Solid Waste in Washington State

18th Annual Status Report

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Solid Waste in Washington State

Eighteenth Annual Status Report

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Introducing the Waste 2 Resources Program

In July 2009, the Washington State Department of Ecology's Solid Waste and Financial Assistance Program (SWFAP) changed its name to the Waste 2 Resources (W2R) Program.

For years, "Solid Waste & Financial Assistance Program" did not accurately reflect the program's work and mission. A new name was needed after the rollout of the *Beyond Waste Plan* and addition of the Industrial Section to the program. The name was selected because:

- "Waste 2 Resources" implies the program covers everything from managing solid wastes to developing new resources. It includes financial assistance, technical assistance and regulatory resources.
- The name reflects our Beyond Waste Initiative, including Green Building, Organics and Moderate Risk Waste, which encourage use of recycled/reused materials previously viewed as wastes, while focusing on turning those wastes into resources such as energy conservation, organic nutrients in lieu of fertilizers and green energy through new technologies.
- To derive resources from wastes, it is best the waste materials be toxics-free and PBT-free, which reflects the work of our Reducing Toxic Threats Section.
- Unlike the old program name, we believe Waste 2 Resources also reflects work the Industrial Section does through the Footprint Project and numerous mills that take used cardboard, hog fuel and commingled recyclables.

The program will gradually transition to the new name in the next several months to minimize costs associated with the name change. So, for awhile you will likely see correspondence, e-mails, web pages, etc. using the old name, the new name or a combination. We hope to complete the transition soon.

The Beyond Waste Plan - 2009 Update

The Beyond Waste Plan Update is Done!

Beyond Waste is the state plan for solid and hazardous waste. It sets the vision to eliminate most wastes and toxic substances in 30 years (by 2035). The Beyond Waste Plan was created by and for stakeholders, including local governments, industry and the public, with Ecology as the lead. The original plan was adopted in 2004. We just completed the first five year update, which you can view at www.ecy.wa.gov/beyondwaste.

Similar to local plans, the state is required to update their solid and hazardous waste plans regularly. In addition to meeting legal requirements, this update includes lessons learned in the first five years. It also serves to keep recommendations and milestones on track to meet the 30-year goals established in the original plan.

Overall, the changes made with the update are minor, as the original plan still provides good direction. Much of the plan stayed the same, including the Beyond Waste vision, the five initiatives and two issue areas, the 30-year goals for each initiative, the overall plan structure and all the background papers written as part of the original plan. Many of the recommendations and milestones also stayed the same.

So What Has Changed?

We strengthened the focus on product stewardship and prevention, as the importance of these two elements has only increased over the last five years. We improved the Implementation Plan, adding a section that more clearly defines the role of local governments. We also more closely aligned the plan with agency priorities on mitigating climate change, protecting Washington waters and reducing toxic threats. That's because reducing wastes and toxics benefits many areas of our environment.

> ***The Beyond Waste Vision:***
> *We can transition to a society where waste is viewed as inefficient, and where most wastes and toxic substances have been eliminated. This will contribute to economic, social and environmental vitality.*

And of course, there are some new, improved recommendations and milestones. The changes came from a number of sources, including the work of the Climate Action Team, state and agency priorities, the state Solid Waste Advisory Committee (SWAC), Ecology staff and public input. We also made the milestones more measurable and better aligned with recommendations.

The Update Process

We started the update process by assessing progress so far. Changes were proposed where the original work was accomplished, where there was little or no progress, and where new directions were needed given changes that occurred in the last five years. Input was received at many points from staff, management and the state SWAC.

Public input was solicited in March 2009. We received 20 comments from local governments, other state agencies and environmental organizations. Most comments were supportive. Changes made at the public's request included increasing focus on prevention and product stewardship, adding more measurements and clearer delineation of roles.

2009 Beyond Waste Plan Update - Changes by the Numbers

Table 1.1 summarizes changes to recommendations and milestones in the 2009 Plan Update. There are 9 more recommendations and 21 more milestones than the 2004 Plan. These additions provide better direction and make work easier to track.

