

Action Plan - WSDOT Sustainable Transportation

For the 2013 – 2015 Fiscal Biennium – Close Out



Executive Summary

Sustainability: Make decisions and take actions that promote the conservation of resources for future generations by focusing on the balance of economic, environmental and community needs.

- *WSDOT's Values Statement*

The Washington State Department of Transportation (WSDOT) Sustainable Transportation Action Plan (Action Plan) describes major WSDOT activities that promote sustainable practices and clean transportation in Washington State for the 2013 – 2015 biennium. The Action Plan connects related WSDOT activities to goals outlined in the WSDOT Strategic Plan (Results WSDOT) and/or Results Washington.

The Action Plan summarizes ongoing and future actions and is intended for use by WSDOT and external audiences. It is designed as an electronic document that includes internet links and email contacts for additional information on included topics.

The Action Plan will be updated at least each biennium to form a record of agency progress over time and status of individual items will be updated regularly.

Strategic Direction

WSDOT sustainability efforts are distributed throughout the agency and through partnerships with external stakeholders. WSDOT employees are encouraged to promote sustainable transportation with a focus on the following:

- Support reductions in vehicle miles traveled (VMT) and greenhouse gas (GHG) emissions
- Encourage more cost-effective and sustainable practices for construction and operations
- Facilitate efficient and sustainable transportation for users
- Research and promote the use of new technologies
- Promote alternative fuels and electric vehicle (EV) infrastructure
- Prepare our communities and the transportation system to adapt to climate change

WSDOT's vision is to be the best in providing a sustainable and integrated multimodal transportation system. Sustainability is one of WSDOT's core values. Recent strategic efforts at the state and agency level support realization of that vision.

Results Washington

Governor Inslee's [Results Washington](#) includes indicators of success for five goal areas. WSDOT is directly responsible for some actions that support indicators related to clean transportation, and sustainable and efficient infrastructure. WSDOT will also contribute to other goals such as quality of life, vibrant communities, clean and restored habitat, and healthy air and water.



Executive Order 14-04

The Governor's [Executive Order 14-04](#) "Washington Carbon Pollution Reduction and Clean Energy Action" directs state agencies to reduce carbon emissions and improve energy independence. WSDOT is directed to encourage electrical vehicle (EV) use, expand the EV network, and improve multimodal planning to chart the path to a "multimodal, coordinated, cost-effective, safe and low-carbon transportation system."

Results WSDOT: Moving Washington Forward

WSDOT's Strategic Plan: "[Results WSDOT](#)" frames future agency actions to ensure WSDOT is the leader in providing a sustainable, integrated, and multimodal transportation system. It calls on WSDOT employees to be innovative and demonstrate that we are trustworthy leaders. Results WSDOT provides a clear roadmap that links six goals with a pathway to achieve them.

1. Strategic Investments
2. Modal Integration
3. Environmental Stewardship
4. Organizational Strength
5. Community Engagement
6. Smart Technology

Goal 3: Environmental Stewardship is to "Promote sustainable practices to reduce greenhouse gas emissions and protect natural habitat and water quality." This goal and its intended outcomes below are central to the actions identified in this Action Plan.

- Improve environmental conditions: leave it better than before
- Reduce WSDOT's overall carbon footprint
- Improve energy efficiency of transportation systems and WSDOT operations

Relationship to other WSDOT initiatives:

- [Practical Design](#): Practical design principles support WSDOT's strategic goals to implement programs that save money, improve conditions for travelers and communities, and integrate all

modes of transportation. This Action Plan can inform the department's practical design efforts and reinforce the delivery of multiple benefits of transportation investments.

- **Lean:** Since August 2012, WSDOT has initiated 70 Lean projects to streamline processes and improve customer service. This Action Plan, and subsequent updates, may report significant efficiencies gained through Lean projects.

Plan Organization

This plan summarizes and groups actions by program or activity area for the 2013-2015 fiscal biennium (July 1, 2013 – June 30, 2015). However, readers should understand that most actions are shared across WSDOT programs and with other partner agencies. The plan is organized as follows:

1. Multimodal Planning
2. Electric Vehicles
3. WSDOT Facilities
4. Highway Lighting
5. Highway Maintenance
6. Operational Efficiencies
7. Commute Trip Reduction
8. Fleet – Land Based
9. Washington State Ferries
10. Highway Construction and Materials
11. Project Delivery
12. Fish Passage Barrier Removal
13. Climate Preparedness
14. Greenhouse Gas Inventory and Reduction Strategies

The *Appendix* summary table includes the same actions highlighted in the plan, planned date of completion, and connections to the strategic direction areas identified above: Results Washington, Executive Order 14-04, or Results WSDOT.

Multimodal Planning

Summary of status of priority actions **at the end of** the 2013-15 biennium:

- WSDOT Multimodal Planning will lead four Clean Transportation Actions in the Governor's Executive Order (EO) 14-04:
 1. Work with the Regional Transportation Planning Organizations, counties, and cities to develop a new program of technical and financial assistance to help local governments implement transportation efficiency improvement measures.
Status: Completed in December 2014
 2. Review existing state transportation grant programs and develop recommendations to increase multimodal investments.
Status: Completed
WSDOT, along with the Freight Mobility Strategic Investment Board, the Transportation Improvement Board, and the County Road Administration Board, submitted a report in January 2015. Key Findings:
 - a. *The state currently has programs in place to invest in multimodal transportation; therefore, no recommendation to create new grant programs.*
 - b. *Demands for current multimodal program funds and the multimodal needs of the local jurisdictions far outpace the resources available and more funds are needed.*
 - c. *Absent new funding multimodal investments funds, agencies still see potential to increase coordination and customer convenience, thus stretching state dollars as far as possible.*
 3. Implement changes in planning and priority setting to meet policy objectives of the Governor's EO 14-04.
Status: Completed [Planning guidance through Practical Solutions and Least Cost Planning](#), **January 2015.**
 4. Statewide Transportation Plan – Develop, adopt, and implement multimodal, federally compliant, long range statewide transportation plan.
Status: Phase 1 – policy guidance and recommendations, completed January 2015.
Phase 2 – federally compliant multimodal plan, underway, estimated completion 12/2017.
- 5. Complete pilot test and report on the Federal Highway Administration's (FHWA) Energy and Emissions Reduction Policy Analysis Tool ([EERPAT](#)) that analyzes transportation GHG reduction policy scenarios in summer 2014.
Status: Completed.
Various GHG policy scenarios have been completed using EERPAT by December 2014. All results and draft report were given to the FHWA and their consultant RSG. RSG has submitted a brief report on the pilot study by the states of Washington, Maryland, Vermont and Colorado. WSDOT's pilot study scenarios and its results were presented at the TRB Annual meeting in January 2015.
- 6. Submit report to FHWA on pilot test of FHWA Infrastructure Voluntary Evaluation Sustainability Tool ([INVEST](#)) for corridor planning by February 2014.
Status: Completed

Overview of Efforts

Improve corridor planning products

- WSDOT is implementing a Corridor Sketch Initiative statewide: this is a new way for WSDOT to work jointly with partners to capture and document consistent baseline information about a corridor that informs future investment decisions. This is one way WSDOT is implementing Least Cost Planning at the corridor level. This process is consistent with WSDOT's strategic plan (Results WSDOT), the legislature's transportation system policy goals, and supports WSDOT's practical solutions.

