Reducing Greenhouse Gas Emissions in Washington State Government

Third Biennial Progress Report

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Washington State Department of Ecology
Olympia, Washington

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Acknowledgements

Ecology acknowledges and thanks the sustainability coordinators, facility managers, fleet managers, fiscal staff, commute trip reduction coordinators, and other representatives from 120 state agencies that contributed time and effort to:

- Quantify greenhouse gas emissions,
- Identify actions taken,
- Develop and implement reductions.

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Executive Summary

Background and Purpose of This Report

In 2009, the Legislature adopted the State Agency Climate Leadership Act, which requires state agencies to reduce greenhouse gas (GHG) emissions to:

- 15 percent below 2005 levels (1.19 million metric tons of carbon dioxide equivalent ($MMTCO_2e$)) by 2020;
- 36 percent below 2005 levels by 2035;
- 57.5 percent below 2005 levels by 2050.

The greenhouse gas reporting requirements apply to 141 state agencies, including:

- All administrative, legislative, and judicial agencies and elected offices;
- Boards and commissions;
- Community and technical colleges;
- Universities.

The Act requires agencies to:

- Report every year their greenhouse gas emissions to Ecology;
- Project their emissions to 2035;
- Develop a strategy to meet the reduction targets; and
- Report every two years the actions they have taken to meet reduction targets.

By December 31 of each even numbered year starting in 2010, Ecology is required to compile a biennial report to the governor and the legislature. This report lists the total state agencies' greenhouse gas emissions for the 2005 baseline year and the two years before the due date of each report, and actions taken to meet the reduction targets. [1]

This report updates state agencies' progress in reducing GHG emissions since Ecology submitted the first report in January 2011.[2] It summarizes GHG emissions for 2005 and 2012-2013, as well as actions taken since 2012 to meet the reduction targets.

Report Highlights

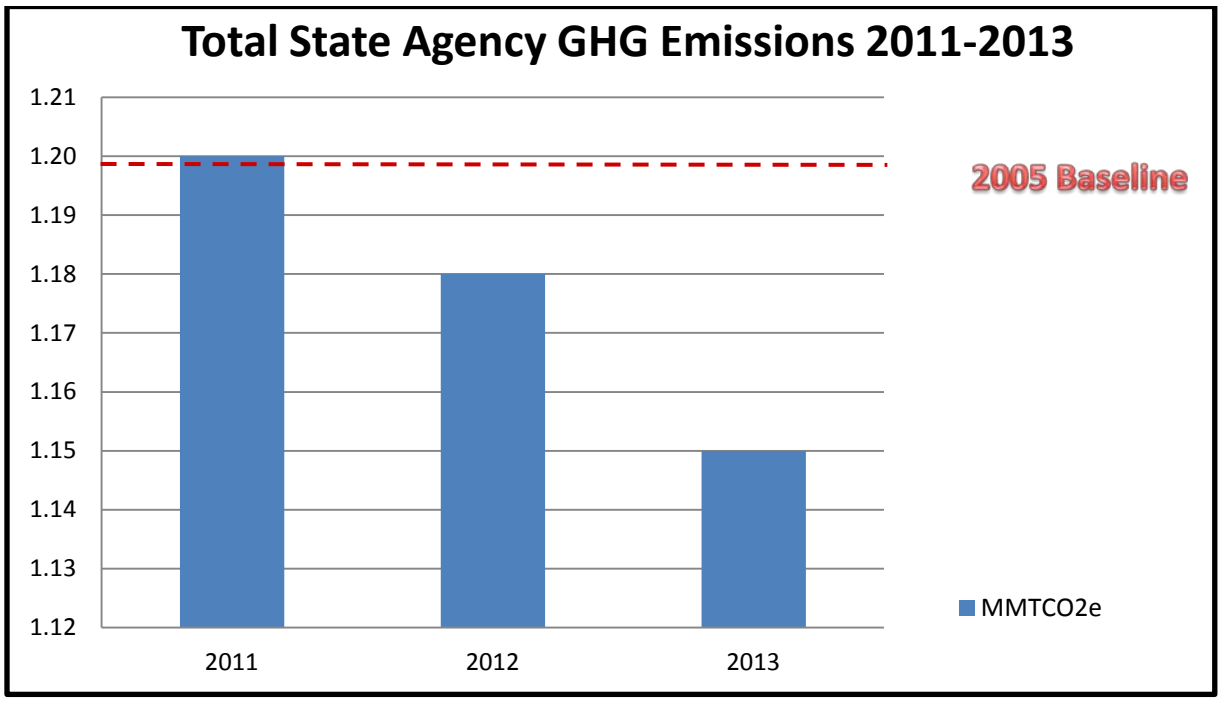
Total state agency greenhouse gas emissions increased 5.2 percent from 2005 to 2008, then steadily declined from 2008 to 2013.

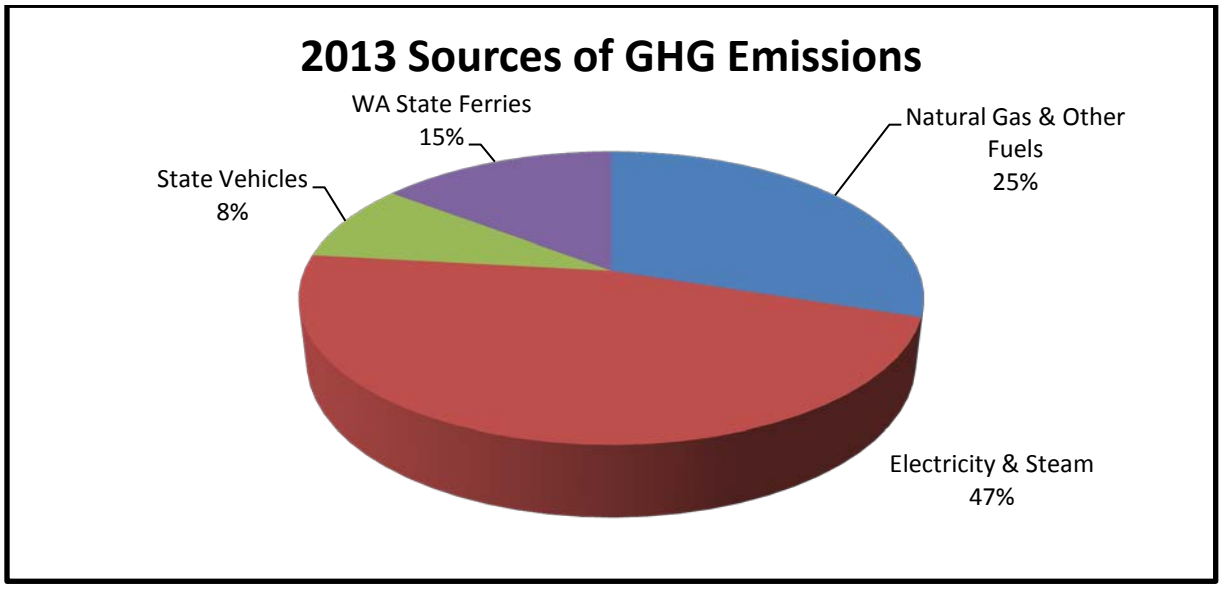
- For 2013, state agency GHG emissions represented about 1.2 percent of the total statewide GHG emissions from all sectors.