Table 1.1
Changes to Recommendations & Milestones
In 2009 Beyond Waste Plan Update

Changes	Recommendations	Milestones
Removed	12	15
New	19 (27%)	39 (41%)
Changed	6 (8%)	15 (16%)
Unchanged	46 (65%)	40 (43%)
Total 2009 Update	**71**	**94**
Total from 2004 Plan	**64**	**73**

The update was issued in December 2009, and implementation will continue into the next five years. However, it is not just for Ecology to implement. The Plan provides a guide for local governments, businesses, other state agencies and nonprofits that want to help steer the state toward a future "beyond waste." We simply cannot achieve the Beyond Waste vision without everyone working together.

Beyond Waste: It's About More than Just Waste

As mentioned, moving Beyond Waste will benefit more than just solid and hazardous waste systems. As we reduce wastes and toxics, we help reduce greenhouse gas emissions, protect Washington waters from poisons in stormwater runoff, and reduce other toxic threats as well. These are all priorities of Ecology and the state of Washington. Implementing the Beyond Waste Plan will also help create green jobs and grow the green economy, especially in areas of green building, organics recycling and environmentally preferable purchasing.

A Summary of Changes by Initiative

Following are discussions about changes made to each section of the Beyond Waste Plan. They address distinct needs and developments in each initiative area.

Moving Beyond Waste with Industries

We aligned this initiative more closely with the small volume hazardous materials and wastes initiatives, as they deal with many of the same materials, just from different sources. In both cases, we want to move toward prevention and away from management and cleanup. We will take a more comprehensive approach to reducing toxics, with less emphasis on business sector campaigns and more emphasis on green chemistry, product stewardship and product design solutions. Pollution prevention planning to reduce toxics is still key, as is finding safer alternatives to chemicals of concern. We added new milestones on toxics in stormwater and education on toxics in products.

Reducing Small Volume Hazardous Materials and Waste

As mentioned above, we aligned this initiative more with the Industries Initiative, with a more comprehensive approach to reducing toxics. This includes increased emphasis on environmentally preferred purchasing and product stewardship, and less emphasis on a chemical by chemical approach. However, we will continue to focus on some priority substances, such as mercury and other persistent bio-accumulative toxins (PBTs). There are new milestones on a regional approach to moderate risk waste management and education on toxics in products.

Increasing Recycling of Organics Materials

The update to this initiative is building on momentum for bio-energy, which is a growing strategy to address climate change. The recommendations for this initiative did not change, but many milestones were modified or added. New milestones include creating a hierarchy for organics management and food waste prevention. Focus remains on increasing residential and commercial organics recovery, addressing regulatory barriers and education to increase quality of recycled organic material.

Making Green Building Practices Mainstream

This initiative will continue to promote statewide commercial and residential green building programs and resources. Only the milestones were modified or added; the recommendations did not change. There is a new milestone on the Living Building Challenge, which is the greenest building standard currently available. Other new milestones address low-impact development and energy efficiency, which support stormwater and climate change efforts, respectively. Construction and demolition waste is still a focus, as is building reuse and materials salvage. Educational programs are being promoted in trade schools and colleges in support of green building jobs.

Measuring Progress Toward Beyond Waste

This initiative contains all new recommendations and milestones as all the original ones were accomplished. New actions include evaluating, improving and developing goals for the progress indicators. We also intend to update and enhance the indicators related to the Consumer Environmental Index (CEI) and set a goal to perform a waste characterization study every four years. We will expand publicity for the Beyond Waste Progress Report, and are already beginning work on tying the progress report to staff work plans and other agency measures.

Current Hazardous Waste System Issues

The issues addressed in this section are pollution prevention planning, compliance with dangerous waste regulations, and operations and corrective action at hazardous waste facilities. We are encouraging broader pollution prevention plans by addressing energy management, environmentally preferable purchasing, and solid waste and water reduction in addition to hazardous waste. We also want to increase focus on safe management of small quantity generators and transfer, storage and disposal facilities permitted in part by local government. We will continue to work with EPA's Environmental Results and Envirostars programs, and work to meet the 2020 cleanup deadline for corrective action sites.

Current Solid Waste System Issues

This section covers planning and regulations, recycling and waste reduction, safe disposal, and financing. The update maintains focus on all these key areas, but adds emphasis on waste reduction and recycling with new recommendations on education and packaging reduction. With the update, we will continue to help local governments incorporate Beyond Waste principles, goals, and actions into local waste plans, as well as search for ways to provide stable funding for the solid waste system over time. We will also maintain focus on ensuring safe, adequate disposal and reducing threats from closed and abandoned landfills.