Test transportation policies for GHG reduction potential

- Working to achieve VMT reduction benchmarks for 2020, 2035, and 2050 compared to 75 billion baseline VMT for 2050 as required by [RCW 47.01.440](#).

The actions above support **Results WSDOT Goal 3: Environmental Stewardship**
1.0 Improve environmental conditions: leave it better than before

Contacts:

*EERPAT & Travel Demand Model – Natarajan "Jana" Janarthanan,
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*Corridor Planning Products – Faris Al-Memar, AlMeemaF@wsdot.wa.gov, (360) 705-7956
INVEST – Elizabeth Robbins, RobbinS@wsdot.wa.gov, (360) 705-7371*

Electric Vehicles

Summary of status of priority actions **at the end of** the 2013-15 biennium:

1. WSDOT Public-Private Partnerships will complete an action plan to advance electric vehicle use in Washington State by December 31, 2014, as directed in the Governor's Executive Order (EO) 14-04.
Status: Completed: February 2015. See the EV Action Plan [online](#).



2. Develop proposal for 2014 Legislative session to install DC fast chargers in 9 communities in Puget Sound Region and along I-90 to Spokane (orange dots on map) by spring 2017.
Status: Completed.

The Legislature directed WSDOT to develop an Electric Vehicle Infrastructure Bank with \$1M in seed funding to encourage private sector investment in EV fast charging along major transportation corridors.

3. Leverage opportunities: Require applicants for park and ride projects in the Regional Mobility Grant program to include charging stations as part of their proposal by December 2014.
Status: Completed.

Transit agencies may need technical support on EV charging equipment installation.

Overview of Efforts

Promote the West Coast Green Highway that runs from British Columbia, Canada, to Baja California, Mexico

- The [West Coast Green Highway](#) promotes cleaner fuels by increasing market demand for high-efficiency, zero-, and low-carbon-emitting vehicles.
- WSDOT supports efforts to extend and fill-in the existing fast charging network and to develop incentives for employers to install workplace charging.
- Increase the number of registered plug-in vehicles from 8,000 in 2013 to 50,000 by 2020.

Establish performance measures for state clean transportation goals

- Support the Department of Ecology on Results Washington Goal 3 "[Sustainable and Clean Energy](#)."

Coordinate with partners to advance plug in electric vehicle adoption

- Provide technical and policy support to public and private stakeholders and advocate for electric vehicles at the state and national levels.

12,930 Plug In Electric Vehicles Registered in Washington (as of June 2015)



Overview: Electric Vehicle Chargers in Washington State

Charger Type	Number of Chargers			
	Installed Before June 30, 2013	Anticipated New Chargers Installed during 2013-2015 Biennium	Anticipated Total Chargers by June 30, 2015	Exceeded Goal Actual Total Chargers by June 30, 2015
Total Fast Charging Stations	30 (incl. below)	15	45	49
• WSDOT DC fast chargers	12	0	12	12
• Other DC fast chargers	15	14	29	33
• Tesla Superchargers	3	1	4	4
Total Public Charging Stations in WA (all types)	411	50	461	497

The actions above support **Results WSDOT Goal 3: Environmental Stewardship**
 3.0 Improve energy efficiency of transportation systems and WSDOT operations

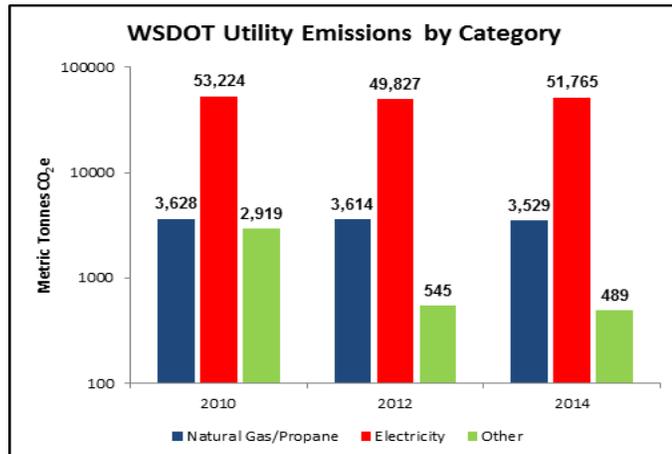
Contact: Tonia Buell, BuellT@wsdot.wa.gov, 360-705-7439

WSDOT Facilities

Summary of status of priority actions **at the end of** the 2013-15 biennium:

1. Submit annual Governor's [EO 12-06](#) report to Department of Enterprise Services on progress of building energy efficiency initiatives every December 1st.
Status: Completed 2013 and 2014.

2. Upgrade or replace 13,000 light fixtures and controls to reduce 1,070 MTCO₂e by 2019.
Status: In progress. Given fixture life-cycles and budgetary constraints eventual upgrade and replacement of WSDOT facility light fixtures will occur by 2020. In the 2013-2015 biennium approximately 650 fixtures have been replaced or upgraded.



The actions above support the **Governor's Executive Order 14-04** and **Results Washington Goal 5: Efficient, Effective & Accountable Government**
2.2 Reduce the statewide energy use index of state facilities

Overview of Efforts

Pursue Energy Reduction at WSDOT Facilities

- Continue benchmarking facilities in EPA's [Energy Star Portfolio Manager](#) for large facilities, and when data is available for automatic upload.
Status: In progress, completed the entry of all required facilities into Portfolio Manager. Also benchmarking other facilities where data can be automatically uploaded from the utility.
- WSDOT promotes energy reduction at agency facilities to meet or exceed state requirements as funding allows.
 - [RCW 19.27A.190\(8\)](#): perform energy audits and implement energy conservation
 - Audits conducted. Facilities is reviewing a plan to review previous audit data and to audit additional facilities with a goal of implementing identified energy conservation measures.
 - [Executive Order 12-06](#) :
 - Annually benchmark facility energy data
 - Implement cost-effective energy efficiency investments as practicable
 - Reduce total agency building energy use by 20 percent from 2009 level
 - Work with building lease owners to schedule energy efficiency improvements

Contact: **Jeff Cook**, CookJD@wsdot.wa.gov, 360-705-7890

Highway Lighting

Summary of status of priority actions **at the end of** the 2013-15 biennium:

1. Research options to increase energy efficiency of highway lighting in 2015, including flexibility in design requirements for lighted areas.

Status: Design Policy update completed

2. Develop a safety predictive model to determine where roadway illumination is justified and where it can be removed without significant impacts to safety and mobility by June 30, 2015.

Status: Interstate model development has been completed



Source: WSDOT

Overview of Efforts

Use More Energy Efficient Lighting to Reduce Energy Consumption

- LED lighting can be greater than 50% more energy efficient than standard lighting and allows dimming and on/off functionality to increase efficiency to nearly 74%, while maintaining safety.
- During the projected 15-year life cycle of highway lighting, the [Adaptive Light Emitting Diode \(LED\) Lighting Pilot](#) project and the phase 2 expansion could save more than \$345,000 in utility and maintenance costs and reduce energy consumption by over 3 million kilowatt hours, saving 1,122 metric tons of carbon dioxide equivalent (MTCO₂e).
- Established procurement contracts that provide LED lighting options that benefit all public jurisdictions in WA State.
- 18 LED roadway lighting projects:
 - (10 complete and operational; (8) in construction);
 - 646 existing High Pressure Sodium (HPS) roadway lights converted to LED,
 - (448 complete and operational; (198) in construction);
 - 69 existing HPS roadway lights removed,
 - (65 removal complete; (4) in construction).
- Design Policy Revisions, to decrease overall lighting requirements for new projects – Implemented – July 2014
- Received \$500k Department of Commerce Energy Efficiency Grant in December 2014 that will be used to help finance a \$2million project. Will convert approximately 1,600 roadway lights to LED. During the projected 15-year life cycle of highway lighting the project should save more than \$2.5million in utility and maintenance costs while reducing energy consumption by over 1.8 million kilowatt hours per year, and saving 670 metric tons of carbon dioxide equivalent (MTCO₂e) per year. This project is in scoping/design phase and projected to be completed by April 2016.

