees will help cool the building in summer by giving it shade, while allowing passive solar heating to get through in the winter when the leaves have fallen. A permanent irrigation system is not required due to the water-efficient landscape design. Interior water systems have also been designed to be efficient, minimizing water consumption.



Restrooms feature waterless urinals, dual flush toilets and low-flow motion activated sinks. Dual flush toilets are rated at 1.6 gallons per flush (gpf) for solid waste and 0.8 gpf for liquid waste. With the installation of these fixtures, water use at the building has been reduced by 45.62 percent when compared to a facility with standard water fixtures.

Energy Use

As part of the LEED certification, optimization of energy performance is a major credit rating. The Edna Lucille Goodrich Building has many features allowing the building to optimize energy use.

Light bars are positioned throughout the building and mounted along the top edge of windows to reflect ambient natural light so artificial lighting can be minimized.

The artificial lighting is a reflective, defused fluorescent system, equipped with brightness sensors mounted in ceiling tiles automatically adjusting light fixtures based upon the brightness and level of natural light.



The fixtures in the lunch rooms are also energy efficient. Each floor has two lunch rooms. The refrigerators, stoves and microwaves are Energy-Star rated appliances. Motion sensors automatically turn the lighting systems on and off.

Recycling stations are located under the counters in each lunch room for convenience, and easy access. Vending machines within each lunch room have energy monitors, reducing the unit's energy load.

Other energy-maximizing features of the Edna Lucille Goodrich Building includes chilled water and hot water systems. Water is only chilled at night when energy is less in demand and stored for use during normal business hours. The hot water system is active only during normal business hours to minimize energy consumption.



Recycling is a major component of the daily operations of the Edna Lucille Goodrich Building. Paper recycling stations are located near the copier and printing stations on each floor where the paper is stored for pickup by the recycling vendor. Copier and printing stations on each floor also have recycling stations. Also, a dedicated exhaust system installed in each room removes unwanted particulates emitted by the copiers. The energy-conserving fixtures and features save the building 39.2 percent in energy costs over a building with standard fixtures and features.



Materials & Resources

Materials used in the construction of the Edna Lucille Goodrich Building were subject to the LEED certification process. A construction waste management plan was developed as a result of the certification process. This plan provided an accurate monthly accounting of construction waste produced and the recovery rate of waste materials during construction. This included the documentation and commingling of concrete, clearing and grubbing of construction and natural vegetation materials. A full 75 percent of waste materials were diverted from regional landfills as a result of the waste management plan.

The combined savings by using recycled content materials in construction comprises nearly 16 percent of the overall \$5,478,761 material costs. The materials containing recycled content include carpets, linoleum flooring, and ceramic tiles used throughout the building. Careful attention was given to ensure materials used in the construction were extracted and manufactured in proximity to the site, as reducing the transport distance of materials contributes to the reduction of emissions resulting from construction. The percentage of materials extracted within 500 miles was nearly 12 percent, while manufactured materials within 500 miles constituted nearly 32 percent of total materials used in the construction of the building.

Indoor Environmental Quality

Another part of the LEED certification process involves indoor environmental quality. This includes the scrutiny of materials that emit low levels of volatile organic compounds (VOCs). These low-emitting materials largely apply to interior paint and the adhesives used to adhere floor coverings and carpets.

Interior paint, primers, and topcoats all met the requirements of the USGBC Green Seal. The Green Seal provides environmentally friendly interior paints that do not compromise indoor air quality. Carpet products installed throughout the building also meet the Carpet & Rug Institute Green Label Program standards.

The Edna Lucille Goodrich Building is a prime example of sustainability efforts WSDOT strives to obtain. The building's Gold rating is an achievement that embodies the overall sustainability goals of the department. More importantly, the building is a model for minimizing our environmental footprint, maintenance, and operational costs for all WSDOT facilities.

D. Waste Management and Recycling

Paper Recycling

Target: Recycle 100 Percent of Used Office Paper

Timeline: September 1, 2009

At WSDOT Headquarters, paper is recycled along with periodicals, newspapers, cardboard boxes, etc. Currently, no accurate or consistent methodology measures the amount of paper recycled agency-wide. Due to a variety of ways that paper is recycled and

measured throughout the region offices, no paper recycling data is provided in this report. However, we intend to identify the degree and proper methodology of paper recycling practices in order to provide this data in future reports.

E. Persistent Toxic Chemicals

Section Summary

Executive Order or Statute	Topic	Requirement	Target Date
EO 04-01	Persistent Toxic Chemicals	Adopt measures to reduce the use of equipment, supplies, and other products that contain persistent, toxic chemicals	9/1 annually

Target: Adopt Measures to Reduce Use of Equipment, Supplies and Other Products That Contain Persistent, Toxic Chemicals

Timeline: September 1, annually

The major areas where materials with persistent toxic qualities have been used or exist within the highway right of way or agency facilities include: maintenance operations such as paint stripping, metal bridge painting, and herbicides for vegetation management,

and in older facilities from lead paint and mercury in light filaments and tubes.

Persistent Toxic Chemicals: Responsibility and Responsiveness

Highway Striping

Most highway lane divider and edge lines must be repainted on an annual basis. All paints now used by WSDOT for these purposes are water-based products, and not classified as dangerous waste under state law.

Metal Bridge Maintenance

Metal bridges must be cleaned and repainted on a regular basis. Many of the older structures still have lead-based paints on them. When old paint is removed prior to repainting, the chips are captured and disposed of properly. New paints applied to metal structures are non-solvent based and not classified as dangerous waste under Washington state law.