Mercury Containing Lights Study and Recommendations

The 2009 Washington State Legislature directed the Department of Ecology to "*develop recommendations for a convenient and effective mercury-containing light recycling program for residents, small businesses, and small school districts throughout the state.*" The following summarizes the findings and recommendations of our effort. [1]

[1] The complete report can be found at http://www.ecy.wa.gov/biblio/0907076.html.

Mercury is highly toxic, and can cause nerve and organ damage resulting in sickness, paralysis and even death. Volatile at room temperatures, mercury evaporates into a hazardous vapor that can be inhaled, which is the primary pathway of human ingestion. Due to these characteristics, the release of mercury needs to be minimized whenever possible.

There has been a great deal of work done related to mercury containing light recycling. Ecology carried out a study in 2007 that contained recommendations for a recycling program. This was followed by a national dialogue which Ecology partially funded. Most recently, the 2009 Legislature entertained five different bills on the subject. None of those bills passed, but the proviso that directed this report did pass as part of the budget bill.

The Legislature provided no additional funding for the report, thus limiting the work Ecology could do. As part of the process to develop this report, Ecology reviewed existing literature, studies and documents.

Stakeholder Process

Ecology consulted with stakeholders as directed by the Legislature. We received input from:

- Retailers,
- Waste haulers,
- Recyclers,
- Mercury-containing light manufacturers or wholesalers,
- Cities,
- Counties,
- Environmental organizations, and
- Other interested parties.

This was done through consultation with the State Solid Waste Advisory Committee (SWAC) and the Northwest Product Stewardship Council, and through conversations and e-mails with stakeholders. We also held one stakeholder meeting that provided an opportunity for interested parties to come together and state their preference for a financing and collection approach. This meeting was funded by the Local Hazardous Waste Management Program in King County. Ecology also asked for comments on two draft reports.

First Draft Report

Ecology released the first draft report and received comments in September 2009. The report did not contain final recommendations, but included a review of a variety of collection and financing options available. This review included a description of the options, and pros and cons of each. Distribution of this first draft was followed by the stakeholder meeting held in mid-September.

Collection

Ecology found that the stakeholders supported flexibility in the method of collection for recycling. All collection options should be available to recover as many unwanted mercury containing lights as possible.

Funding Mechanism

Ecology found that stakeholders were strongly divided on a funding mechanism. There was no one mechanism that all stakeholders preferred, or could even live with. The final result was that stakeholders lived in two camps:

- One preferred a cost internalization approach where the manufacturers pay for the recycling program, much like the E-cycle Washington Program.
- The other camp preferred a financing method that would:
  - Incorporate the cost of recycling into the garbage collection rate base, and
  - Solid waste collection companies and cities would collect fees to run and fund their own solid waste collection services.

Ecology's Recommendations - Second Report

Ecology gathered more information, reviewed similar stakeholder processes, and received more stakeholder input to gain an understanding of the pros and cons of the various options. Ecology prepared its draft recommendations and sent them to stakeholders in the second report in October. Ecology's recommendations include:

- **Recycling.** Due to the toxicity of mercury, all parties – individuals, schools, small and large businesses, governments and non-profits – should be required to recycle all mercury containing lights.
- **Financing.** Manufacturers should fund the recycling system by incorporating the cost into their price of the product.
  - They would fund recycling for households and small commercial hazardous waste generators (small businesses and small schools).
  - This would not include regulated hazardous waste generators
- **Collection.** Standards for collection should allow for a variety of collection alternatives as long as minimum service levels are achieved.
- **A Disposal Ban.** Once the recycling system is established and operating, a ban should be implemented prohibiting disposal of mercury containing lights in incinerators, waste to energy facilities and landfills.
- **Management of the Recycling System.**
  - Households and small quantity generators:
    - Manufacturers should manage the recycling system for households and small commercial hazardous waste generators because they would fund it.

  - Large quantity commercial hazardous waste generators:
    - The hazardous waste generators are closely regulated and must report all hazardous waste generated. Mercury containing lights are part of their hazardous waste stream. They can take advantage of what is known as the universal waste rule which exempts hazardous wastes that are recycled.
    - Because these generators are already required to manage their hazardous wastes, including mercury containing lights, they should continue to work within chain of commerce. The best case would be to require light installation contractors to provide collection services and ensure the lights are recycled.
- **Legislative Options.** Two options exist:
  - Create a stand-alone law. This would add to the number of laws regulating products within Washington State.
  - Incorporate new language into 70.95N Electronic Product Recycling as another covered product .
    - E-cycle Washington is proving to be an effective, popular program.
    - More products, like mercury containing lights, could be added.