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Highway Maintenance

Summary of status of priority actions **at the end of** the 2013-15 biennium:

1. Commence the statewide program of bridge cleaning and washing to help extend the life of coatings on steel bridges.
Status: 61 bridges were completely cleaned in FY 2015
2. Increase pavement maintenance work to help extend the life of pavements in the face of decreasing pavement preservation funding and work.
Status: \$34.4m spent during the 2013-15 biennium, within 3% of planned expenditures
3. Implement a contract to apply durable pavement striping/markings at key locations where the annual application of water-based paint does not hold up to traffic wear and tear.
Status: Contract completed in summer 2014
4. Implement our annual inspection and maintenance program for storm water treatment facilities to ensure that highway runoff is treated for quantity and quality before it leaves the highway right of way.
Status: Ongoing; by the end of FY 2015, brought 260 facilities back into compliance with applicable standards. Work continues to bring the remaining 107 facilities into compliance.



Source: WSDOT

Overview of Efforts

Maximize the lifespan of highway assets through regular inspection, preventive maintenance, and repair activities

- Proactive, preventive maintenance program for assets with electrical and mechanical systems such as signals, intelligent transportation systems, highway lighting, movable/floating bridges, and urban tunnels.
- Routine inspection and maintenance of assets such as cable barrier, culverts, catch basins, and traffic signs.

- Complete repairs when needed to restore functionality to highway assets including pavements, guardrail, and structural bridge components.

Minimize materials and energy consumption through training and effective use of equipment

- Use of advanced and regularly calibrated snow plow equipment that applies just enough salt and sand to achieve desired road conditions
- Improved data collection and management that helps maintenance managers deploy the minimal amount of labor, equipment, and materials resources to achieve program delivery goals
- Continued use of LED technology in signals and expanding use of LED technology in highway lighting to minimize electricity consumption.

Integration of highway maintenance and preservation expenditures and activities to help assure lowest life-cycle cost management of highway assets

- Coordinating with the HQ Materials Laboratory and Capital Program Development and Management to strategically target pavement investments and actions to extend the life of existing pavements as much as possible.
- Coordinating with the HQ Bridge Office and Capital Program Development and Management to strategically target various bridge investments and actions to extend the life of existing bridges as much as possible.

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Operational Efficiencies

Summary of status of priority actions **at the end of** the 2013-15 biennium:

1. Complete a Transportation System Management and Operations (TSMO) self-assessment workshop to improve traffic operations, demand management, and corridor planning to ensure TSMO capabilities are effectively considered alongside other traditional improvements by summer 2014.

Status: Workshop completed

2. Install 17 ramp meters to improve flow, system efficiency, reduce accidents, and relieve traffic congestion through ramp meters on [I-5 in Tacoma](#) beginning in summer 2014.

Status: Completed – System operational in May 2015

3. By June 30, 2015, pursue installation of 15 new roundabouts at locations where other types of intersections are being proposed. Roundabouts reduce idling and maintenance costs, increase safety, and improve traffic flow. WSDOT currently has 124 roundabouts.

Status: Completed – 17 roundabouts pursued (7 constructed and operating; 3 designed and funded; 3 in the design process with funding; 4 more being pursued)



Completed roundabout on the I-82 Valley Mall Boulevard project

Overview of Efforts

Reduce Idling and Traffic Delay and Prevent Secondary Collisions with the WSDOT Incident Response Team (IR)

- IR teams responded to 11,333 incidents in the first quarter of 2014, providing \$17.4M in economic benefit (\$9.7M from reduced delay).

Improve Freight Mobility

- In 2013, WSDOT's commercial vehicle electronic screening program allowed trucks to bypass weigh stations 1.3 million times, saving commercial trucking \$13.3M in operating costs from time saving and about 0.4 gallons of fuel per bypass.

Use Low Cost Enhancements (LCE) to Improve Operational Safety and Mobility

- LCE projects deliver key safety initiatives and provide immediate safety and efficiency improvements. WSDOT delivered 275 LCE projects in the 13-15 biennium.

Toll Corridors Strategically

- Since 2007, WSDOT has strategically tolled corridors to manage congestion, enhance mobility, and generate revenue for future improvements.

Expand Travel Options

- Improve transit options as an aspect of design and construction projects, including intercity passenger rail and bus service and bicycle/pedestrian projects.
- Expand HOV lanes in Tacoma.



WSDOT Incident Response and Washington State Patrol

Contacts: Bill Legg, LeggB@wsdot.wa.gov, 360-705-7994

Roundabouts - Brian Walsh, WalshB@wsdot.wa.gov, 360-705-7986

Commute Trip Reduction (CTR)

Summary of status of priority actions **at the end of** the 2013-15 biennium:

1. Submit report to the Legislature on “[Demand Management and the path to greater efficiency](#)” for 2014 legislative session.
Status: Completed; Drafting new report to the legislature to be delivered December 1, 2015.
2. In Spring 2014, develop and implement WSDOT telework policy and support the [Governor’s Executive Order 14-02](#) to expand telework and flexible work hours.
Status: Ongoing work on state agency implementation team. Developing a telework policy and training for both managers and employees.
3. The CTR Board’s four-year pilot program is testing different Transportation Demand Management (TDM) strategies or experiments in different jurisdictions (Redmond, Seattle, Snohomish County, Tacoma, Tukwila, and Yakima). For example, testing different types of employer engagement; different methods to gather data other than surveys; different administrative methods; and integration with other programs to reduce Single Occupancy Vehicles (SOV) use.
Status: Six research projects have been launched. Jurisdictions are implementing and field-testing strategies. Yearly jurisdiction progress reports are due to the board. A final board report on the pilot with analysis and proposals is due to the legislature in December 2017.
4. Increase the number of approved WSDOT employees that telework at least one day a week from 90 employees in 2013 to 350 by June 30, 2015.
Status: In progress, currently have 240 active identified participants in telework.

Overview of Efforts

Update the CTR Program

- Continuing to apply lessons learned since 2006; expand and move toward reduction in all trips.
- Update program data methodology that determines effects of CTR on jurisdictions.

Communicate the Benefits of CTR

- Progress integrating CTR/TDM in corridor sketches; CUTR research project continues to inform this effort.

Expand Telework and Use of Flexible Work Hours

- WSDOT invested in video-conferencing and expanded use of web conferencing.
- Moving from CITRIX to VPN; laptops are being provided to more staff.
- Work with the Department of Enterprise Services to support other state agency efforts to meet the Governor’s EO 14-02 goals for promoting flexible work hours.