[1] Codified in RCW 70.235.060.

[2] The first progress report issued in January 2011 is posted at http://www.ecy.wa.gov/climatechange/WAleadership.htm.

- In 2013, 89 percent of the total reported GHGs were emitted by 17 state agencies (that each emit over 10,000 $MTCO_2e$). One percent of the total reported GHGs were emitted by 52 state agencies that emit less than 1,000 $MTCO_2e$.





State agencies developed strategies to reduce GHG emissions and took action since 2012 to conserve energy, improve energy efficiency, and use clean energy technologies. This has resulted in significant savings in utility and fuel costs. State agencies' actions include:

- Meet or exceed LEED certification requirements for new buildings and renovation projects. Since the High-Performance Green Buildings Act came into effect in 2005, 52 state-owned projects have been LEED certified, including 2 Platinum, 29 Gold, and 22 Silver.
- Complete energy benchmarking of facilities in Portfolio Manager (an EPA energy management tool), conducting audits, and making energy efficient investments.
- Use energy savings performance contracting to identify, implement, and finance energy efficiency projects in their facilities, leading to significant savings in energy and utility costs.
- Reduce energy use from information technology and office equipment. Consolidating and virtualizing servers has reduced energy use and cooling costs.
- Expand use of biodiesel and increase fuel economy in state vehicles.
- Reduce business travel by using video-conferencing, teleconferencing, and web-conferencing, as well as restricting travel.
- Reduce drive-alone commute trips and vehicle miles traveled. Expand the commute trip reduction program run by WSDOT to cover all state agency worksites in Thurston County.
- Generate renewable energy on-site, or purchase green power or renewable energy credits through their utility or a third-party provider.
- Reduce environmental impact by recycling, composting, conserving resources, and purchasing environmentally-preferred products. Conserve water, manage stormwater, and reduce GHG emissions from wastewater treatment.

Conclusions

To meet the 2020 GHG reduction targets, state agencies will need to reduce their GHG emissions 11 percent below 2013 levels. Meeting these emission reductions will require continued aggressive action and full implementation of existing and potentially new policies. In addition, cabinet agencies are required under Executive Order 12-06 to reduce their building energy use 20 percent below 2009 levels. This program is managed by DES.

Although many GHG reduction strategies are cost-effective and have short payback periods, many agencies noted the following needs:

- Additional low-cost financing options and budgetary or other incentives;
- More staff to monitor/analyze data and systems;
- Agency management support;
- More awareness of the goals and why this is important;
- Understanding of emission reduction actions;
- Better data about energy use.

Agencies reported several factors that could affect their ability to meet the targets, such as changes in building space, staffing, population served, and agency services.

Moving forward, Ecology will continue to work with agencies to:

- Implement new and existing reduction strategies and leverage complementary efforts;
- Improve data and tracking of energy use and GHG emissions;
- Evaluate options to help achieve carbon neutrality;
- Measure and track progress and account for changes in operations.

Agencies will continue to report annual GHG emissions as well as actions taken, which will provide further assessments of overall progress. Ecology will compile this information and provide the next update in December 2016.

1. Introduction

State Agency Climate Leadership Legislation

In 2009, the Legislature adopted the State Agency Climate Leadership Act (E2SSB 5560, Chapter 519, Laws of 2009), which requires state agencies to reduce greenhouse gas (GHG) emissions to:

- 15 percent below 2005 levels (1.19 million metric tons of carbon dioxide equivalent ($MMTCO_2e$)) by 2020;
- 36 percent below 2005 levels by 2035;
- 57.5 percent below 2005 levels by 2050.

The law requires agencies to report to Ecology:

- Annual GHG emission totals;
- Projected emissions through 2035;
- Actions taken to reduce GHG emissions;
- A strategy to reduce GHG emissions.[3]

The Legislature also requires Ecology to:

> By December 31st of each even-numbered year beginning in 2010, the department shall report to the governor and to the appropriate committees of the senate and house of representatives the total state agencies' emissions of greenhouse gases for 2005 and the preceding two years and actions taken to meet the emissions reduction targets.[4]

Purpose of This Report

This report satisfies the statutory requirement to update the legislature about state agencies' progress in reducing GHG emissions since Ecology submitted the first report in January 2011.[5] It summarizes:

- Total state agency GHG emissions for 2005, 2012, and 2013;
- Main sources of GHG emissions;
- Strategies to reduce GHG emissions;
- Actions taken from 2012-2013 to reduce GHG emissions.

[3] Codified in RCW 70.235.050.
[4] Codified in RCW 70.235.060.
[5] The first progress report issued in January 2011 is posted at http://www.ecy.wa.gov/climatechange/WAleadership.htm.

2. Background

Reporting State Agencies

The GHG reporting requirements apply to 141 state agencies, including:

- All administrative, legislative, and judicial agencies and elected offices;
- Boards and commissions;
- Community and technical colleges;
- Universities.

The emissions figures in this report are based on reported or estimated emissions for 121 agencies that have submitted an emissions inventory for at least one of the reporting years (2005 and 2008-2013). 20 agencies did not report for any year, so these emissions are not included in the totals. Ecology estimates that these agencies represent less than 1 percent of the total reported state agency emissions.

Agencies used an Ecology-developed greenhouse gas calculator that applies a set of generally-accepted GHG accounting principles and guidelines, with adjustments to apply specifically to state agencies. Several higher education institutions that participate in the American College and University Presidents' Climate Commitment used a comprehensive greenhouse gas calculator tailored specifically to higher education institutions. The GHG emissions information contained in this report was compiled from annual GHG inventory reports submitted by each individual agency.

Sources of GHG Emissions

Agencies reported on sources of GHG emissions directly under their operational control or that result from activities directly controlled by the agency, including:

- Natural gas, electricity, and other fuels used in buildings and stationary equipment owned or operated by the agency
- Diesel, gas, and other fuels used in vehicles and equipment owned and operated by the agency, including light and heavy duty on-road vehicles, non-road or off-road vehicles, ferries, boats, and aircraft

In addition, most agencies reported GHG emissions from:

- Business travel in vehicles owned by employees;
- Air travel;
- Employee commuting.

Few agencies reported fugitive emissions (emission leaks) of refrigerants or other greenhouse gases with high global warming potential.

GHGs Included

State agencies reported on the four main GHGs emitted from their activities, including:

- Carbon dioxide (CO_2)
- Methane ($CH_{4)}$
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)

Agencies use a common metric, the carbon dioxide equivalent (CO_2e) to report their GHG emissions. The CO_2e metric takes into account the different potential each of the gases has to heat the planet compared to CO_2, or the Global Warming Potential (GWP). The table below describes the global warming potential related to each type of greenhouse gas.

Greenhouse Gas	GWP
Carbon dioxide (CO2)	1
Methane (CH4)	25
Nitrous Oxide (N2O)	298
Hydrofluorocarbons (HFCs)	12-14,800

Table 1: Global Warming Potentials

Source: IPCC 2007 Fourth Assessment Report, Table 2.14
http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html

3. Total State Agency Greenhouse Gas Emissions

Trends in Greenhouse Gas Emissions

In 2013, state agencies emitted about 1.15 million metric tons of carbon dioxide equivalents ($MMTCO_2e$) from energy used to heat and power state-owned and leased buildings and from the state vehicle fleet. This is equivalent to an approximate 4 percent reduction from GHG emissions levels in 2005 (1.19 $MMTCO_2e$). Emissions from state agencies account for about 1.3 percent of total GHGs emitted in Washington.