Comments on the Second Report

We invited comments on these recommendations in the form of letters of support or opposition. Copies of those letters are included in Appendix A of the background document at http://www.ecy.wa.gov/biblio/0907077.html.

The letters continue to demonstrate the same divide between stakeholders that was heard throughout the process and Legislature during the 2009 session. Specifically, city and county governments, the environmental community and electric utilities strongly support the proposed recommendations made in the second report. Mercury light manufacturers, electronic lamp recyclers and waste haulers strongly oppose those recommendations.

Ecology's Recommendations to the Legislature

Ecology believes that even if more time and resources were available to further vet options with stakeholders, the outcome of divided camps would be the same.

All stakeholders will agree the desired outcome is that mercury containing lights are recycled, and that any method of collection that serves the needs of local communities is necessary to achieve this outcome. At this time, there is not a preferred financing mechanism that all parties can agree on.

After considering this, Ecology continues to support the recommendations listed above and further discussed in the full report.

Solid Waste Management Regulatory Revisions – Achieving the Next 50%

Background

*Chapter 70.95 RCW - Solid Waste Reduction and Recy*cling was originally passed in 1969. The environmental concern at the time was open burning dumps. The majority of waste disposed in these dumps was "rubbish" from households. The focus of the original legislation was closure of open burning dumps and construction of new "sanitary landfills" to control air pollution while reducing vermin, thereby protecting human health and the environment. At the time, most counties owned and operated the local "dumps." These were replaced by landfills.

Local governments were given the responsibility to write local solid waste management plans. The plans were to identify the solid waste disposal needs for the jurisdiction 20 years into the future to ensure there would be ongoing disposal capacity for the wastes generated.

Today most local landfills are closed, with 98% of the state's trash shipped to regional landfills in eastern Washington and Oregon. Over the years, the composition of the waste stream changed as the materials in products changed. The solid waste stream that was once organic in nature is now largely products and packaging made of a variety of materials, some containing toxic substances.

The Legislature has responded to the changing waste environment by amending RCW 70.95 more than 28 times. In addition, many standalone pieces of legislation have passed to allow for increased recycling efforts, including the Waste Not Washington Act, the labeling of plastics, used oil recycling, mercury, and many more with the most recent being the electronic recycling, children's safe products and lead wheel weights laws.

There are at least 89 laws on the books related to solid waste or recycling. Although responsive to an immediate need at the time, these laws have distributed responsibility and authority for solid waste management to many levels of government using a variety of regulatory approaches which creates inefficiencies in implementation. It also creates inconsistent levels of effort to achieve waste reduction and recycling goals.

During the summer of 2008, Ecology co-lead a group that developed proposals to reduce greenhouse gases through waste reduction and recycling strategies. This was part of the work done under the Climate Action Team established by Governor Gregoire.

The workgroup developed legislative proposals to move the state toward recycling "The Next 50%." While these proposals were good and need to be a part of our efforts to update the state's solid waste management laws, they were not a comprehensive legislative package. We are concerned if these proposals are taken individually without considering the state's entire solid waste management system, we will continue down the road of piecemeal legislation that will not address key barriers to improved solid waste management, environmental protection and development of recycling opportunities available.

Policy Issues

- Ecology believes these 40 years of changes, not only to the waste stream but to the management of that waste, calls for a modernized regulatory structure: one that allows for the movement and reuse of materials while providing infrastructure for disposal of residuals.

- Solid Waste management is delegated to local governments. The state's role is to set regulatory environmental performance standards for solid waste facilities. In many counties, the permit is issued to the local public works department and signed by the Board of Commissioners. Enforcement of the permit and solid waste regulations is delegated to the local governments' health department that also reports to the same Board of Commissioners. This creates a conflict between management and enforcement at the local government level.

- The issue of local disposal capacity has changed. Most wastes are transported out of the jurisdiction where they were generated and shipped to large regional landfills.

- The kind of capacity needed for handling solid waste has changed. Washington State now diverts nearly 50% of the wastes generated to uses other than disposal. Local governments have planned and developed collection systems for collection and diversion of materials to end-use markets rather than disposal, yet there is no requirement to ensure recycling processing and market capacity exists for these materials.