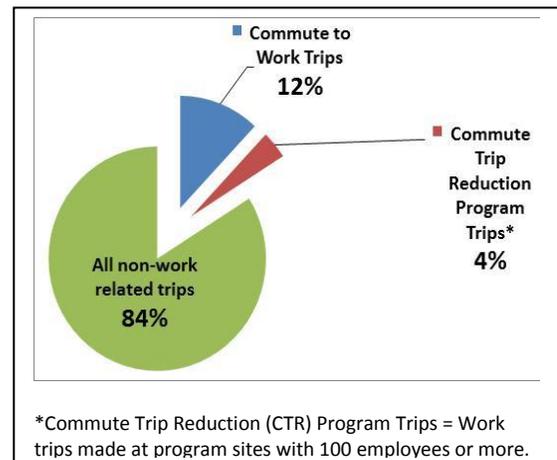
Use Technology to Encourage More Efficient Commute Options

Promote Rideshare Online, a Transportation Demand Management (TDM) technology platform that encourages the use of non-single occupancy vehicle modes.

- Rideshare Online continues to grow and expand.

Contact: Kathy Johnston,

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Land Fleet

Summary of status of priority actions **at the end of** the 2013-15 biennium:

1. Increase average miles per gallon (mpg) for the passenger and light duty truck fleet from 18 in 2010 to 23 mpg by June 2020.
Status: Completed. June 2020 goal has been achieved ahead of schedule.
2. Replace 10 sedans and sport-utility vehicles with 6 electric vehicles and 4 extended-range electric vehicles by June 2014.
Status: Completed.
3. Increase the number of cleaner burning dual fuel (Propane/Gas) work trucks from 21 to 81 by October 2015.
Status: In progress. Fifty-two of 81 planned conversions have been completed.
4. Increase biodiesel from B13 to B20 by June 2015.
Status: In progress. During the first six months of 2015, biodiesel averaged a B14.8.

Fleet Operations' goal is to reduce greenhouse gas emissions to at least 15% below our 2005 total emissions by 2020. Our comprehensive plan includes a wide range of strategies, such as replacing vehicles to improve average fuel economy, utilize alternative fuel technology, and reduce emissions. As we strive to meet our goals, one factor out of WSDOT control is operational tempo the need for WSDOT to respond to emergencies and severe weather events.

WSDOT was the first state agency to purchase a plug-in electric hybrid (2012) and fully electric vehicle (2014). Nationally, WSDOT developed the first lease for the Nissan Leaf, which has become the new standard.

Overview of Efforts

Fuel conservation planning

- Regional and statewide plans identify measures to conserve fuel, including alternatives to single occupancy vehicle travel, efficient driving tips, and vehicle maintenance.

Reduce total fuel use through conservation, right-sizing, and efficiencies

- CY 2014, WSDOT consumed 202,875 gallons of fuel less than CY2012 through conservation, right-sizing and efficiency measures.
 - Note: Fuel use is primarily driven by operational tempo relating to projects, and responding to weather event, fires, and traffic incidents and congestion.
- Total WSDOT fleet emissions in CY 2014 were 1,893 metric tons of carbon dioxide equivalents (MTCO₂e) less than 2012.

Increase use of cleaner alternative fuels

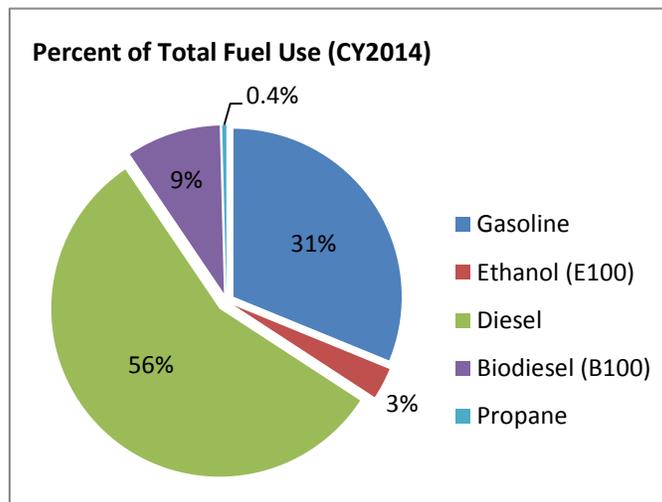
- The WSDOT land fleet is the largest state biodiesel purchaser.
- Southwest Region converted 21 cars and trucks to cleaner propane dual fuel vehicles in 2012. As of June 30, 2015, a total of 51 vehicles have been converted to cleaner propane dual fuel vehicles.

Equipment modifications

- Purchased hybrids and more fuel efficient vehicles (June 2015, 104 of 475 passenger vehicles are hybrid, extended range electric or electric vehicles).
- Changed to smaller engines on some work trucks.
- Switched from incandescent warning lights to LED (less battery drain, less vehicle idling).
- Installed shift lights in dump trucks to tell operators the optimum time to shift.

On-Road Fleet Inventory

Vehicle Fuel Type	Total Number of Vehicles	
	June 2013	June 2015 (planned)
Hybrids	83	84
Plug-in Electric	1	14
Electric	0	6
E85/Flex	651	598
Propane	21	51
B20 capable HD	1,270	1,270



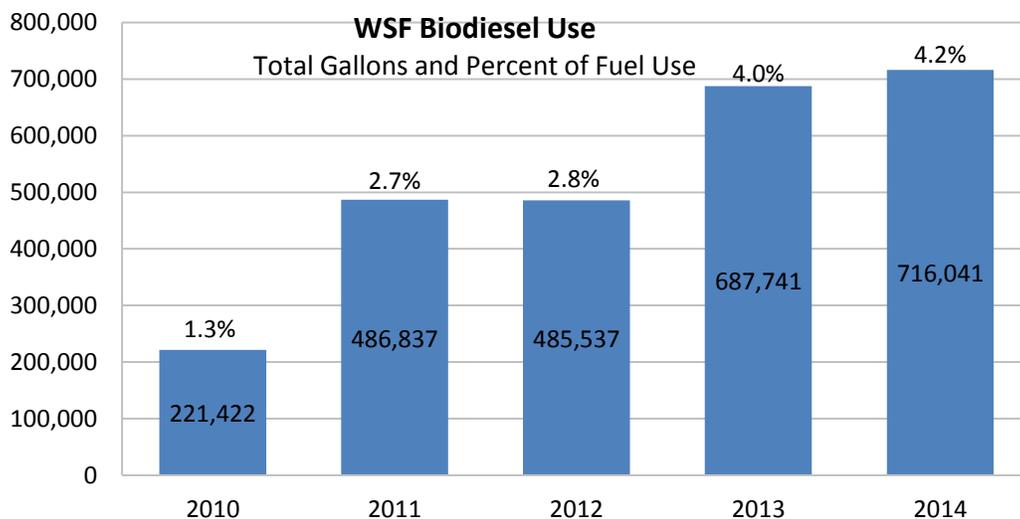
The actions above support **Results WSDOT Goal 3: Environmental Stewardship 2.0** Reduce WSDOT’s overall carbon footprint

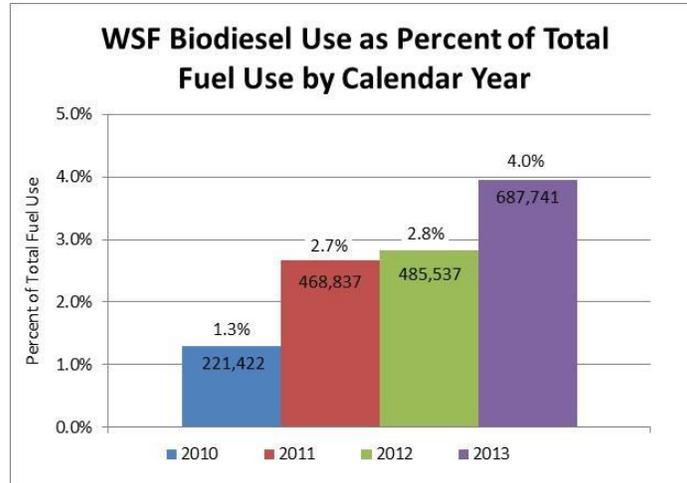
Contact: Georgina Willner, WillneG@wsdot.wa.gov, 360-705-7883