Approximately 48 percent of agencies saw a decrease in GHG emissions from 2005-2013. 32 percent saw an increase in GHG emissions and 10 percent saw relatively constant emissions. Among these agencies, higher education displayed a similar trend with 55 percent seeing a decrease in GHG emissions and 45 percent seeing an increase in GHG emissions.

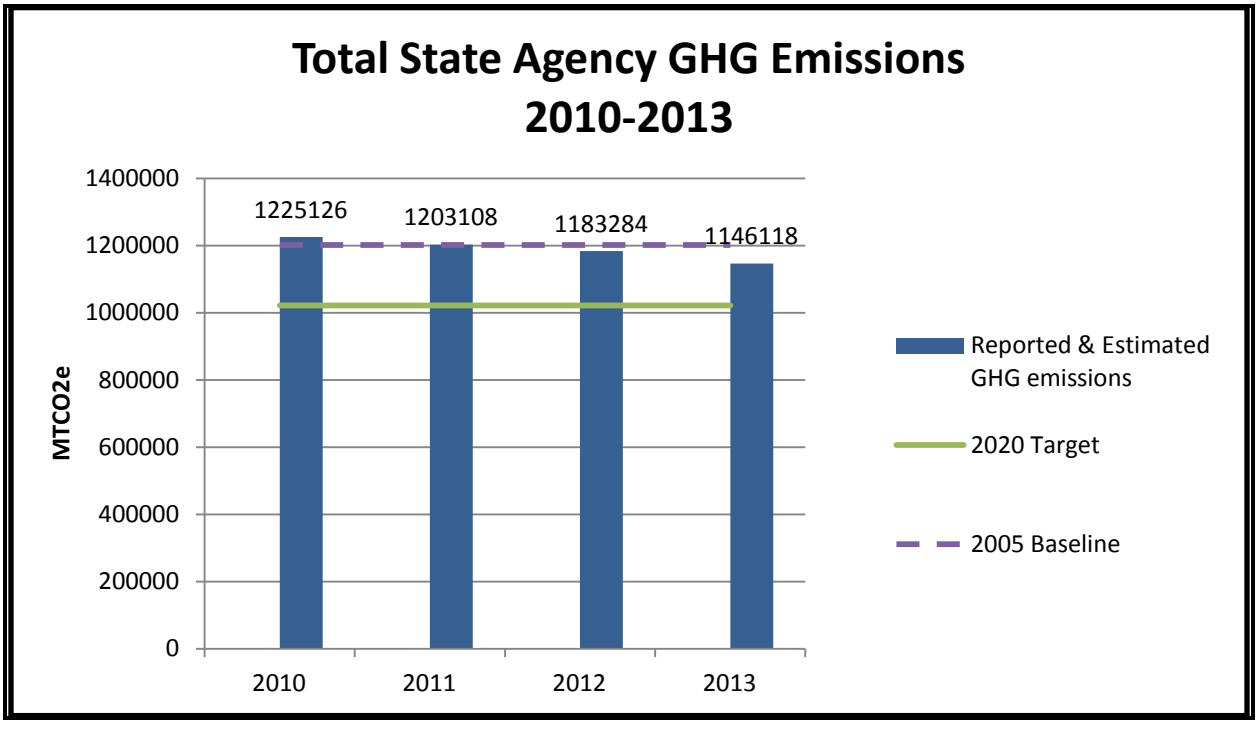


Figure 1: 2010-2013 Total State Agency GHG Emissions. This includes GHG emissions from state-owned and leased buildings and the state vehicle fleet. Estimated emissions are based on previously-reported data.

The reduction in GHG emissions from 2008-2013 is likely because of several factors, including:

- Continued implementation of policies to reduce energy use and GHG emissions;
- The economic downturn and reduction in state revenue, services, and staff;
- Agency reorganization/and closures.

As the economic recovery progresses, some agencies may see their GHG emissions start to stabilize or increase. Reducing emissions and meeting the statutory targets will likely require more aggressive action by state agencies.

Greenhouse Gas Emissions by Agency Size

In 2013, eight state agencies emitted over 25,000 $MTCO_2e$ and accounted for approximately 74 percent of total state agency emissions. These agencies include:

- Department of Transportation
- University of Washington
- Washington State University-Pullman and Energy Extension offices (statewide)
- Department of Corrections
- Department of Social and Health Services
- Department of Enterprise Services
- Western Washington University
- Central Washington University

Fifty-two agencies emitted less than 1,000 $MTCO_2e$ each and accounted for 1 percent of total state agency GHG emissions. A breakdown of agencies by size of GHG emissions is included below.

AGENCY CATEGORY	2013 TOTAL GHG EMISSIONS BY CATEGORY	PERCENT OF TOTAL GHG EMISSIONS	NUMBER OF AGENCIES
Over 25,000 $MTCO_2e$	852193	74.4%	8
10,000 to 25,000 $MTCO_2e$	114759	10%	7
1,000 to 10,000 $MTCO_2e$	169118	14.8%	47
100 to 1,000 $MTCO_2e$	9141	0.8%	19
Less than 100 $MTCO_2e$	907	0.1%	33
TOTAL	1146118	100%	114

Table 2: 2013 Agency Size and Percentage of Total GHG Emissions

State agencies carry out a variety of activities to achieve their mission and deliver services. Because each agency has different types of buildings and fleets, the agencies' GHG emissions are not directly comparable. This variation and the resulting differences in GHG emissions levels and strategies needed to achieve the mandatory reduction targets should be considered when reviewing or comparing agency GHG emissions.

GHG Emissions by Source

The largest single source (52 percent) of state agency emissions in 2013 comes from electricity and steam used in state-owned and leased buildings and other fixed equipment, such as traffic lights and streetlights. The second largest source (25 percent) is from natural gas and other fuels used to heat and power buildings ("stationary sources"). Diesel used in the Washington State ferry system, along with gasoline and diesel used in the state fleet account for 23 percent of state government emissions.