Facilities Maintenance and Clean-up

There are a number of older facility buildings owned and operated by WSDOT that may still have persistent toxic chemicals present in the form of lead based paint or used in thermostats, switches, and/or light filaments containing mercury. Some of the older light ballasts also contain polychlorinated biphenyls (PCB). WSDOT deals with these chemicals on a case by case basis when renovating or replacing older facilities. The WSDOT Olympic, North Central, and Eastern regions have approximately 9,500 highway lights. Of these highway lights, 265 or approximately 2.7 percent are mercury vapor lamps. All three regions have not installed these lamps for many years and plan to replace all failed units with high pressure sodium units, per availability of funding, scheduled within the next four to five years. The maintenance and upkeep of WSDOT's Maintenance Facilities includes routine replacement of failed fluorescent lamps, bulbs, and light ballasts. WSDOT recycles fluorescent lamps and bulbs, which contain a small percentage of mercury, and light ballast that contain PCBs. These items are collected at project sites, consolidated at the Regional Maintenance Headquarters, and transported off site by contracted recyclers.

Reducing Herbicide Use—Integrated Vegetation Management

WSDOT uses herbicides in combination with mechanical, manual, and biological methods to control vegetation along roadsides through an ongoing process referred to as Integrated Vegetation Management (IVM). The agency's goal in relation to herbicide use is to reduce and minimize herbicide use wherever and whenever possible. In recent years, WSDOT has refined policy in relation to herbicide use, based on recent scientific studies of product toxicity, mobility, and persistence in the environment. From 2003 to 2005 overall herbicide used was reduced by 40 percent based on pounds of active ingredient applied.

Chemicals in Use

The United States Environmental Protection Agency (USEPA) categorizes chemicals found in various products and wastes as those requiring additional screening or prioritization. These chemicals are identified as having the highest "persistence," "bio-accumulation," and "toxicity" calculations as evaluated by USEPA's 1998 Waste Minimization Prioritization Tool Screening Evaluation.

Pendimethalin – This is the only herbicide used by WSDOT present on the EPA list mentioned above. This herbicide is sometimes used for pre-emergent control of annual grasses and broad-leaf weeds on the east side of the Cascades. WSDOT uses Pendulum 3.3 EC and WDG products containing pendimethalin. In the maintenance of a bare ground strip at the edge of pavement and applied in the spring, Pendulum 3.3 EC is applied at a typical rate of 8 pounds of product per acre, while Pendulum WDG is typically applied at 5 pounds per acre. WSDOT applied approximately 365 pounds of pendimethalin statewide during 2004, all on the east side of the state. Along with all other products, we are continuing to evaluate the best methods for reducing herbicide use.

Integrated Vegetation Management

The care and control of plants along highways is addressed through Roadside Vegetation Management Plans which define Integrated Vegetation Management (IVM) practice for each maintenance area throughout the state. These geographically-based plans include an inventory of routine maintenance activities, weed infestations, sensitive areas, and other relevant information, including a computerized record-keeping system to document and evaluate site-specific treatments for vegetation management and prescribed treatment for various types of vegetation.

Currently, a statewide set of vegetation management plans to determine the right tool or combination of tools is being developed to ensure that the right plants exist at the right place and time. The plans are scheduled to be completed by 2007, but implementation, refinement, and training of maintenance crews is ongoing. Using roadside vegetation management plans help to reduce herbicide use and maintenance costs by determining the most responsible and cost effective approaches to vegetation management over the life-cycle of the highway. The following considerations are weighed for each situation:

- Impacts on people, including driver safety, pedestrian safety, and WSDOT employee safety;
- Impacts to the environment, including streams, wetlands, lakes, noxious weed control, and biodiversity, and fire prevention;
- Impacts to the highway, including pavement preservation; and
- Impacts to taxpayers in terms of life-cycle costs.

The practice of using fewer chemicals follows the understanding that through proper management, roadside vegetation can become self-sustaining over time thereby reducing costs, herbicide use, and overall maintenance requirements. Additional steps in balancing responsible and cost effective approaches to vegetation management include:

Roadside Responsibility

- Our activities and specific limitations on product use are based upon peer-reviewed sound scientific findings as presented in our 2003/2005 Herbicide Risk Assessment Report and corresponding product fact sheets;
- We have reduced the herbicide maintained vegetation-free zone at the edge of pavement from 8 feet to 3 feet over the past 10 years on most state highways and completely eliminated this zone on many sections of highway;
- We emphasize precise spot treatments of noxious weeds, in lieu of broadcast spray;
- We have a plan for responsible roadside maintenance that relies on a variety of strategies and offers alternatives to herbicide use when practical;

- We provide annual training for our maintenance employees on:
 - Roadside maintenance options (i.e. integrated vegetation management)
 - Proper herbicide handling and use (maintenance workers must be licensed and take Continuing education courses to maintain licenses);
- We work closely with county noxious weed boards to prevent noxious weed infestations and keep weeds from invading neighboring properties and agricultural lands;
- We balance a variety of needs to determine the best way to treat our roadside maintenance activities;
- We typically apply herbicides well below the maximum allowable application rates on product labels; and
- Records are kept of all applications of herbicides.

Agency Responsiveness

- We are developing more roadside maintenance integrated vegetation management plans and communicating with the public about the plans; and
- We are improving our communications with people interested in WSDOT's herbicide and maintenance program.

Cost effectiveness

We are currently in the midst of a five-year research project to study the long-term benefit cost of a variety of alternatives to herbicide use for managing vegetation at the edge of pavement. This study will be completed and results published early in 2009.

F. Communication and Education

The agency has identified the following actions to raise employee awareness and culture of sustainable practices.