Washington State Ferries

Summary of status of priority actions **at the end of** the 2013-15 biennium:

1. Propose conversion of 6 Issaquah Class vessels from diesel to liquefied natural gas (LNG) for 2014 legislative session.
Status: WSDOT continued LNG security planning, outreach and pre-design activities. The Governor proposed \$145 million for the conversion project in the 2015 legislative session. However, the 2015 Legislature did not act on the proposal.
2. Explore private-public funding opportunities for LNG vessel conversion in 2014.
Status: Pending approvals from US Coast Guard. WSDOT updated the Waterway Suitability Assessment. Further action is pending approvals from US Coast Guard.
3. Evaluate increasing biodiesel use by piloting B10 from recycled canola oil and rapeseed in two vessels by winter 2014.
Status: The study was delayed due to fuel supplier and fuel price issues. Move to 15/17 action plan.
4. Convert the Hyak ferry to a battery hybrid by fall 2014.
Status: WSDOT concluded that this project was not financially feasible. The 2015 Legislature reallocated funding for this project to other projects.
5. Test a centrifugal lube oil filter in 2014 to reduce use of lube oil and paper oil filter waste.
Status: Ongoing – continuing analysis for one year.
6. Expand the reservation system for private vehicles to the San Juan Islands to reduce vehicle idling and related emissions by the end of 2014.
Status: Completed. In January of 2015, the reservation system was fully implemented in the San Juan Islands. The system has successfully reduced vehicle wait times.





Overview of Efforts

Provide Sustainability Leadership

- Third party certified by [EnviroStars](#) and [Green Waters](#) for green best management practices and hazardous waste reduction.
- Participate in the [Puget Sound Air Emissions Inventory](#) to quantify ferry fleet emissions.

Conserve Fuel

- In 2013, WSF developed a Fuel Conservation Plan that identifies funding dependent strategies to further reduce overall fuel use.
- AASHTO recognized WSF with [President's Award](#) for reducing 180,000 gallons per year on the Kingston to Edmunds route by reducing vessel speeds.

WSF: Fuel Reduction Strategies and Estimate Emissions Benefits

Fuel Reduction Strategies (as funding allows)	Estimated Annual Tons of Emissions Reduced		
	Fine Particulate Matter (PM2.5)	Course Particulate Matter (PM10)	Carbon Dioxide (CO ₂)
Evaluate and Incorporate Efficient Technologies			
Convert six Issaquah Class Vessels to LNG	6,161	24	26
Install hybrid propulsion in Hyak Vessel	2,125	<i>na</i>	8
Install five-bladed propeller	9,246	8	8
Install 1042 kits	2,106	2	2
Use less power pushing the dock	4,375	4	4
Operational Changes to Reduce Fuel Use			
Full feather operation, Salish and Kennewick Vessels	1,175	1.0	1.1
Avoid trim in lightly loaded vessels	1,610	1.3	1.4
Reduce acceleration leaving the dock	729	0.6	0.7
<i>Total Emissions Reductions</i>	<i>27,527</i>	<i>39</i>	<i>51</i>

na = not available

The actions above support **Results WSDOT Goal 3: Environmental Stewardship 2.0** Reduce WSDOT's overall carbon footprint

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Highway Construction and Materials

Summary of status of priority actions **at the end of** the 2013-15 biennium:

1. Research the use of recycled concrete in new concrete pavements by spring 2014.
Status: Washington State University research has been completed
2. Implement general special provision to allow $\leq 40\%$ reclaimed asphalt pavement (RAP) binder in pavements using $\leq 5\%$ recycled asphalt roof shingles (RAS), in summer 2013.
Status: RAP/RAS Specification Implemented in WSDOT Construction Contracts via WSDOT Standard Specifications



Overview of Efforts

Reduce Energy Use by Extending Pavement Life and Investigating Alternative Paving Options

- Extend the life of concrete pavements using [dowel bar](#) retrofits.
- Use the WSDOT [Pavement Management](#) System to manage pavement lifecycle costs.
- [Warm Mix Asphalt](#) lowers the mixing temperature of asphalt to reduce compaction temperatures with the goal of saving fuel.

Reuse Roadway Materials to Reduce Energy Consumption

- [Crack Seal](#) and overlay of asphalt on existing concrete pavement base to reduce the need for removal and replacement of existing pavement.
- WSDOT uses [Reclaimed Asphalt Pavement](#) produced during pavement rehabilitation.
- Cold-in-Place Recycling reuses existing asphalt pavements to reduce material transport costs and reduce energy and emissions.

Recycle Materials to Reduce Waste

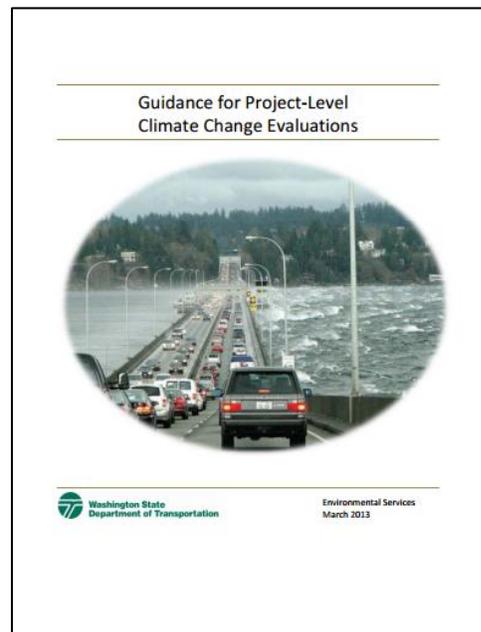
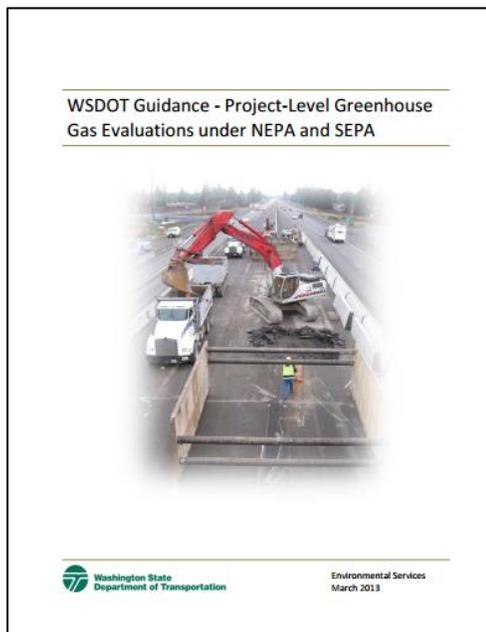
- WSDOT [Standard Specifications](#) allow the use of hot mix asphalt, recycled asphalt shingles, concrete rubble, recycled glass, steel furnace slag or aggregate to reduce the amount of materials entering the landfill. Coordinating with industry to develop specifications to allow better tracking of the usage of recycled material on WSDOT projects.