- Regulatory authority over solid waste is dependent on local comprehensive solid waste plans. These plans are written and implemented by individual county governments. This leads to disparity in programs, funding and regulatory oversight depending on the resources of the individual counties.

- Current definitions of solid waste and the regulatory structure do not provide cost effective or efficient avenues for recycling or reuse of materials that are defined as solid waste, but may have other more beneficial uses.

- Solid waste financing is dependent on generation of waste. There are many taxes, local and state, associated with waste disposal. If waste generation goes down, revenue goes down. This creates a disincentive to recycle or reuse materials.

- There is limited infrastructure for recycling facilities in the state, especially in eastern Washington.

- There is little or no regulatory authority over material recovery facilities, and permits vary from one local jurisdiction to another.

- There no emphasis on developing and sustaining local industries that would use recycled materials in Washington State. Rather, most recovered materials are sent offshore for recycling.

Next Steps

Over the next several months, Ecology plans to hold a series of stakeholder meetings to further analyze barriers to achieving the next 50% of recycling. At those meetings we plan to hear from stakeholders their experiences, problems and potential solutions.
We will then begin to draft potential legislative language, incorporating solutions into law.

Ecology wants to take the next big step to move solid waste to resources using materials management strategies.

New Recyclable Transporter Regulation

In April 2009 the Department of Ecology adopted a new rule affecting transporters of recyclable materials and recycling facilities. This rule implements SB 5788, passed by the 2005 Legislature, under the authority of RCW 70.95.400-430. *Chapter 173-345 WAC Recyclable materials – transporter and facility standards* affects:

- Businesses that transport recyclable materials
- Facilities that recycle solid waste
- Material recovery facilities (MRFs)

This chapter does not affect those facilities with current solid waste handling permits issued under RCW 70.95.170.

This rule requires transporters of recyclable material to:

- Register with Ecology
- Transport recyclable materials only to locations where Recycling occurs
- Keep records of all activities for two years

In addition, this new rule requires recycling facilities to notify Ecology of their existence 30 days before operation begins and prescribes penalties for noncompliance of up to $1,000 per violation. More information on the rule and public involvement process throughout rulemaking is on Ecology's rule archive website at http://www.ecy.wa.gov/programs/swfa/rules/ruleTrans.html.

Regulatory Barriers to Making Progress on Beyond Waste

In 2008 the W2R Program launched a regulatory assessment project that looked at regulatory barriers or problems that stand in the way of:

- Safe, effective solid waste management
- Increased producer responsibility
- Reducing solid wastes
- Reducing the use of toxics
- Recycling
- Reuse
- Reducing health and environmental effects of solid waste management

A list of problems with current laws and rules emerged as a result of the assessment project. The number one priority for rulemaking was clear: Amend C*hapter 173-350 WAC, Solid Waste Handling Standards*. This rule needs to be amended to ensure progress toward achieving the *Beyond Waste* vision.

In 2009 W2R Program staff refined the list of barriers or problems with the Chapter 173-350 WAC rule. In 2010 the program intends to file the CR 101 Pre-proposal Statement of Inquiry with the Office of the Code Reviser, which officially announces the beginning of formal rulemaking. The state SWAC, stakeholders and the public are invited to participate in the rule development process.

Guidelines for Conditionally Exempt Solid Waste Facilities

In August 2009, the W2R Program completed a document entitled *Specific Guidelines for Conditionally Exempt Solid Waste Facilities (Response to Incidents of Non-Compliance).* This document provides guidance to W2R Program staff on incidents of conditionally exempt solid waste management facilities being out of compliance with solid waste management laws (Chapter 70.95 RCW, *Solid Waste Management – Reduction and Recycling*) and regulations (Chapter 173-350 WAC, *Solid Waste Handling Standards*). The guidelines cover both informal responses and formal enforcement actions to noncompliance.

All conditionally exempt solid waste management facilities must be in compliance with applicable laws and regulations to maintain exempt status. Applicable laws and regulations are intended to protect human health and the environment, and ensure facilities do not receive unfair economic advantage from noncompliance.