1. Enhance data collection, reporting, and implementation of future updates through Phase II (see Section V: Future Challenges and Next Steps). Phase II shall address the following:
 - Acknowledge and set needed actions to meet targets outlined in the Executive Orders;
 - Improve and establish consistent reporting processes by identifying gaps and creating guidelines; and
 - Increase internal sustainability dialogue
2. Post a copy of the Sustainability Plan and Progress Report update on the Intranet for review and download
3. Create a WSDOT sustainability Web site
4. Showcase model examples of sustainability practices and encourage a variety of communication techniques and supportive materials for employee training and awareness
5. Offer opportunities to learn about sustainability practices at the work place and for application at home

IV. SUSTAINABLE ACTIVITIES IN FOCUS

Major investments are now made in wetland avoidance or replacement, erosion control, cultural resource protection, and stormwater treatment in response to specific permit requirements, as well as, best practices that demonstrate our environmental commitment. To date, project planners and engineers carefully consider ways of reducing habitat and other environmental impacts by:

- Removing sediments and metals in stormwater treatment;
- Protecting the quality of groundwater;
- Controlling the erosion of stream banks;
- Reducing surface run-off;
- Providing fish passage and enhancing habitat connections;
- Replacing and improving wetland functions;
- Protecting cultural and historic resources; and
- Minimizing air pollution.

This section highlights WSDOT sustainability related activities that support the intent of the Executive Orders on sustainability. It is our intention for subsequent plan updates to highlight additional WSDOT activities that go beyond specified targets and measurements to demonstrate our commitment to sustainability.

A. Habitat Conservation

Stormwater Management

Stormwater management involves regulatory drivers and constraints and numerous technical disciplines including hydraulics, hydrology, geology, and water quality. The relatively narrow linear nature of the highway network further constrains the use of conventional stormwater management approaches while also requiring safe access for maintenance of stormwater facilities. To help meet these challenges, WSDOT relies on stormwater research to help identify state-of-the-art, cost-effective solutions for designing, constructing, and maintaining stormwater management systems.

WSDOT's existing stormwater-related research areas and needs fall into four categories: 1. Properties of highway runoff; 2. Environmental effects; 3. Mitigation; and 4. Policy, procedure and design.

Untreated (end-of-pipe) highway runoff can exhibit direct aquatic toxicity. The exact causes of these toxic discharges are unknown, but have been speculated to result mostly from "high" concentrations of dissolved (non-complexed) metals and combustion poly-nuclear aromatic hydrocarbons (multiple benzene rings).

Low Impact Development (LID), also known as "water conservation design" or "zero impact development," is a technology WSDOT employs for stormwater treatment. LID technologies are based on using the cumulative effects of multiple, redundant, decentralized stormwater management techniques to meet stormwater management thresholds. This type of development attempts to control runoff volumes so that end-of-pipe systems are either reduced or entirely eliminated. LID differs from conventional end-of-pipe treatment systems, which are generally used as conveyance systems.

WSDOT and its partners have cooperatively operated an ultra-urban stormwater research facility since 1996. This test site receives urban stormwater from a heavily traveled section of an interstate highway within the City of Seattle. The system collects highway runoff from one end of a bridge, and uses splitter pipes to route the flow to four test bays. The drainage basin covers approximately 31.6 acres, with 22.7 acres of pavement and 8.9 acres of roadside landscaping. This project was initiated because of the sparse information on the effectiveness and maintenance requirements of "emerging," "proprietary", and "ultra-urban" stormwater treatment technologies. Current partners in the facility are WSDOT, City of Tacoma Public Works Department, and Seattle Public Utilities with Taylor Associates, Inc. managing the site.

Active and Recently Completed WSDOT Stormwater Research Projects		
Project name	Description	Status
Compost Amended Vegetated Filter Strip	This project is quantifying the flow control and water quality benefits of composted shoulders, which is an approved Low Impact Development technique. The study is expected to help WSDOT and Ecology calibrate models for estimating how much water is detained or infiltrated. Secondary objectives include documenting how effectively compost removes sediment, metals, phosphorus and oil. This is a three-year project, largely funded by the Federal Highway Administration. Cost - \$345,000	One year completed in a three year study. Construction was completed in October of 2004. Data collection began immediately thereafter
Ultra Urban Stormwater Treatment Testing (I-5 Ship Canal Bridge)	The City of Tacoma is testing several BMPs for use in ultra urban settings where space is extremely limited at WSDOT's testing facility. WSDOT provides support as needed. Cost - \$300,000	Ongoing, a final report is expected in August 2006
Runoff Treatment BMP Design in Cold Climates	This project will evaluate how BMPs should be designed in areas with cold climates where ice and snow can greatly influence BMP effectiveness. Cost - \$200,000	This is a two-year project that started in January of 2005.
Low Impact Treatment Methods - Natural Dispersion of Highway Runoff	This is a study by WSU to develop better sizing criteria for dispersion and infiltration facilities in eastern Washington. Cost - \$125,000	Complete. Results were provided to Ecology and are now under consideration for use in updating Ecology's Eastern Washington Stormwater Management Manual.
BMPs for Disposal of PCP Grindings	This project evaluates the impacts of concrete grindings on pH and the use of compost to neutralize pH. Cost - \$10,000	Draft report completed. Research indicates that compost greatly reduces the elevated pH levels.
Precipitation Modeling for Eastern WA Stormwater Design	This project will produce a map showing the expected rainfall amounts for the range of expected storm intensities across all of eastern Washington. This information will be used to more accurately size stormwater treatment facilities. Cost - \$85,000	Projected completion date October 2005
Floating Bridge Runoff Study	This limited study was performed in response to unusually high zinc concentration observed in runoff from a floating bridge. The study suggests that poor quality control in the downspout galvanization process in the 1960s is responsible for elevated zinc levels on one of the bridges. Cost - \$20,000	Completed. WSDOT is evaluating how to prevent future problems with better quality control on materials.
Ecology Embankment	The Ecology Embankment is a Low Impact Development BMP that infiltrates and filters runoff within highway shoulders. Research started on this BMP prior to the development of Ecology's BMP testing protocols, which require dissolved copper data. Copper data was collected to document that this BMP meets the performance goal for Enhanced Metals Treatment.	Field data collection completed and data has been submitted to Ecology