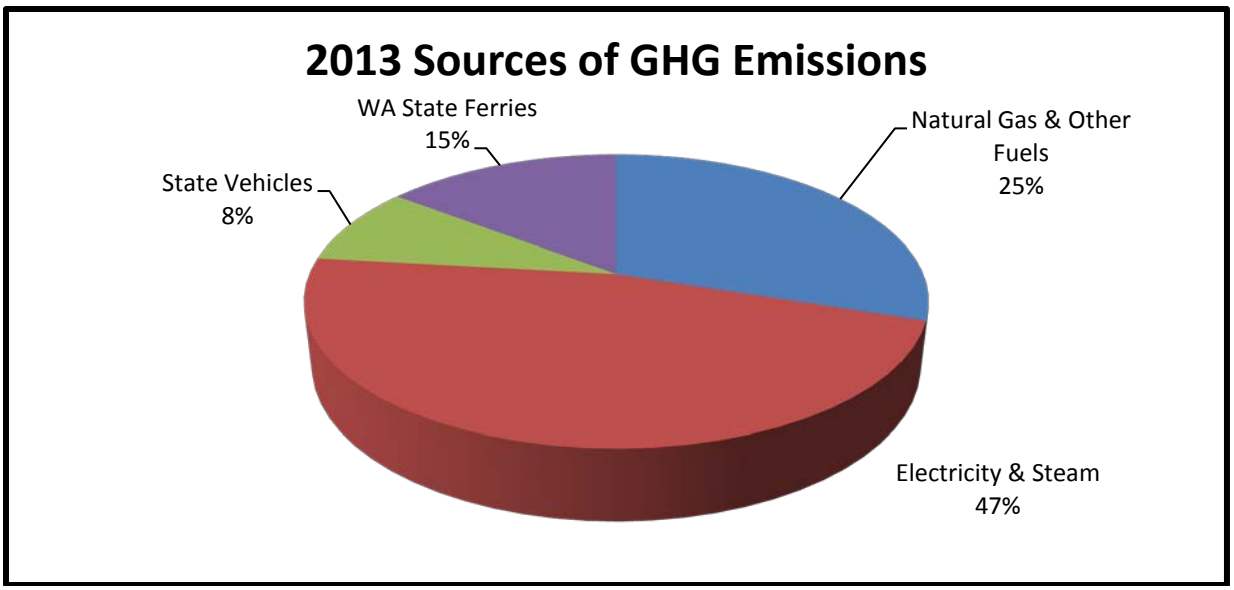


Figure 2: Sources of GHG Emissions, 2013

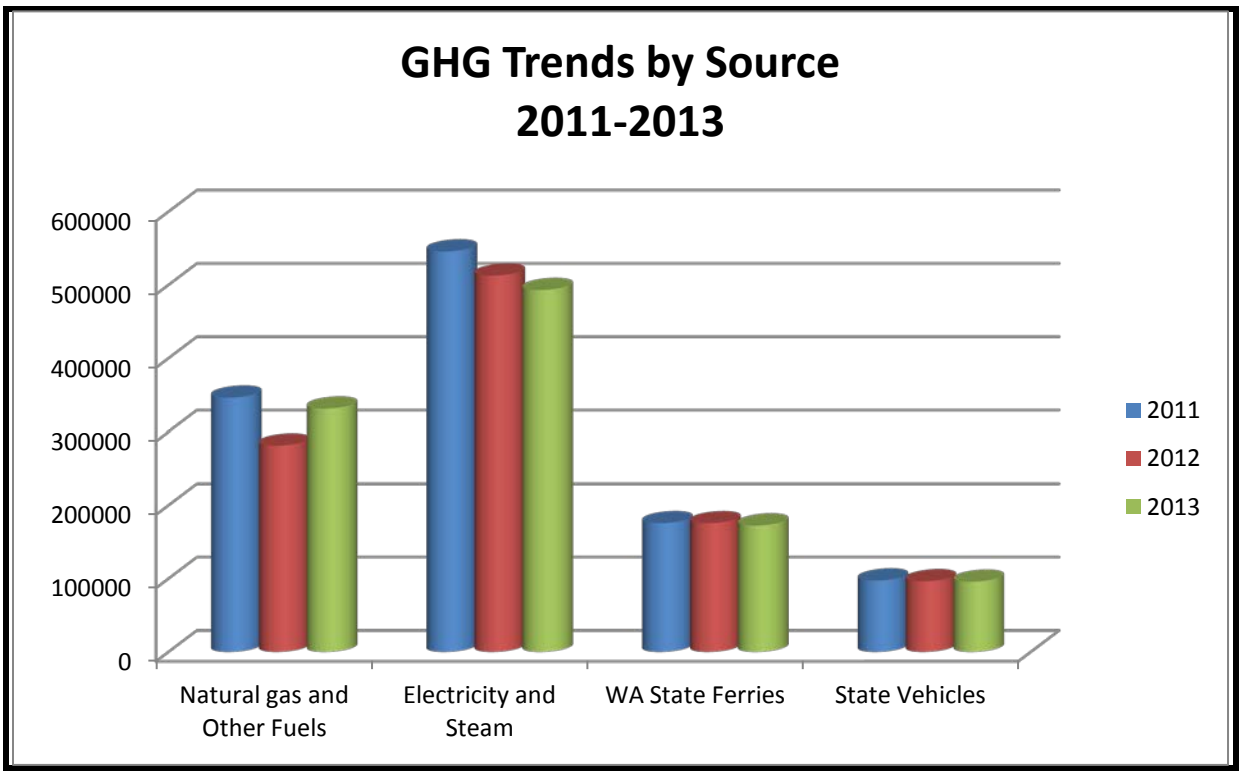


Figure 3: GHG Trends by Source, 2011-2013

Agencies also quantified other sources of emissions from business travel in private vehicles, air travel, employee commuting, and fugitive emissions. These were not included in the totals above and are described in more detail starting on page 12.

Energy use in buildings and fixed equipment

In 2013, state agencies emitted approximately 824,517 metric tons ($MTCO_2e$) from energy used to power and heat state-owned and leased buildings and fixed equipment, such as traffic and street lights. Each agency reported the energy consumed in agency-owned buildings and privately-leased space. Ten agencies account for about 90 percent of the total state agency GHG emissions from buildings and fixed equipment.

All state agencies used a consistent emissions factor (the EPA Emission and Generation Resource Integrated Database (eGRID) for the Northwest Power Pool (NWPP) sub-region) to quantify GHG emissions from electricity use. This factor reflects the GHG emissions associated with the fuel mix used to generate electricity in the NWPP sub-region. The sub-region includes all of Washington, Oregon, Idaho, and Utah, major portions of Nevada, Montana, and Wyoming, and a portion of Northern California. Electricity generation within the NWPP sub-region includes:

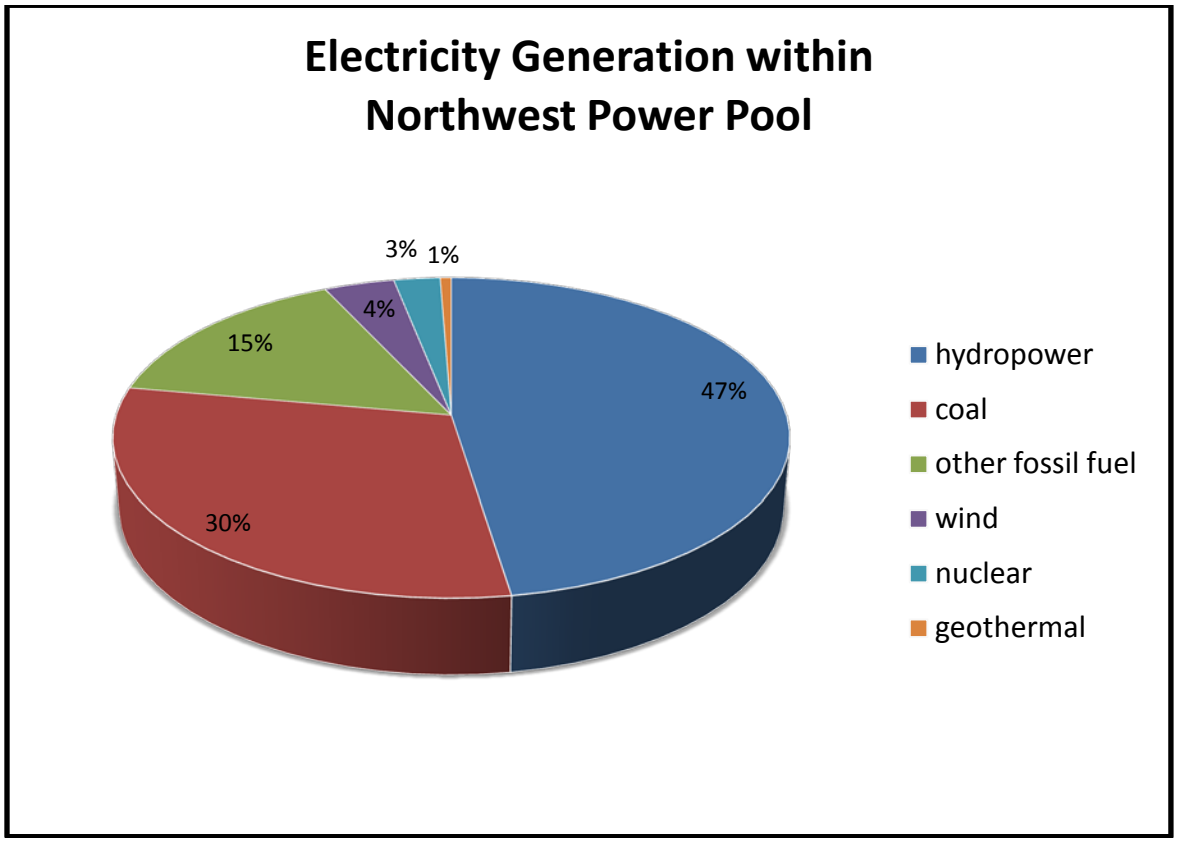


Figure 4: Electricity Generation within Northwest Power Pool

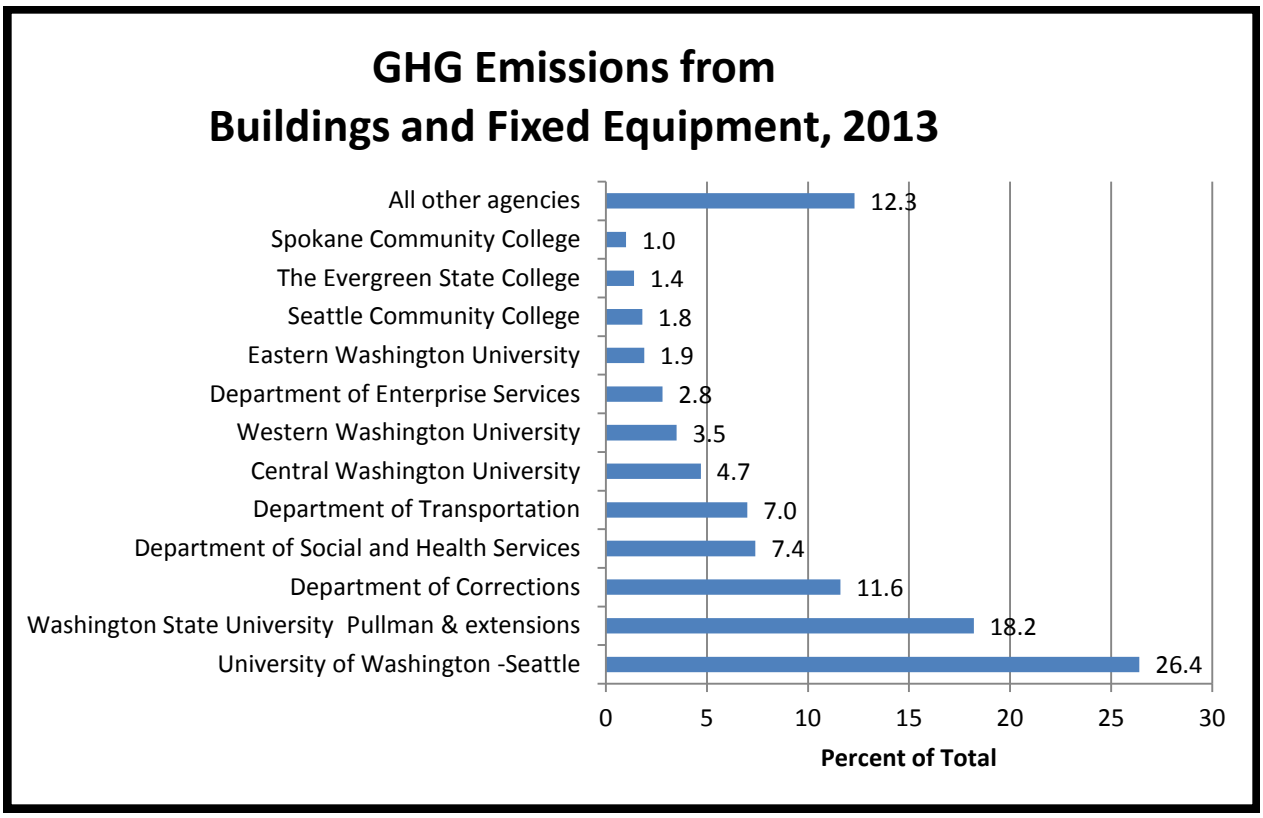


Figure 5: GHG Emissions from Buildings and Fixed Equipment, 2013

State vehicle fleet

State agencies emitted about 268,445 $MTCO_2e$ from state-owned motor vehicles in 2013. About 64 percent of the 2013 transportation-related total is from the Washington State ferry system, the nation's largest ferry system, run by Washington State Department of Transportation. Thirty-six percent or 95,833 $MTCO_2e$ are from other state fleet vehicles, which includes:

- On-road light duty and heavy-duty vehicles;
- Off-road vehicles and equipment;
- Non-state ferries;
- Boats;
- Aircraft.

Five state agencies account for 89 percent of total GHG emissions from the state fleet. Each agency reported GHG emissions from agency-owned fleet and from use of the motor pool.