Authority for Ecology to enforce state solid waste management laws and regulations for conditionally exempt solid waste handling facilities is contained in RCW 70.95.315. Authority granted to Ecology under this section includes issuance of orders, and assessment of civil

penalties by Ecology when terms and conditions for exempt status are violated or orders are not complied with. Also, according to Chapter 173-350 WAC, an exempt facility out of compliance with applicable laws and regulations is required to obtain a solid waste handling permit from the jurisdictional health department (JHD).

JHDs also have authority over conditionally exempt solid waste facilities and may pursue enforcement in accordance with applicable local ordinance. Ecology will notify JHDs of its intent and coordinate when applicable to pursue informal or formal enforcements action against noncompliant exempt facilities.

Technical assistance by Ecology or the local regulatory authority program staff will be emphasized to ensure compliance by conditionally exempt solid waste facilities.

Post-closure Maintenance and Monitoring Requirements for Landfills

When a landfill is closed and no longer accepting waste, it is critical to close the site following specific requirements to ensure protection of human health and the environment. In addition, longer term maintenance and monitoring is required.

Currently municipal solid waste (MSW) landfills are permitted under C*hapter 173-351 WAC, Criteria for Municipal Solid Waste Landfills*. Prior to 1993 they were permitted under *Chapter 173-304 WAC, Minimum Functional Standards for Solid Waste Handling (MFS).* Under both regulations, MSW landfills that close are required to undergo a period of post-closure maintenance and monitoring.

MSW landfills that close under the current *Criteria for Municipal Solid Waste Landfills* have a 30-year requirement for post-closure requirements. Many landfills, including limited purpose and wood waste landfills, which closed under the *Minimum Functional Standards for Solid Waste Handling (MFS*), were required to plan for and fund a 20-year post-closure period.

When is Post-closure Monitoring and Maintenance No Longer Required?

Many landfills that have closed and conducted post-closure maintenance and monitoring under the *Minimum Functional Standards for Solid Waste Handing (MFS)* are approaching the 20-year point in their post-closure phase. Ecology has received an increasing number of questions from landfill operators and from solid waste permitting authorities regarding procedures for ending the post-closure phase of these landfills.

Post-closure for a landfill closed under the *MFS* must address maintenance and monitoring needs of the facility following closure. The administrative requirements for post-closure involve three major components:

- A post-closure plan
- An estimate of the total cost of completing post-closure activities for the landfill for at least a 20-year post-closure period
- A financial assurance account with sufficient funding to pay the costs of post-closure activities over the duration of the landfill's post-closure phase

Ecology estimates there are more than 60 closed landfills with post-closure permits issued under the *MFS*. These include municipal solid waste landfills, limited purpose landfills and wood waste landfills.

Although the *MFS* refers to a 20-year period of post-closure activities and for financial assurance planning, the actual criterion for ending post-closure maintenance and monitoring is not based on passage of a specific length of time. Rather, the regulation requires that post-closure activities of maintenance and monitoring of air, land and water continue as long as necessary for the facility to stabilize and to protect human health and the environment.

The *MFS* further defines a stabilized landfill site as one that exhibits "little or no settlement, gas production or leachate generation." Monitoring data for these parameters and knowledge of the construction and operational history of the facility are critical to evaluate whether a landfill is ready to end its post-closure phase.

However, some data may not have been collected as part of post-closure maintenance and monitoring. As a landfill operator and the solid waste permitting agency consider the operator's proposal to terminate post-closure maintenance and monitoring, they should review the data available for the facility and identify any gaps pertaining to settlement, gas production and leachate generation.

Ecology is developing a Focus Sheet to address questions on procedures for terminating post-closure maintenance and monitoring for landfills under the *MFS*. Our objective is to develop a set of suggested approaches to evaluating monitoring data against criteria of little or no settlement, gas production or leachate generation. Ecology is also looking more closely at the related financial assurance issues for *MFS* landfills – updating cost estimates, tracking post-closure activities and costs, and submittal of annual audit reports.

Chapter 2: Partnering for the Environment

Building strong partnerships underlies the success of Ecology's W2R Program. The W2R Program has worked hard to cultivate effective partnerships with businesses, local governments, community organizations, other state agencies, the agricultural community and industry groups across the state. By working together, groups are able to offer their unique perspectives and resources to move toward an economically, environmentally vibrant future in Washington.