Removal of Fish Passage Barriers

Access to good quality habitat is a key component to the recovery of listed salmon stocks. Since 1991, WSDOT has managed a program to inventory and correct highway culverts that block fish passage. Common barriers to fish passage include rapid water movement, insufficient water depth, and large

culvert outfall drops. Once these problem culverts are corrected, the benefits to fish habitat are real and immediate – in many cases fish have been observed upstream of improved culverts within weeks of restoring access.

Since 1991, WSDOT and the Washington Department of Fish and Wildlife (WDFW) have worked cooperatively on a program to inventory and prioritize barrier culverts on streams that flow under our state highways. To date, WDFW has completed the WSDOT barrier inventory for 92 percent of culverts on the west side of the state. The total amount of inventory equates to 3,784 road miles out of a total of 7,045 miles, or 54 percent of the total highway system. WDFW has inspected 803 of 5,853 highway crossings since last year, identifying 1,136 WSDOT-owned fish passage barriers where modification to the culvert or other water crossing would result in significant habitat gain. WSDOT has removed 180 of these barriers, improving access to more than 411 miles of stream habitat. To achieve the full environmental value of this work, other non-WSDOT barriers will also need to be corrected in the future.

WSDOT culvert barriers are corrected in the course of highway projects, during routine maintenance, or by identifying through a special retrofit program funded by the legislature. Projects are prioritized by culvert barriers that yield the greatest habitat benefits. WSDOT has spent more than \$39 million since 1991 to inventory, conduct habitat studies, prioritize, and correct fish passage barriers to Washington streams as of May 2006. Correcting fish passage barriers like roadway culverts is one of the most effective ways to improve streams for fish habitat conditions. The effort to fix these barriers remains a high priority.

WSDOT has developed and funded a research strategy to improve our understanding of how road crossings can become barriers to fish and the best approaches to correcting barriers. Topics for research include the hydraulic conditions in culverts for various flows and design configurations, as well as ecological questions relating to the behavior of juvenile salmonids. The WSDOT research provides a scientific foundation for the fish passage program as we seek cost-effective and ecologically sound solutions.



BEFORE

SR 20 near Mazama, Little Boulder Creek:
A 10-foot culvert created a fish passage barrier.



AFTER

A new 26-foot wide culvert replacement on Little Boulder Creek restores fish passage.

Wetland Mitigation

WSDOT made notable progress in managing impacts to wetlands and implementing mitigation “banking” procedures and projects. The Intermodal Surface Transportation Act of 1991 (ISTEA) specifically identifies development projects eligible under the National Highway System and Surface Transportation Program in Sections 1006 and 1007.

Washington State Executive Order 90-01 mandates that the actions of state agencies achieve a goal of “no net loss” of wetland acreage and function. In recognition of the “Wetlands Executive Order,” WSDOT has adopted the “no net loss” goal as agency policy.

WSDOT is accountable for both transportation and environmental stewardship. A comprehensive wetlands program to ensure that unavoidable impacts associated with projects has been established. These environmental impacts compensate in a responsible ecological manner.

WSDOT is recognized as a national leader among transportation agencies in the use of new technologies that reduce impacts to aquatic habitats. For example, the construction of crib-walls, using concrete railroad ties and incorporating bioengineering practices are some of the alternative technologies utilized to avoid and minimize impacts to wetlands.

Some elements of the wetland program include:

- Maintaining a highly trained staff of wetland scientists and landscape architects to oversee the design, construction and monitoring of its wetland mitigation sites;
- Continually improving the technical proficiency of its wetland biologists and landscape architects through forums, training classes, workshops and participation in professional organizations;
- Researching and developing technical guidance that will lead to improvements in wetland mitigation efforts;
- Providing leadership in advance mitigation including wetland banking;
- Setting the standard of excellence in wetland monitoring and reporting; and
- Implementing site management and re-remediation activities when monitoring reveals a need.

WSDOT currently manages two wetland mitigation bank sites: the Moses Lake Mitigation Bank in Grant County (approved in 2002) and the North Fork Newaukum Mitigation Bank in Lewis County (approved in 2004). A third site located at the Greenhill Mitigation Bank in Lewis County will contribute to the concurrent mitigation projects in the state.