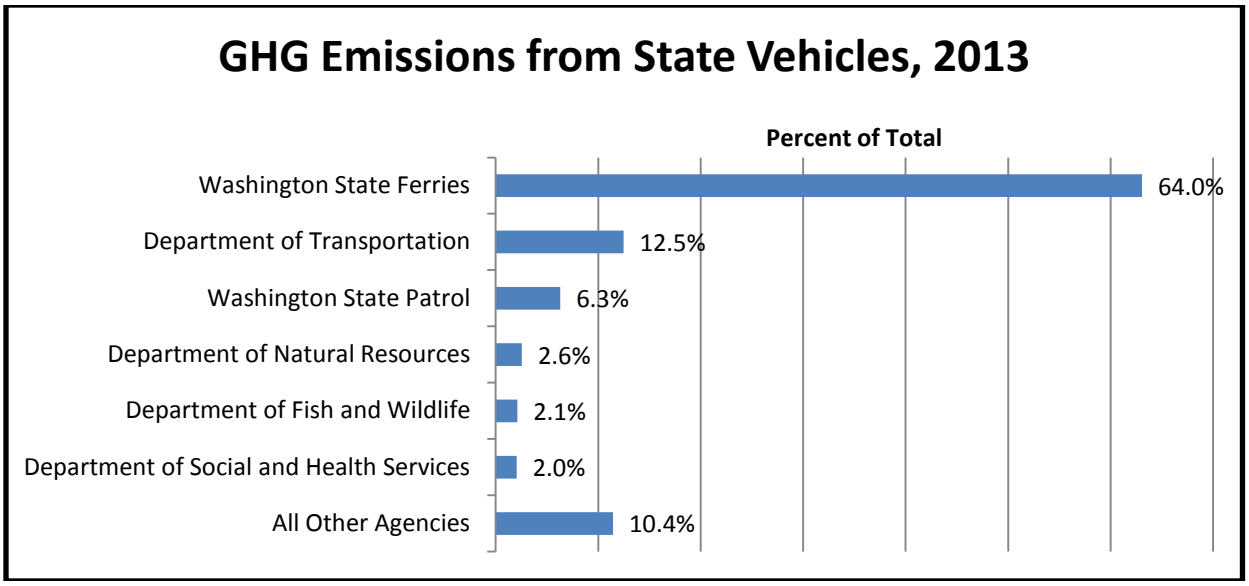


Figure 6: GHG Emissions from State Vehicles, 2013

Other sources of GHG emissions

Most state agencies reported GHG emissions for several other sources, including:

- Business travel in private vehicles (including employee-owned vehicles) and air travel;
- Employee commuting;
- Fugitive emissions.

These are not included in the total state agency GHG emissions because data was not available or was poor for 2005, the baseline year. Many agencies have taken steps to improve tracking of this data, but significant challenges remain. Also, agencies have less control over emission reduction decisions made by employees.

Although these emissions are not included in the total, agencies achieved and continue to make significant reductions from these sources. In the future, Ecology will work with agencies to standardize which of these other sources the reduction targets should apply to and how best to incorporate their emissions in the baseline.

Business travel in private vehicles

State agencies reported about 50,892 $MTCO_2e$ from business travel in 2013. This figure is likely low because many agencies have decentralized records or limited data on air travel. Also, the data does not include estimated emissions from non-reporting agencies. As data and tracking improve, more agencies could start reporting GHG emissions and reported levels could increase.

GHG emissions from business travel in private vehicles are limited to emissions from air travel and business travel in vehicles owned by employees. GHG emissions from employee travel by taxi, rental cars, rail, ferry, or bus are not included in this estimate.

Employee commuting
State agencies also reported 155,126 $MTCO_2e$ from employee commuting for 2013. This figure is incomplete and does not include estimates for non-reporting agencies and for worksites that are not a part of the Commute Trip Reduction (CTR) program run by WSDOT.

WSDOT began to quantify GHG emissions for CTR worksites in 2009. In 2009, the Legislature added requirements for all state agencies located in Thurston County to participate in a Joint Comprehensive CTR Plan. For future years, more agency worksites in Thurston County will have data on GHG emissions from employee commuting. WSDOT estimated emissions from employee commuting for commuters driving alone, carpooling, vanpooling, or motorcycling as determined by commute trip survey data. Commuting emissions do not include student commutes or commuting by rail, transit, or ferry.

Fugitive emissions
Seven agencies reported 22,968 $MTCO_2e$ "fugitive" emissions or gas leaks from:

- Commercial refrigeration
- Commercial air conditioning equipment and heat pumps
- Fire suppression equipment
- Other types of equipment

Many refrigerants and compressed gases are high global warming potential (GWP) gases that have GWPs that are 140 to 11,700 times that of carbon dioxide. Ecology and other agencies will evaluate expanding fugitive emissions reporting in future years. Many agencies continue to struggle collecting this data.

Additional Sources Reported by Higher Education Institutions
Most of the universities, community and technical colleges participate in the American College and University Presidents' Climate Commitment. They use a comprehensive greenhouse gas calculator tailored specifically to higher education institutions. This calculator includes additional sources of emissions not included by other agencies, such as student commuting, solid waste, and other sources. To provide a consistent basis for comparison, these additional sources are not included in the emissions totals in this report.

Higher education institutions also often account for purchases of renewable energy credits (RECs) or offsets in their inventories. However, for this report, emission reductions from RECs or offsets are not factored in for several reasons:

- RECS allow agencies to purchase reductions elsewhere and not focus on energy reductions from their operations, which allows the state to save money and improve efficiency over the long-term.
- The quality and rigor of offsets and RECs varies and, in some cases, it is difficult to determine if they lead to actual reductions in GHG emissions.
- The protocols for quantifying GHG reductions from offsets, RECs, and green power are complex and vary in accuracy.

Moving forward, Ecology will work with agencies to determine if and how to account for reductions from RECs or offsets.

4. Existing and Planned Actions to Reduce Greenhouse Gas Emissions

Actions Taken Since 2012 to Reduce GHG Emissions

The Act requires agencies to report every two years about actions they have taken to reduce GHG emissions in the past two years. Ecology developed a web survey for agencies to report. Ninety five agencies responded and completed the web survey.

Building energy use actions

Fifty-two agencies responded about the actions they have taken since 2012 to reduce energy in buildings. Key actions include:

- Constructed new or renovated buildings to meet green building standards.
- Completed energy performance benchmarking in Portfolio Manager, conducted audits, and made investments in energy efficiency.
- Upgraded and renovated buildings to add energy saving measures such as retrofitted HVAC, efficient indoor and outdoor lighting, and weatherization and occupancy sensors.
- Continued to use Energy Savings Performance Contracting to identify and implement energy efficiency projects.
- Switched to more energy efficient appliances.
- Closed inefficient housing units and moved people to new energy efficient space.
- Replaced old boilers with high efficiency condensing boilers.
- Installed a rooftop solar system.

Seattle College hired a sustainability coordinator to improve energy use tracking and analysis, to focus on energy conservation efforts, as well as improve educational programs to staff, faculty, and students.

Pierce Community College, with an energy conservation grant from the Washington Department of Commerce, upgraded HVAC systems.

State Parks performed park energy audits and conservation upgrades to park buildings, parking lot lights, and residences.

Office equipment and information technology actions

Since 2012, agencies have worked to increase energy efficiency and reduce energy consumption from office equipment and information technology. Key actions include:

- Virtualized servers, and consolidated or eliminated some servers.
- Used Energy Star computers, monitors, printers, and copiers.
- Installed software on desktop and laptop computers that automatically puts the computer into a lower power setting or hibernation mode when not in use.
- Deployed software to track and reduce printer use, so printing costs are reduced.
- Reduced number of printers and copiers.
- Installed video conferencing systems to reduce travel.
- Promoted paperless systems and use of electronic communications instead of printed materials.

Bellevue College uses EPA's Electronic Product Environmental Assessment Tool (EPEAT) as an easy-to-use resource to identify purchases that promote electronic products with positive environmental attributes. All new computers must be EPEAT compliant.

http://www.epa.gov/epeat/

State fleet actions

Since 2012, actions to cut costs, and reduce fuel use and GHG emissions from the state fleet include:

- Installed software in fleet vehicles to improve fuel efficiency.
- Sold old vehicles and purchased more fuel efficient vehicles, hybrids, flex-fuel vehicles, and/or smaller vehicles.
- Instituted preventative maintenance schedules and fleet management practices.
- Implemented limits on idling.
- Expanded use of biodiesel.
- Expanded purchase of hybrid or electric vehicles and equipment.
- Installed electric vehicle charging stations.
- Implemented business trip reduction policies.
- Invested in video-conferencing and expanded use of web conferencing.