Contact: Kurt Williams, WilliKR@wsdot.wa.gov, 360-709-5410

Project Delivery

Summary of status of priority actions **at the end of** the 2013-15 biennium:

1. Pilot test FHWA's INVEST sustainability self-evaluation tool for projects in late 2013 and report to FHWA in winter 2014.
Status: Completed February 2014
2. Evaluate sustainability ratings tools: [INVEST](#), [Envision](#), and [GreenLITES](#) in spring 2014.
Status: Completed February 2014
3. Update the WSDOT [Project Level GHG Analysis](#) and [Climate Change guidance](#) documents in fall 2014.
Status: Completed November 2014
4. Complete report of the SR 520 Bridge Replacement and HOV Program sustainability activities by January 2014.
Status: Completed January 2014



Source: WSDOT

Overview of Efforts

Evaluate GHG Emission, Climate Change, and Extreme Weather Vulnerability on Projects

- WSDOT developed the nation's first DOT project level guidance for [GHG analysis](#) and [Climate Change](#) in 2009.
- Published 14 project-level NEPA/SEPA documents with analysis of GHG and climate change impacts.

The actions above support **Results WSDOT Goal 3: Environmental Stewardship**
1.0 Improve environmental conditions: leave it better than before

Contact: Carol Lee Roalkvam, roalkvc@wsdot.wa.gov 360-705-7126

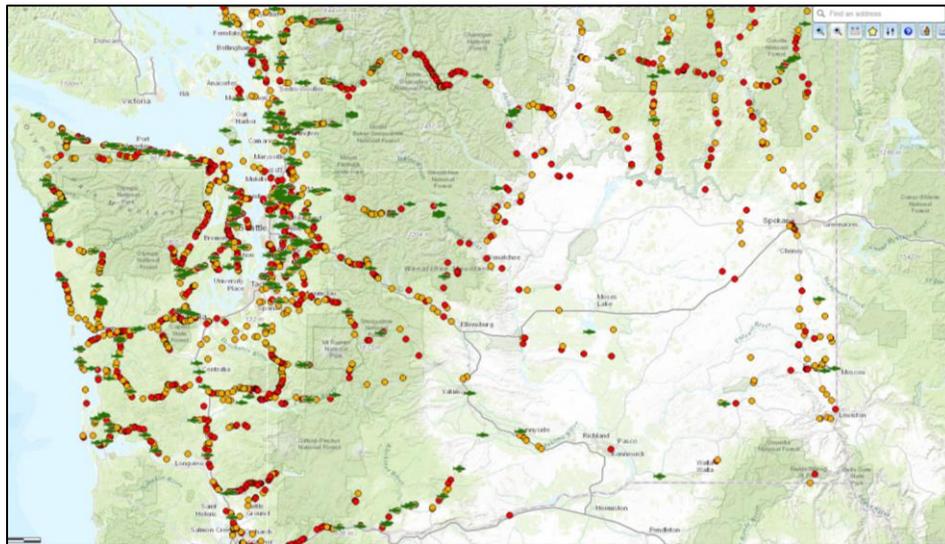
Updated: 11/09/2015

Fish Passage Barrier Removal

UPDATE will be revised to match recent Goal 3 task status report.

Summary of status of priority actions **at the end of** the 2013-15 biennium:

1. Organize and ramp up to comply with the Federal Court Injunction for fish barrier corrections by Spring 2014
Status: Completed
2. Coordinate with Tribes on Barrier correction activities
Status: Ongoing
3. Participate in Fish Passage Board to promote partnerships and coordination on barrier correction.
Status: Ongoing
4. Develop and implement a communications plan to better inform the public about this program
Status: Completed August 2014



New WSDOT internet page showing fish barrier locations

Overview of Efforts

Expedite design and delivery of barrier correction projects

- Conducted Lean process with WDFW. Results include: Revised fish passage project design process to merge WSDOT and WDFW staff in joint effort to streamline project development; Established process to monitor and improve deliverables from WSDOT and WDFW support groups.
- Conducted quarterly program management meetings with regions and support groups to report on progress and address delivery issues.
- Implemented quarterly reporting to WSDOT executives.

Design, construct and maintain culverts to ensure continued passage and preserve assets

- Three part strategy (since 1991) as part of larger transportation construction projects where culverts are within project limits; through stand-alone projects; as part of maintenance activities where possible.

The actions above support **Results WSDOT Goal 3: Environmental Stewardship**
1.0 Improve environmental conditions: leave it better than before



Source: WSDOT

Contact: Rick Smith, smithrick@wsdot.wa.gov, 360-705-7130
Paul Wagner, WagnerP@wsdot.wa.gov, 360-705-7406

Climate Preparedness

Summary of status of priority actions **at the end of** the 2013-15 biennium:

1. Complete Skagit Basin Climate Change Pilot Project by January 2015.
Status: Completed January 2015
2. Prepare WSDOT's Climate-Ready Action Plan by June 30, 2015, to focus department efforts including decision support (asset management and practical guidance), leading by example (best practices), and capacity building for WSDOT staff and our partners.
Status: Replaced with Results WSDOT Goal 3 work plan and tasks

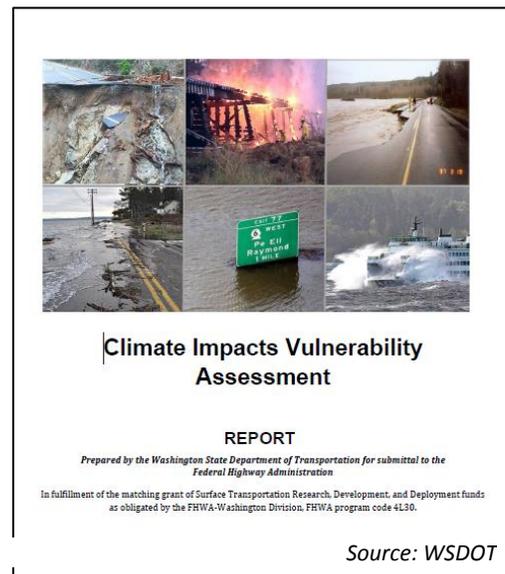
Overview of Efforts

Build Climate-Ready Infrastructure Today

- New investments consider climate vulnerability
- Ongoing I-4 Program and retrofit projects are central to improving our climate-readiness
- Skagit Basin pilot is helping define long-term solutions, working with the county and the Corps of Engineers. This pilot will advance the integration of WSDOT's vulnerability assessment by using locally available flood hazard data and emergency planning tools.

Improve transportation asset management

- Integrating climate information into our business practices from planning through operations and maintenance.
- Expanding communication and collaboration with our partners (state & federal agencies, tribes, transit agencies, MPOs, local agencies) on how we can improve the resilience of our state's transportation systems.
- Demonstrating value of WSDOT's vulnerability assessment methods for use by other agencies (partnered on the Sound Transit pilot, WSDOT staff conduct frequent external presentations).