Small Animal Habitats

Providing habitat for small animals adjacent to

highway projects is a methodology used to mitigate the impacts that the projects have on the wildlife habitat. Under President Clinton's Administration, the small animal environmental program was made a part of the Transportation Equity Act for the 21st Century (TEA-21). This provided an unprecedented opportunity to reduce highway impacts on wildlife. In the Federal Highway Administration 1999 Strategic Plan, FHWA made a commitment to environmental stewardship by protecting and enhancing the natural environment and communities affected by highway transportation projects. The 1999 FHWA Strategic Plan also contained a pledge to build and strengthen the partnerships enabling this program to happen. As a result, the FHWA produced a guideline document, "Critter Crossings: Linking Habitats and Reducing Roadkill," available at www.fhwa.dot.gov/environment/wildlifecrossings/. These guidelines provide methods for state departments of transportation to mitigate impacts to habitat as a result of roadway projects

An example of improving small animal habitat is at the Bow Wetland Mitigation Site. At this site, mice, robins, blackbirds, sparrows, chickadees, and other small mammals and birds are using habitat structures created by WSDOT. The structures are made of brush and tree limbs cut during clearing activities on the site and stockpiled. Small logs, four to six inches in diameter by six to eight feet long, crisscrossed and topped with smaller branches and brush, were also crisscrossed. Since the habitat structures are six to eight feet tall, there is plenty of space for small animals to get in and move about. The log-brush structures solved two problems at once: They replaced lost habitat with new habitat, and they reduced the amount of vegetation waste generated during the land clearing activities for the project.

“Fish Sticks” Program—Fish Habitat Markers

The “Fish Sticks” program is designed to provide a marker, delineating the boundaries near salmon bearing streams for WSDOT roadside maintenance crews. The sticks, similar to milepost markers are made of plastic, and bear a coral-red salmon reflective sticker. Thousands of the colorful markers line state roadways throughout Washington between salmon-spawning waterways and state rights of way. WSDOT installed the “fish sticks” to mark the boundaries for mowing, spraying, ditch-cleaning, and other maintenance activities in these areas. When maintenance crews come upon these markers, they apply state-of-the-art environmental management practices to keep pollutants and sediment away from sensitive wetlands, streams, and rivers. WSDOT put “fish sticks” in many priority sensitive areas including 300 feet of Route 101 in Mason County between the Hood Canal and the salmon bearing Hamma-Hamma River. Along this section of Route 101, the “fish sticks” program also helps protect a nearby oyster farm in addition to salmon habitat.



B. Emissions Reductions

Commute Trip Reduction Program

In 1991, the Washington State Legislature passed the Commute Trip Reduction (CTR) Law, incorporating it into the Washington Clean Air Act. The goal of the law was to help reduce harmful environmental impacts caused by automotive traffic. The CTR law affects the state's nine counties with populations over 150,000: Clark, King, Kitsap, Pierce, Snohomish, Spokane, Thurston, Whatcom, and Yakima. The CTR Task Force consists of 28 members appointed by the Governor to establish program guidelines, ensure statewide consistency among county and local governments, and report to the Legislature every two years.

Washington is currently the only state that administers a trip reduction program. The CTR program helps reduce economic and environmental impacts caused by the increase in number commute trips of Washington's workforce. From 1980 to 2003, total vehicle miles traveled increased by 92 percent. In 2005, 560,000 employees at 1,114 work sites participated in the CTR program. By focusing on peak travel times, travel delay is reduced by 1,677,000 hours per year.

Figure 26

Counties Participating in the CTR Program



Source: WSDOT Public Transportation and Rail

Reduction in Commute Trip Reduction Counties

In 2005, Central Puget Sound employees commuting to work sites that participate in the CTR program made 14,200 fewer vehicle trips each weekday morning. In addition, the absence of about 20,000 vehicles on the state's roads each workday morning reduced petroleum consumption by approximately 5.8 million gallons. Based on the average price of gas, CTR commuters saved \$13.7 million by reducing commute trips, thereby eliminating nearly 74,200 tons of carbon dioxide emissions and 3,700 tons of air pollutants such as carbon monoxide, volatile organic compounds, and nitrogen oxides.

The 2006 legislature refined the CTR law by focusing on urban growth areas (UGAs) in the most congested parts of the state, establishing a framework that integrates CTR program efforts with land use and transportation planning, targeting an investment program for designated growth and transportation efficiency centers (GTECs), increasing program efficiency by reducing administrative costs, establishing a more effective leadership role for state agencies, and streamlining and reconstituting the CTR Task Force as the CTR Board.