The Beyond Waste Plan - Progress Depends on Partnerships

Beyond Waste, the state's solid and hazardous waste plan, involves a fundamental shift from managing wastes and toxics to preventing them from being generated. Wastes that cannot be eliminated can become resources for closed-loop recycling systems. The plan focuses on hazardous materials and wastes, organic materials and green building. Recognizing that existing wastes need proper, safe management, the plan also addresses current hazardous and solid waste management systems.

Why Beyond Waste?
Avoiding wastes and the use of toxic chemicals is the smartest, cheapest and healthiest approach to waste management.

Progress So Far

The first five years of the *Beyond Waste Plan* saw much progress. Of the original 74 milestones, 25 were accomplished, and progress was made on 38 others. Only 11 had little to no progress. Some notable accomplishments include:

- A manufacturer-funded program to recycle electronics is in place for computers, TVs, monitors and laptops.
- Green building standards are required for state funded buildings.
- Government is leading the way with composting programs at a number of locations, including all Ecology offices. Anaerobic digestion is being actively pursued as an additional organic management strategy.
- Businesses reduced the amount of recurrent hazardous waste they generate by 50%.
- A Chemical Action Plan for PBDE flame-retardants was written and legislation was passed.
- Implementing the Mercury Chemical Action Plan kept almost 15,000 pounds of mercury out of the environment.
- More local governments are adopting the *Beyond Waste* vision in their plans and programs.

- The *Beyond Waste Plan* is recognized as a key strategy to combat climate change.
- Additional accomplishments on *Beyond Waste Plan* initiatives are included in this chapter.

Table 2.1
Progress on the 2004 Beyond Waste Plan Milestones

Beyond Waste Plan Section & Number of Milestones	Achieved	Significant or Some Progress	Little or No Progress
Industries Initiative (14)	4	10	-
Small Volume Hazardous Materials & Waste Initiative (10)	2	6	2
Organics Initiative (10)	4	6	-
Green Building Initiative (11)	7	2	2
Measuring Progress Initiative (4)	4	-	-
Hazardous Waste Issues (10)	2	6	2
Solid Waste Issues (14)	2	8	5
Total	25	38	11

These Accomplishments Relied on Partnerships

Partners included other agencies, local governments, non-profit organizations, and a wide array of businesses. In the next five years, partnerships will continue to play a key role in implementation of the *Beyond Waste Plan* as we progress with recommendations and milestones laid out in the 2009 plan update.

Continued Success of the Beyond Waste Plan also Depends on Partnerships

There are some overarching themes and approaches that apply to many of the *Beyond Waste* Initiatives. These are essential actions for partners to consider to achieve the *Beyond Waste* Vision.

- *Include Beyond Waste goals in local, business, or agency plans.* When writing or updating local waste management or sustainability plans, include actions from the *Beyond Waste Plan* consistent with your goals.
- *Support resource recovery and recycling infrastructure development.* To increase resource recovery, we need processing facilities.
- *Focus programs on preventing wastes in the first place.* This is the key tenet of *the Beyond Waste Plan*. It is not enough to manage wastes; we must also create less waste.
- *Encourage product stewardship and extended producer responsibility programs.* Much of our waste comes from products. When producers take responsibility for their products they can assist with end-of-life management and creation of less wasteful and less toxic products.

- *Collect, analyze and share data.* Describe current trends accurately and work collaboratively to develop a better picture of progress. Data collected consistently across organizations is the most useful.
- *Share your stories.* Stories inspire us and serve as models. They can also help others avoid program pitfalls. The Closed Loop Scoop and the Solid Waste Information Clearinghouse are just two of many good venues to post stories (see discussion later in this chapter).

For more information on progress, see the *Beyond Waste* Progress Report, a set of 16 specific and overarching indicators which track the effects of reducing wastes on our environment, economy, and society. The plan and Progress Report are available online at www.ecy.wa.gov/beyondwaste/.

Partnering for the Environment through Sustainable "Green" Building

The Waste 2 Resource Program Green Building Group (GBG) has seen continued success in making green building mainstream in Washington State. This year marked the fifth year of the Beyond Waste Green Building Initiative. During the first five years, we accomplished seven of the eleven original milestones.