The actions above support **Results WSDOT Goal 3: Environmental Stewardship**
1.0 Improve environmental conditions: leave it better than before

Contact: Carol Lee Roalkvam, roalkvc@wsdot.wa.gov 360-705-7126

Greenhouse Gas Inventory and Reduction Strategies

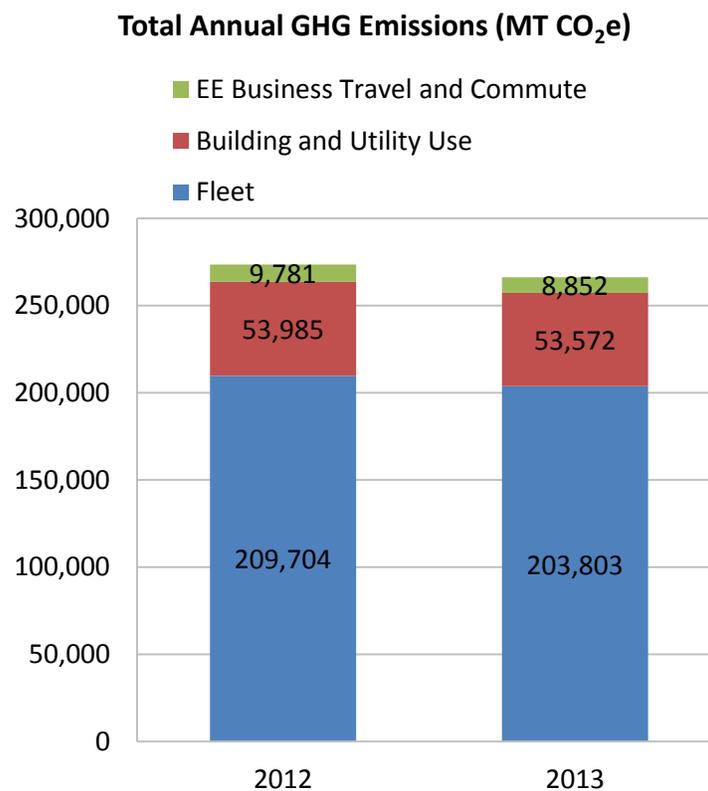
Summary of status of priority actions **at the end of** the 2013-15 biennium:

1. Prepare agency greenhouse gas (GHG) emissions inventory in Summer 2014 and submit final report to the Department of Ecology in Fall 2014, per [RCW 70.235.050](#)
Status: Completed August 2014
2. Submit update of *WSDOT Strategy for Reducing Greenhouse Gas Emissions* to the Department of Ecology in Fall 2014, per [RCW 70.235.050](#)
Status: Completed September 2014

Overview of Efforts

Inventory and reduce WSDOT GHG emissions

- WSDOT has completed agency GHG emissions inventories for 2005 and 2009 through 2013 to comply with [RCW 70.235.050](#)



Agency GHG Emissions in 2012 and 2013

Source of GHG Emissions	2012 Emissions (MT CO ₂ e*)	2013 Emissions (MT CO ₂ e)	Percent of Total Agency Emissions (2013)
Stationary Combustion	4,022	3,677	1%
Purchased Electricity	49,827	49,718	19%
Purchased Steam	137	177	<1%
On-road light duty	6,621	6,211	2%
On-road heavy duty	25,283	21,998	8%
Off-road	3,230	2,940	1%
Ferry	174,531	172,612	65%
Other Boat & Air	39	42	<1%
Employee Business Travel	1,913	1,705	1%
Employee Commuting	9,781	7,147	3%
Totals	275,384	266,226	100%

*Million metric tons carbon dioxide equivalents

The actions above support **Results WSDOT Goal 3: Environmental Stewardship**
2.0 Reduce WSDOT's overall carbon footprint

Contact: Karin Lanrdsberg, landsbk@wsdot.wa.gov (360) 705-7494

APPENDIX

Planned Sustainable Transportation Actions in the 2013 - 2015 Fiscal Biennium

Progress and Tracking Sheet

Updated 11/30/2015

Action Area	Planned Date of Completion/ Implementation	Connection to Other Initiatives	Progress to date
Multimodal Planning			
1. Work with Regional Transportation Planning Organizations, counties, and cities to develop a new program of technical and financial assistance to help local governments implement transportation efficiency improvement measures	December 2014		Completed: December 2014
2. Review existing state transportation grant programs and develop recommendations to increase multimodal investments WSDOT, and partners, submitted a report in January 2015. Key Findings: a. State has programs to invest in multimodal transportation;, no recommendation to create new grant programs. b. Demands for multimodal funds and needs far outpace resources and more funds are needed. c. Absent new multimodal investments funds, agencies still see potential to increase coordination and customer convenience, thus stretching state dollars as far as possible.	December 2014	Gov. EO 14-04	Completed: January 2015
3. Implement changes in planning and priority setting to meet policy objectives in the Governor's Executive Order 14-04	December 2014		Completed: January 2015 <u>Planning guidance through Practical Solutions and Least Cost Planning</u>

Updated: 11/09/2015

Action Area	Planned Date of Completion/ Implementation	Connection to Other Initiatives	Progress to date
4. Statewide Transportation Plan – Develop, adopt, and implement multimodal, federally compliant, long-range statewide transportation plan.	December 2017		Phase I – Completed: January 2015 Phase II – federally compliant multimodal plan, underway, Estimated completion: Dec. 2017
5. Complete pilot test and report on the Federal Highway Administration’s (FHWA) Energy and Emissions Reduction Policy Analysis Tool (EERPAT).	Summer 2014		Completed: December 2014 WSDOT’s pilot study scenarios and its results were presented at the TRB Annual meeting in January 2015.
6. Complete pilot of Federal Highway Administration’s Infrastructure Voluntary Evaluation Sustainability Tool (INVEST) for corridor planning and submit report to FHWA	January 2014		Completed: February 2014

Electric Vehicles

1. WSDOT Innovative Partnerships will complete an action plan to advance electric vehicle use in Washington State	December 31, 2014		Completed: February 2015 See the EV Action Plan online
2. Develop proposal for 2014 legislative session to install 9 DC fast chargers in Puget Sound Region and along I-90 to Spokane Legislature directed WSDOT to develop Electric Vehicle Infrastructure Bank with \$1M in seed funding to encourage private sector investment in EV fast charging along major transportation corridors.	Spring 2015	Gov. EO 14-04	Completed
3. Leverage opportunities: Require applicants for park and ride projects in the Regional Mobility Grant program to include charging stations as part of their proposal. Transit agencies may need technical support on EV charging equipment installation.	December 2014		Completed

Action Area	Planned Date of Completion/ Implementation	Connection to Other Initiatives	Progress to date
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WSDOT Facilities

1. Submit annual Governor's Executive Order 12-06 report to Department of Enterprise Services on progress of meeting building energy efficiency initiatives	December 1, 2014	Gov. EO 12-06	Completed: 2013 & 2014.
2. Upgrade or replace 13,000 light fixtures and controls incrementally to reduce 1,070 MTCO _{2e} by 2019	Incremental		In progress, unfunded effort. Given fixture life-cycles and budgetary constraints eventual upgrade and replacement of WSDOT facility light fixtures will occur by 2020. In the 2013-2015 biennium approximately 650 fixtures have been replaced or upgraded.

Highway Lighting

1. Research options to increase energy efficiency of highway lighting, including flexibility in design requirements for lighted areas	June 30, 2015	Gov. EO 14-04	Design Policy update completed.
2. Develop a safety predictive model to determine where roadway illumination is justified and where it can be removed without significant impacts to safety and mobility.	June 30, 2015		Interstate model development is completed.