Figure 27

Reductions in Commute Trip Reduction Counties

CTR County	Year	Vehicle Miles Traveled	Fuel Reduction	CO2 (tons)	CH4 (tons)	N2O (tons)
Clark	1995	2,666,937	127,757	1,249	0.40875	0.95722
	1997	4,307,960	203,152	1,985	0.64357	1.89840
	1999	2,966,084	138,229	1,349	0.38459	1.56074
	2001	3,740,631	176,761	1,726	0.51485	2.32522
	2003	5,719,531	270,813	2,645	0.65536	3.40297
	2005	3,028,641	142,431	1,388	0.26778	1.41813
King	1995	18,686,776	789,978	7,660	2.67014	5.88070
	1997	34,217,677	1,444,971	13,998	4.97689	13.71744
	1999	59,987,224	2,575,808	24,953	7.57021	28.45752
	2001	79,941,262	3,411,539	32,976	10.95486	44.40755
	2003	79,591,218	3,413,794	32,985	8.98384	40.36853
	2005	90,643,442	4,108,085	39,895	7.97201	39.50567
Kitsap	1995	860,974	49,618	490	0.16740	0.38132
	1997	1,403,938	70,066	689	0.24838	0.71280
	1999	-2,420,499	-101,563	-981	-0.35746	-1.11436
	2001	-2,520,078	-112,162	-1,085	-0.41464	-1.45725
	2003	9,807,198	427,208	4,113	1.37111	5.16500
	2005	6,796,317	287,785	2,768	0.72180	2.73384
Pierce	1995	8,183,845	391,673	3,831	1.26989	2.99837
	1997	13,438,735	638,664	6,247	2.07427	6.27707
	1999	13,246,743	619,701	6,056	1.76310	7.52961
	2001	20,349,422	951,052	9,292	2.86612	13.24138
	2003	4,841,129	208,146	2,023	0.54215	2.66537
	2005	9,870,797	449,405	4,376	0.86492	4.50904
Snohomish	1995	2,017,112	94,675	926	0.31100	0.73164
	1997	2,777,083	123,784	1,209	0.41813	1.26494
	1999	6,999,639	316,503	3,088	0.91972	3.82834
	2001	6,520,977	292,558	2,857	0.90994	4.18648
	2003	4,195,941	180,967	1,755	0.48581	2.26761
	2005	479,264	56,893	600	0.04756	1.14062
Spokane	1995	13,052,727	623,376	6,094	2.08385	4.97209
	1997	15,818,441	743,480	7,257	2.39380	7.34220
	1999	12,604,004	591,121	5,772	1.61491	7.25036
	2001	13,151,870	614,626	5,997	1.82717	8.70468
	2003	7,866,622	367,617	3,586	0.91547	5.01995
	2005	9,254,607	434,476	4,238	0.92729	5.02918
Thurston	1995	3,287,886	152,169	1,485	0.61396	1.19886
	1997	4,374,041	201,000	1,960	0.78216	2.02224
	1999	4,844,643	221,295	2,158	0.74031	2.74757
	2001	3,697,415	171,191	1,671	0.61406	2.46043
	2003	3,577,974	166,912	1,631	0.49927	2.34318
	2005	5,900,105	268,091	2,610	0.63609	3.00116
Whatcom	1995	no data	no data	no data	no data	no data
	1997	no data	no data	no data	no data	no data
	1999	1,116,023	52,018	507	0.16858	0.62320
	2001	1,541,660	71,935	701	0.25164	0.99140
	2003	2,042,475	96,927	945	0.28316	1.28579
	2005	904,438	43,449	424	0.09821	0.47417
Yakima	1995	425,985	20,758	203	0.08164	0.16789
	1997	1,169,882	55,991	548	0.21180	0.58494
	1999	693,191	33,269	326	0.10508	0.42836
	2001	1,495,983	71,041	695	0.25332	1.06305
	2003	567,085	27,291	267	0.08108	0.39271
	2005	2,443,280	116,618	1,141	0.28273	1.46263

Source: WSDOT Public Transportation & Rail Division

Vehicle Fleet Retrofit: Warning Lights and Exhaust Related Retrofit

WSDOT developed a retrofit project to reduce the emissions produced by fleet vehicles related to operating warning lights on vehicles. Historically, in order to operate warning lights on vehicles, the engine had to be running. This project will reduce the high energy consumption required of incandescent lighting by replacing it with light emitting diode (LED) or equivalent technology for sign boards and warning lights on 160 vehicles. This retrofit allows vehicles to shut off their engines while warning lights are in operation. This reduces diesel exhaust emissions, greenhouse gas emissions, fuel consumption, carbon monoxide output, and nitrogen oxides.

Additionally, the project will retrofit approximately 260 diesel engines with diesel oxidation catalysts and/or closed crankcase ventilation devices reducing diesel particulate emissions approximately 30 percent to 40 percent per vehicle when the engines are running.

Overall, these retrofits will:

- Eliminate approximately 4.4 tons of air pollutants each year through idle reduction (hydrocarbons, NO_x, carbon monoxide and small particulate/diesel emissions);
- Eliminate approximately 2.1 tons of air pollutants each year with engine & exhaust retrofits (hydrocarbons, NO_x, carbon monoxide and small particulate/diesel emissions);
- Eliminate about 1.6M lbs of carbon dioxide/greenhouse gas emissions each year; and
- Provide an estimated annual fuel savings of 121,000 gallons.

2006 “No Idling” Policy

Energy conservation continues to be a significant issue for our agency. Over the years, policies have been developed and implemented to ensure limited resources are used in the most cost-effective, efficient manner possible. As such, WSDOT is implementing an agency-wide “No Idle Policy.” The policy simply requires all vehicle operators to turn off their engines prior to leaving their vehicles. An exception to this policy may be granted when idling is necessary for specific health, safety, or operational reasons.

One of the most powerful arguments in favor of reducing idling is cost savings. By reducing idling time by 50 percent, the annual estimated fuel savings could be as much as \$500,000. It also greatly reduces engine wear, which will also reduce engine maintenance cost and extend the life of most engines. Reduced idling will also have a favorable effect on air quality, especially in the urban areas where most of our facilities are located. Air pollution is a major public health concern and can cause or aggravate a number of illnesses.

Efforts to reduce idling in work zones can also contribute to a substantial reduction in overall fuel consumption. Also, we are looking into modifying equipment to extend the time equipment can operate without idling. Low energy consumption associated with the use of strobes and light emitting diodes are currently making this a cost-effective trade off.

Below are additional suggestions that were circulated to help increase fuel conservation efforts:

- **Combine Trips** - Choose the shortest route to your destination and combine short trips whenever possible. Several short trips taken from a cold start can use twice as much fuel as one longer, multi-stop trip with a warm engine.
- **Avoid Long Warm-ups** - Even on cold winter mornings, a vehicle does not need more than a minute to be ready. Idling longer than one minute to warm a vehicle consumes fuel unnecessarily.
- **Drive Intelligently; Avoid Fast Accelerations And Sudden Stops** - Quick accelerations and sudden stops over-exert your engine and burns extra fuel.
- **Do Not Rest Your Foot On The Brake While Driving** - The slightest pressure will cause a drag on the brakes that will demand additional gas use and cause excessive wear on the brakes.
- **Check Your Tire Pressure** - For every pound of under-inflation, you can lose up to six percent in gas mileage.
- **Keep Your Fuel Cap on Tightly** - Tightening the fuel cap on your vehicles will prevent evaporation.
- **Carpool** - Carpooling reduces travel monotony and gas expense. Conversation helps to keep the driver alert.
- **Consider the Use of Technology Such as Teleconferencing or Video Conferencing in Lieu of Travel**

Washington State Ferries Initiatives

Emission Reduction Initiative

Since 2002, Washington State Ferries (WSF) has pursued reduction of fleet emissions through vessel engine maintenance. This effort has included upgrading fuel injectors, upgrading or replacing main engines, and replacement of ship-service generators. The last of these upgrades was completed in the Spring of 2006.