WSDOT purchased the first state-owned all-electric vehicle and led a pilot project of negotiating a contract to lease Nissan Leafs. WSDOT was the first state agency in the nation to sign a lease agreement with Nissan.

WSDOT is also moving toward a more fuel efficient fleet: out of 461 vehicles, 82 are hybrid, 3 are extended range plug-in electric, and 1 is all electric.

In addition, WSDOT implemented a number of related fuel conservation policies: Fuel Conservation Policy; No Idle Policy; yearly fleet utilization review and reduction; and monthly

Department of Commerce also purchased two all-electric vehicles.

Business travel in private vehicles and employee commuting actions

Since 2012, key actions to reduce GHG emissions from business travel in private vehicles and employee commuting include:

- Encouraged employees to use agency-owned or motor pool vehicles for business travel.
- Restricted out of state travel and implemented business trip reduction policies.
- Invested in video-conferencing and expanded use of web conferencing.
- Expanded carpooling to business meetings and conferences.
- Expanded CTR reduction program to new worksites in Thurston County.

WSDOT's policy on the "prudent use and conservation of fuel" directs employees to use telecommunication technologies, seek alternatives to single occupancy vehicles, use energy efficient vehicles, and combine trips when possible.

Additional actions

Many state agencies are committed to reducing their impact on the environment through:

- Purchased green power or renewable energy credits (RECs).
- Implemented paper conservation and recycling programs.
- Implemented waste reduction activities, and expanded recycling and composting.
- Expanded purchase of environmentally-preferred products.
- Conserved water, reduced stormwater runoff, and reduced GHG emissions from wastewater treatment.
- Provided employee engagement and behavior change campaigns.

WSU is working to provide more mobility options. Transit ridership in 2013 reached over 1.4 million rides provided. In Fall 2012, the first vanpool between WSU Pullman and Spokane was formed.

The addition of hybrid buses to the Pullman Transit fleet has also decreased GHG emissions from commuting. The hybrid buses improve the mpg by about 60 percent.

WSU completed a Bike and Pedestrian Plan to transform WSU Pullman into a more friendly and safe environment for active transportation. One of the driving factors for creating a Bike and Pedestrian Plan is the success of the "Green Bike" bike sharing program.

The GHG emissions from these activities were not calculated because of a lack of established methods and a lack of data. All of these actions have a direct effect on Washington's environment and help reduce GHG emissions statewide.

GHG Reduction Strategies

Agencies have already taken many actions to reduce GHG emissions, conserve energy, and increase energy efficiency in buildings. However, meeting the reduction targets will require

significant dedication and investment. The State Agency Climate Leadership Act required agencies to develop and submit to Ecology by Sept. 30, 2014, their strategies to reduce GHG emissions. Ecology received strategies from 95 (out of 141) agencies; each strategy uniquely addresses the operations and profile of a specific agency. Agencies are encouraged to monitor and update the strategies periodically to account for changing conditions.

Agencies considered the cost-effectiveness of various actions to reduce GHG emissions and the payback period of the actions. No or low-cost actions were given priority for implementation. Agencies also examined actions with short payback periods and actions that will require major public investments.

In the future, agencies will continue to implement strategies that are funded, have low-cost financing options, and those required by law. Some strategies are not currently funded or are significantly underfunded, and full implementation of those strategies will be challenging.

With existing and planned actions, only about 41 percent of the agencies that responded to the survey question in Figure 5 think they will be able to meet the 2020 reduction target.

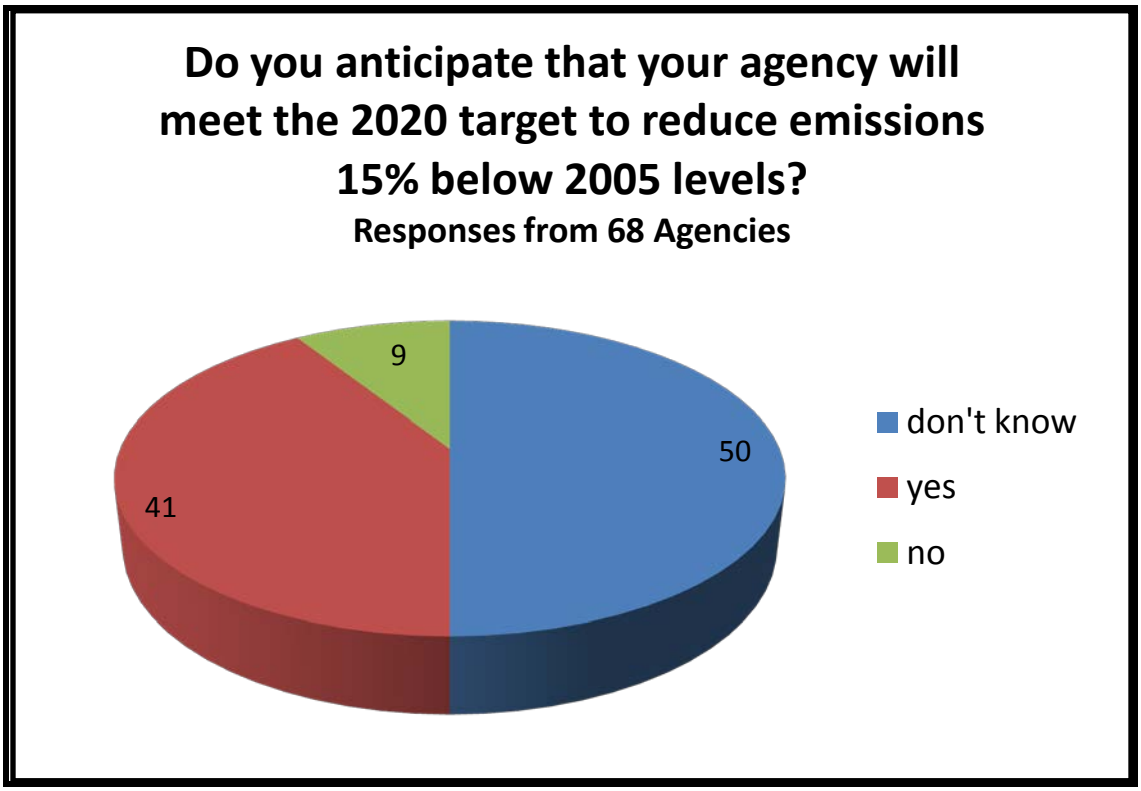


Figure 7: Percent of Agencies that Expect to Meet the 2020 Reduction Target

Fifty-one percent of agencies responding to the survey reported that implementing strategies to reduce energy use and GHG emissions was an important factor in contributing to emission reductions. Some agencies reported that finding additional reductions will be difficult because they have already done so much and remaining actions are less cost-effective.

Other factors contributing to changes in emissions include:

- Increase/decrease in agency building space, staff, population served, and/or agency services
- Agency reorganization
- Improved data collection or correction of older data
- Restrictions on out-of-state travel
- Expansion of CTR program to new worksites
- Several higher education institutions noted that higher enrollment and campus expansions will make it more difficult to meet the reduction targets, despite the fact that the new buildings are more energy efficient.