Highway Maintenance

1. Commence the statewide program of bridge cleaning and washing to help extend the life of coatings on steel bridges.	Begin July 2013, Annual washing ongoing activity		61 bridges were completely cleaned in FY2015.
2. Increase pavement maintenance work to help extend the life of	Begin		\$34.4m spent during the 2013-15

Action Area	Planned Date of Completion/ Implementation	Connection to Other Initiatives	Progress to date
pavements in the face of decreasing pavement preservation funding and work.	implementation July 2013		biennium, within 3% of planned expenditures.
3. Implement a contract to apply durable pavement striping/markings at key locations where the annual application of water-based paint does not hold up to traffic wear and tear	2013-15 biennium		Contract completed: Summer 2014.
4. Implement annual inspection and maintenance program for storm water treatment facilities to ensure highway runoff treated for quantity and quality before leaving highway right-of-way.	Ongoing		Ongoing; by the end of FY 2015, brought 260 facilities back into compliance with applicable standards. Work continues to bring the remaining 107 facilities into compliance.

Operational Efficiencies

1. Complete Transportation System Management and Operations (TSMO) self-assessment workshop to improve traffic operations, demand management, and corridor planning to ensure TSMO capabilities are effectively considered alongside other traditional improvements	Summer 2014	Reform V: Implement Practical Design	Workshop Completed
2. Install 17 ramp meters to improve flow, system efficiency, reduce accidents, and relieve congestion through ramp meters on I-5 in Tacoma.	Begin Summer 2014		<i>Completed: May 2015; System operational</i>
3. Pursue installation of 15 new roundabouts at locations where other types of intersections are being proposed.	June 30, 2015		Completed: 17 roundabouts pursued (7 constructed and operating; 3 designed and funded; 3 in the design process with funding; 4 more being pursued)

Commute Trip Reduction

1. Submit report to the Legislature on “ Demand Management and the path to greater efficiency ”	2014 legislative session		Completed: Drafting new report to the legislature to be delivered by December 1, 2015
2. Develop and implement WSDOT telework policy and support the Governor’s Executive Order 14-02 to expand telework and flexible work hours.	Spring 2014		Ongoing work on state agency implementation team. Developing telework policy and training for both managers and employees.
3. The CTR Board’s four-year pilot program is testing different Transportation Demand Management (TDM) strategies or experiments in different jurisdictions (Redmond, Seattle, Snohomish County, Tacoma, Tukwila, and Yakima). For example, testing different types of employer engagement; different methods to gather data other than surveys; different administrative methods; and integration with other programs to reduce Single Occupancy Vehicles (SOV) use.	2014		Six research projects have been launched. Yearly jurisdiction progress reports are due to the CTR Board. A final board report on the pilot with analysis and proposals is due to the legislature in December 2017.
4. Increase the number of approved WSDOT employees that telework at least one day a week from 90 employees in 2013 to 350 by June 30, 2015.	June 30, 2015		In progress, currently have 240 active identified participants in telework.

Land-Fleet

1. Increase average miles per gallon (mpg) for passenger and light duty truck fleet from 18 mpg in 2010 to 23 mpg in 2020.	June 2015	WSDOT Strategic Plan: Goal 3, 2.0	Completed. June 2020 goal has been achieved ahead of schedule.
2. Replace 10 sedans and sport-utility vehicles with 6 electric vehicles and 4 extended-range electric vehicles by June 2014.	July 2015		Completed.
3. Increase the number of cleaner burning dual fuel (Propane/Gas) work trucks from 21 to 81 by October 2015.	October 2015		In progress. Fifty-two of 81 planned conversions have been completed.
4. Increase biodiesel from B13 to B20 by June 2015.	June 2015		In progress. During the first six months of 2015, biodiesel averaged a B14.8.

Washington State Ferries

<p>1. Propose conversion of 6 Issaquah Class vessels from diesel to liquefied natural gas (LNG) for 2014 legislative session</p>	<p>2014 Legislative Session</p>	<p>WSDOT Strategic Plan: Goal 3, 2.0</p>	<p>The Governor proposed \$145 million for the conversion project in the 2015 legislative session. The Legislature did not act on the proposal. WSDOT continued LNG security planning, outreach and pre-design activities.</p>
<p>2. Explore private-public funding opportunities for LNG vessel conversion</p>	<p>2014</p>		<p>Pending approvals from US Coast Guard. WSDOT updated the Waterway Suitability Assessment. Further action is pending approvals from US Coast Guard.</p>
<p>3. Evaluate increasing biodiesel use by piloting B10 from recycled canola oil and rapeseed in two vessels</p>	<p>Winter 2014</p>		<p>The study was delayed due to fuel supplier and fuel price issues. Move this item to 2015-2017 action plan.</p>
<p>4. Convert the Hyak ferry to a battery hybrid</p>	<p>Fall 2014</p>		<p>WSDOT concluded that his project was not financially feasible. The 2015 Legislature reallocated funding for this project to other projects.</p>
<p>5. Test a centrifugal lube oil filter to reduce use of lube oil and paper oil filter waste.</p>	<p>2014</p>		<p>Ongoing – continuing analysis for one year.</p>
<p>6. Expand the reservation system for private vehicles to the San Juan Islands to reduce vehicle idling and related emissions</p>	<p>Late 2014</p>		<p>Completed: In January 2015, the reservation system was fully implemented in the San Juan Islands. The system has successfully reduced vehicle wait times.</p>

Action Area	Planned Date of Completion/ Implementation	Connection to Other Initiatives	Progress to date
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Highway Construction and Materials

1. Research the use of recycled concrete in new concrete pavements	Spring 2014	WSDOT Strategic Plan: Goal 1 and Goal 3	Washington State University research is completed.
2. Implement general special provision to allow ≤40% reclaimed asphalt pavement (RAP) binder in pavements using ≤5% recycled asphalt roof shingles (RAS)	Summer 2013		RAP/RAS Specifications Implemented in WSDOT construction contracts via WSDOT Standard Specifications

Project Delivery

1. Pilot test FHWA's INVEST sustainability self-evaluation tool for projects and report to FHWA	February 2014		Completed February 2014
2. Evaluate sustainability ratings tools: INVEST , Envision, and GreenLITES	Spring 2014		Completed February 2014
3. Update the WSDOT Project Level GHG Analysis and Climate Change guidance documents	Fall 2014	WSDOT Strategic Plan Goal 3	Completed November 2014
4. Complete report of the SR 520 Bridge Replacement and HOV Program sustainability activities	January 2014		Completed January 2014

Fish Passage Barrier Removal

UPDATE will be revised to match recent Goal 3 task status report.

1. Organize and ramp up to comply with the Federal Court Injunction for fish barrier corrections	Spring 2014	WSDOT Strategic Plan: Goal 3, 1.0	Completed
2. Coordinate with Tribes on Barrier correction activities	ongoing		Ongoing
3. Participate in Fish Passage Board to promote partnerships and coordination on barrier correction	Fall 2014 begin		Ongoing
4. Develop and implement a communications plan to better inform the public about this program	Summer 2014		Completed August 2014

Climate Preparedness and Adaptation

1. Complete Skagit Basin Climate Change Pilot Project	January 2015	Presidential Task Force (Gov. Inslee)	Completed January 2015
2. Prepare WSDOT's Climate-Ready Action Plan	June 30, 2015		Replaced with Results WSDOT Goal 3 work plan and tasks

GHG Inventory and Reduction Strategies

1. Prepare agency GHG emissions inventory and submit final report to the Department of Ecology per RCW 70.235.050 .	Summer 2014	RCW 70.235.050	Completed August 2014
2. Submit update of <i>WSDOT Strategy for Reducing GHG emissions</i> to the Department of Ecology per RCW 70.235.050 .	Fall 2014		Completed September 2014