Upgrading Fuel Injectors

WSF upgraded the fuel injectors on their largest population of large diesel engines, the 44 Electro-Motive Diesel (EMD) engines. The purpose of the fuel injector is to precisely meter the fuel going into a cylinder and to break it into very fine particles (atomize) so it can be completely and efficiently burned in the combustion chamber. To date, approximately 600 of the 680 fuel injectors in these engines have been replaced with new "Eco-Tip" injectors. The Eco-Tip injector has been proven (by the manufacturer) to reduce fuel consumption by two percent, particulate emissions by 44 percent, hydrocarbons by 38 percent, carbon monoxide by 89 percent and sulfur by 3 percent. Eco-Tip injectors also allow WSF EMD engines to run reliably on the low-sulfur fuels.

Additionally, the eight EMDs on the two jumbo Mark I Ferries M/V Walla Walla and Spokane were converted in fiscal years 2003 and 2004 to meet the emission goals of the International Convention for the Prevention of Pollution from Ships (MARPOL) 2000. In 2005, WSF completed design modifications to meet MARPOL 2000 standards for the 16 EMD engines on the Super Class vessels Hyak, Elwha, Kaleetan, and Yakima.

Upgrading Engines

The six Issaquah-class vessels in the fleet had 12 General Electric model 7 EMD engines that use mechanical fuel injection systems. Over the years these engines have been upgraded with new styles of piston rings reducing the amount of lubricating oil being burned, helping to conserve oil and reduce emissions. In 2005, WSF completed replacement of these 12 engines with new General Electric diesel engines equipped with MARPOL-compliant fuel injection systems. These new engines reduce Nitrous Oxide emissions by 30 percent, carbon monoxide by 75 percent, and improve smoke opacity by 70 percent.

Upgrading Ship-Service Generators

In addition to addressing emissions from the propulsion engines, WSF upgraded the older diesel generators in the fleet with new diesel engines that meet MARPOL standards. These generators provide the lighting and other services aboard the vessels. As of spring of 2006, generator replacement has been completed on 10 vessels of the existing fleet. This involved the replacement of 30 ship-service generators. Although the fuel consumption and emissions have not been measured, these replacements have improved fuel efficiency and reduced emissions.

Clean Fuels Initiatives

In addition to the fuel emission reduction measures discussed above, in 2004 and 2005 WSF took major steps to reduce air pollution from its ferry fleet by testing and switching to use of cleaner fuels.

Low-Sulfur Diesel Fuel

Ferries have traditionally used high-sulfur diesel fuel. In 2004, WSF switched its entire fleet to low sulfur diesel. That switch reduced sulfur dioxide emissions by 90 percent and particulate matter by 30 percent.

Testing Ultra-Low-Sulfur Diesel Fuel

With funding from the Puget Sound Clean Air Agency, WSF tested ultra-low-sulfur diesel on the M.V Elwha for 18 months beginning in 2004. The test indicated it is feasible to use this cleaner-burning fuel in all WSF vessels, further reducing sulfur dioxide and particulate matter emissions.

Biodiesel Pilot Test

In 2004 Washington State Ferries pilot tested a mixture of 20 percent biodiesel and 80 percent low-sulfur petroleum diesel. In June 2005, WSF suspended the pilot test because the fuel was clogging the vessels' engine filters. WSF is currently working with the Puget Sound Clean Air Agency to determine what is causing the filter clogging problems so biodiesel testing can continue.

Fuel Conservation Initiative

WSF has started an initiative to identify cost effective opportunities to decrease fuel consumption through changes in fleet and terminal operations. The first step in this effort is to install fuel monitoring equipment on the propulsion systems for vessels from each type and class in the fleet. The monitoring equipment will provide information on how the different vessel types and classes consume fuel during acceleration, crossing, and deceleration into the dock. As of July 2006, two vessels have had the equipment installed. The monitors will be installed soon on other vessels as the evaluation proceeds.

In addition to gathering data on fuel consumption by vessel type and class, each route is being "profiled." By understanding the length of a route, number and size of turns per crossing, currents and wind, the team can focus its efforts on routes with the most opportunity for cutting fuel consumption.

Furthermore, the management of the vessels, loading and unloading at the terminals will be assessed to identify opportunities for operational changes that will facilitate fuel savings.

“Environmentally Friendly” Hydraulic Fluid Test

WSF has traditionally used aviation-grade hydraulic fluid in its terminal operations. In 2003, WSF started testing an “environmentally friendly” hydraulic fluid at the terminal on Shaw Island. In the event of an accidental spill, these fluids are much less toxic in the environment than aviation-grade hydraulic fluid, and they will biodegrade. This “environmentally friendly” hydraulic fluid has performed reliably so far, meeting the operational requirements of the equipment. WSF is evaluating the process of switching to “environmentally-friendly” hydraulic fluid at other terminals in the system.