Agencies reported several factors that would help them meet the GHG reduction targets:

- Additional low-cost financing options and budgetary or other incentives
- Staff assigned to sustainability, and to monitor/analyze data and systems
- Agency management support
- More awareness of the goals and why this is important
- Better understanding of options to reduce emissions
- More and better data about energy use

Agencies suggested incentives to reduce emissions:

- Set aside funding specifically for sustainable projects
- Confirm capital budget to address facility repair and replacement schedules/needs
- Move out of buildings with low Energy Star ratings
- Reduce grant restrictions that require local match funding
- Establish strict travel policies. Establish a centralized CTR program so that policies and incentives are consistent and scaled for each agency.
- Provide incentives or penalties for agencies meeting or not meeting GHG reductions for employee travel
- Provide incentives for exceeding GHG targets

5. Next Steps

Agencies have taken several actions since the last report to reduce energy use, lower costs, and use cleaner, more efficient technologies. However, meeting the reduction targets will be challenging and will require significant dedication and investment. Some agencies expect to achieve continued reductions in GHG emissions, whereas other agencies are expanding and may find it difficult to meet the reduction targets.

Continue to Implement New and Existing Reduction Strategies and Leverage Complementary Efforts

Continuing to implement new and existing policies to conserve energy and fuel, increase energy and fuel efficiency, and deploy advanced technology is critical for agencies to reduce GHG emissions and meet the targets.[6] Ecology will continue to coordinate with other agencies and the Governor's Office to take advantage of complementary efforts that will reduce GHG emissions and improve data coordination.

Continue to Improve Data and Tracking

Some agencies need to improve their tracking of energy use and collect more accurate data. Key challenges include:

- Records of utility energy consumption are often decentralized, making it difficult for large agencies with multiple worksites and utility accounts across the state to track energy use for the agency as a whole.
- Agencies continue to work with utilities to get more accurate information about building energy use and download data directly into Portfolio Manager.
- Some agencies have multiple buildings served by a single meter, which limits the information available to strategically manage utility use by building.
- Departments of Ecology, Commerce, and Agriculture are working to improve biofuel tracking; however, tracking biodiesel content for bulk fuels remains a challenge.
- Records on air travel are often decentralized, so data to accurately measure GHG emissions is not available.
- The CTR program is being expanded to all worksites in Thurston County; however, estimation methods and tools are needed for worksites not included in the CTR program.
- GHG reporting replaced the sustainability reporting required by cabinet agencies. More work is needed to better integrate and track sustainability practices, such as water use, solid waste and recycling, composting, environmentally-preferred purchasing, and other sustainable practices.

Several agencies have updated their prior GHG emission inventories with improved data. Agencies' GHG emissions may fluctuate over the next few years as agencies continue to improve data management and tracking.

Ecology encourages agencies to periodically review their greenhouse gas reduction strategies to evaluate their progress and actions needed to meet the GHG reduction targets.

[6] A list of statutory requirements applicable to state agency GHG reductions is posted here: http://www.ecy.wa.gov/climatechange/docs/2010leadership/app2.pdf.

Measure Progress and Account for Changes in Operations

Ecology will continue to work with agencies to take into account agency reorganization and significant changes in agency operations that result in significant increases or decreases in emissions from the baseline level. Some agencies could meet the targets without taking significant action because of organizational changes and through reductions in staff and services. Other agencies will expand programs and services, making it more difficult to meet the targets.

In order to effectively track progress over time, agencies need to institutionalize the process and establish internal performance measures tied to their specific activities, operations, and energy profile. Complementary efforts by agencies to establish energy benchmarking scores for buildings in Portfolio Manager and to track fleet fuel efficiency will help agencies track their progress in improving efficiency and reducing GHG emissions. Agencies should institutionalize sustainability, and consider energy consumption and emissions in Results WA, strategic plans, policies, budgets, and mission statements.

Report Annual GHG Emissions and Actions Taken

Agencies will continue to report their GHG emissions to Ecology each year, which will help in evaluating progress toward meeting the reduction targets. By September 30, 2016, agencies will report their progress in implementing their strategies and actions taken to reduce GHG emissions. By December 31, 2016, Ecology will provide the next report to the Governor and the Legislature on the total state agencies' emissions of GHGs and actions taken to reduce emissions in 2014 and 2015.

DUE DATE	REPORTING REQUIREMENT
September 30, 2015	Agencies submit to Ecology estimates of 2013 emissions
September 30, 2016	Agencies submit to Ecology estimates of 2015 emissions, survey of actions taken to reduce GHG emissions in 2014-2015, and progress in implementing the reduction strategy
December 31, 2016	Ecology reports to Governor and Legislature total state agencies' emissions for 2005, 2015, and 2016 and actions taken to meet the emission reduction targets

Glossary of Terms and Acronyms

Base (or baseline) year — 2005, the year that agencies started to track their emissions over time

CH_4 – Methane

CO_2 – Carbon dioxide

CO_2e – Carbon dioxide equivalent, the universal unit for comparing emissions of different GHGs expressed as the GWP of one unit of carbon dioxide

CTR – Commute trip reduction, a program to reduce vehicle miles traveled and drive alone vehicle trips

eGRID – Emission and Generation Resource Integrated Database, an EPA database with comprehensive information on U.S. electricity generation and emissions

Emissions factor – The emissions from a unit of activity, such as the emissions from the consumption of one kilowatt of electricity

ESCO – Energy services company, a company that conducts an energy audit of a facility, designs, installs, commissions, and finances energy efficiency projects selected by the facility owner, and guarantees both the maximum project cost and the projected energy savings

Fugitive emissions – Emissions of gases leaked from commercial refrigeration, commercial air conditioning equipment, heat pumps, fire suppression equipment, and other types of equipment. Many refrigerants and compressed gases are high global warming potential (high GWP) gases that have GWPs which are 140 to 11,700 times that of carbon dioxide

GHG – Greenhouse gas, there are six main GHGs recognized internationally in the Kyoto Protocol: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)

Green power – Several utilities have green power programs that allow customers to support renewable energy projects, such as wind and solar

GWP – Global warming potential, the degree of warming to the atmosphere that would result from the emission of one unit of a given GHG compared to one unit of carbon dioxide

HFC – Hydrofluorocarbon ,highly potent greenhouse gases used for refrigeration and other commercial purposes

LEED – Leadership in Energy and Environmental Design, a third party certification system and benchmark developed by the U.S. Green Building Council for the design, construction, and operation of high performance green buildings

N_2O – Nitrous oxide

$MTCO_2e$ – Metric ton carbon dioxide equivalent; one metric ton equals 2,204.62 pounds

Portfolio Manager – An EPA Energy Star tool to benchmark the energy performance of buildings, and track energy and water consumption in buildings

RECs – Renewable energy credits, – a credit for the generation or purchase of one megawatt hour of renewable power; also known as green tags

RCM – Resource Conservation Manager, a staff position dedicated to creating and managing an agency's resource conservation program. The position focuses on managing agency resources, (including electricity, natural gas, water, solid waste, recycling, and others) to reduce operating costs, increase efficiency, and promote sustainable operations.

Stationary combustion emissions – Emissions from the combustion of fossil fuels to produce electricity or heat using boilers, furnaces, or other equipment in a fixed location.