Creosote Piling Removal

In 2000, WSF made a commitment to design, construct, and maintain ferry terminal facilities in an environmentally responsible manner, using the best available practices and materials. As part of this commitment, WSF began removing creosote-treated timber from its ferry terminals.

From 2000 through 2003, WSF removed 2,905 creosote-treated pilings from Puget Sound to benefit fish and the marine environment. Since 2003, an additional 945 creosote-treated pilings have been removed. WSF has the goal to remove an additional 3,935 creosote-treated pilings over the next 10 years at the Anacortes, Mukilteo, Seattle, Bainbridge Island, Port Townsend, Keystone, and Southworth terminals, and at the Eagle Harbor Maintenance Facility.

V. FUTURE CHALLENGES AND NEXT STEPS

It is important to adapt and overcome the challenge embodied in the executive intent of EO 02-03. Additionally, WSDOT is committed to addressing the challenge of emerging global warming and climate change issues. Expanding data collection, reporting, and communication procedures requires improved processes to meet state-wide targets and facilitate greater accountability.

A. Phase 2: Implementing and Improving Sustainability Practices

WSDOT will implement Phase II tasks to facilitate increased accountability and continued compliance with sustainability targets. Phase II shall focus on the following agency-wide tasks:

- Emphasize “bottom line” financial savings
- Ensure consistent data collection
- Require quarterly sustainability reports
- Promote greater sustainability awareness
- Improve policies related to sustainable business practices, and
- Improve upon strategies aimed at attaining sustainability targets.

Subsequent to submitting the 2006 Update to OFM and in preparation for future updates, the WSDOT sustainability group will define the focus and approach for Phase II. To further the exchange of information and ideas, frequent dialogue will be addressed by:

- *Quarterly Division Meetings* – communicate sustainability information related to the division’s scope and responsibilities, as well as identify and coordinate with sustainability division leads.
- *SharePoint Sustainability Platform* – facilitate Web-based team collaboration through the SharePoint applications enabling agency-wide document, dialogue, calendar, news, and event sharing sections.
- *Sustainability Web site* – WSDOT Web page explaining the agency’s approach to sustainability, including sustainable business practices,

initiatives, and other relevant information.

- *Implementation Priorities* - Establish key areas to obtain the greatest benefit for the effort.

Along with fostering improved communication within the agency, WSDOT also builds on and seeks additional partnerships to further the sustainability goals. This includes partnering with other groups with similar functions and interests to secure funding and advance sustainability goals.

This approach helps to establish a more effective and comprehensive process for updating future Sustainability Plan and Progress Reports. In addition, this will position WSDOT to reduce the gaps identified in this report and proceed in ensuring greater compliance with the Executive Orders.

B. Global Warming and Climate Change

Global warming and climate change are related and have become a state-wide and an international topic of interest. This sustainability plan recognizes the importance of staying on top of the issue. An overwhelming amount of information is not easily emphasized. The following examples present several initiatives aimed at managing the challenge.

The West Coast Governors' Global Warming Initiative is made up of Governors from Washington, Oregon, and California. They are exploring implementing regional activities in greenhouse gases reductions, vehicle emission standards, market-based carbon allowance programs, and expanding markets for energy efficiency, renewable resources, and alternative fuels. In 2005, Washington adopted California's more stringent motor vehicle emission standards as a result of this tri-state effort.

In the current draft of the Washington Transportation Plan Update, adopted in November 2006, the Washington Transportation Commission discussed the connections between transportation and air quality. The WTP also introduces the need to further explore global warming and climate change to better understand how transportation can contribute to improving air quality and its relationship to climate change.

In addition, local and regional leaders in the Central Puget Sound area recognize the importance of addressing climate change. The respective governments have begun forming diverse and strategic partnerships, planning for the changing needs of citizens, and calling for action from businesses and government as a result of global warming.

The summary below highlights transportation-related global warming and climate change action acknowledged and enacted by the Washington State Legislature.

In 2005, the Washington State legislature, with endorsement from the Governor, passed legislation

that recognized the importance of requiring more stringent emission standards for new vehicles. The state legislature found that:

- Motor vehicles contribute approximately 55 percent of greenhouse gas emissions in Washington;
- Reductions of greenhouse gas emissions from transportation sources are necessary;
- Other sectors are taking steps to reduce their share of greenhouse gas emissions; and
- Ensuing emission credits may comprise of a federal, state, or regional comprehensive regulatory structure.

In addition, since 2005, a variety of bills were passed aimed at reducing greenhouse gas emissions in other ways, including renewable fuels use and production requirements. Various actions include:

- Provision for a two-year sales tax break for 2009 and 2010 purchase of hybrid vehicles;
- Requirement of energy savings from various consumer products not covered under national programs;
- Provision of tax reductions for business manufacturing solar energy systems or solar components;
- Requirement of "green building" certification for Washington buildings and all buildings receiving state construction funding;
- Provision of a tax rebate to individuals and businesses generating energy from wind, solar, or bio-digesters;
- Requirement that most diesel fuel sold in Washington State be made up of at least 2 percent biodiesel and gasoline contain at least 2 percent ethanol;
- Requirement for state agencies to increase biodiesel usage to 20 percent by June 1, 2009, thereby creating a better market for agricultural production of fuel oils while reducing diesel toxics and greenhouse gas emissions in the process;

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- Requirement for WSDOT to increase the amount of biodiesel use when feasible; and
 - Establish Energy Freedom Program that provides low-interest loans intended to help developers of biofuel processing and infrastructure to more quickly produce sufficient quantities of biofuels in Washington to meet requirements and growing demand.

Additional sustainability information will be available on our Web site at <http://www.wsdot.wa.gov/planning/default.htm>.