In 2009, the Green Building Group worked with stakeholders to update the initiative and set new goals for the next five years. The new milestones are intended to integrate other agency priorities, be more measurable and continue work in areas where greater success can be achieved. The Green Building Initiative milestones for the next five years of *Beyond Waste* are:

- Washington continues to be a leader in green building.
- All new state-funded buildings continue to meet or exceed green building requirements.
- Government continues to identify and remove regulatory barriers to green building.
- 10% of all certified green building projects achieve credits for use of existing building stock, use of salvaged materials and/or at least 75% waste diversion during construction.
- Green buildings occupy 15% of the total market share for new construction in Washington.
- Washington offers degree and certificate programs in green building related trades statewide.
- At least five buildings are built to the Living Building standard in Washington.
- At least 50% of all local governments in Washington have adopted green building policies and/or incentives.
- A certification system for green building materials effectively provides verification that products are manufactured in compliance with product stewardship and sustainability principles.

- Authorities adopt policies that require low-impact development (LID) strategies to be integrated into building design and maintenance.
- Energy use in public buildings meets or exceeds Architecture 2030 goals.

During the next five years of the *Beyond Waste* Green Building Initiative we will partner with other agency programs, groups working on Climate Change and Puget Sound, and organizations which we already have established working relationships. As green building practices continue to gain momentum, their connection with most of Washington's other environmental priorities is being recognized.

Despite an overall decline in the real estate market nationwide, Washington has seen continued growth in its green building industry. Market share of third-party certified green buildings in Washington are still trending toward growth.

Figure 2.1
Number of LEED Registered Buildings in Washington State

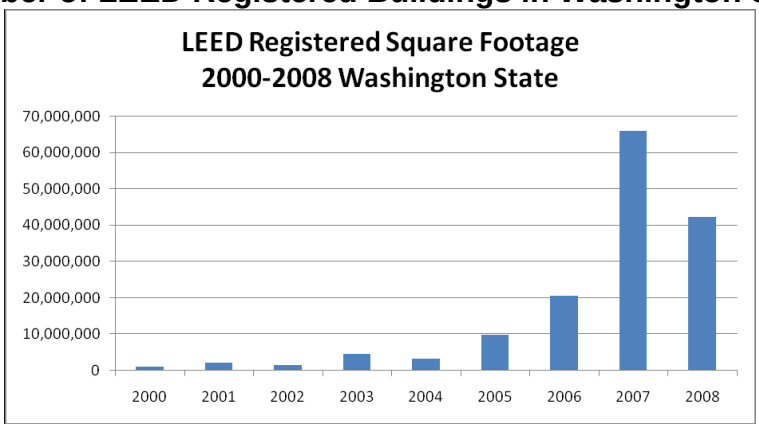
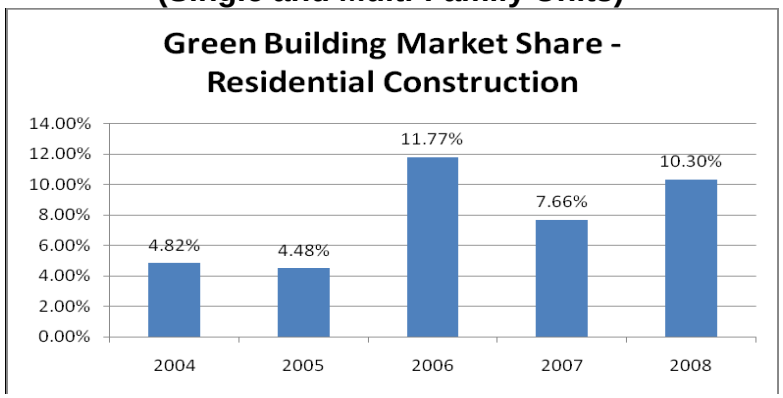


Figure 2.2
Percent Residential Market Share of Certified Green Homes (Single and Multi-Family Units)



Eco-Charrette Facilitation

As a primary activity, Ecology staff facilitates eco-charrettes for public building or publicly funded projects affected by C*hapter 39.35D RCW, Energy Conservation in Design of Public Facilities*. An eco-charrette is defined by the National Charrette Institute (NCI) as *". . . a collaborative planning process that harnesses the talents and energies of all interested parties, to create and support a feasible plan that represents transformative community change."* Charrette services include technical assistance, facilitation and a written, illustrated post-charrette report with recommendations. Agencies affected by the green building mandate have welcomed this service as evidenced by the volume of requests for it. Below are some projects in the last year where Ecology facilitated charrettes.

Community Charrette for Sail River Heights Site

The Makah Tribal Housing Department hosted the first of two community events for its Sail River Heights (SRH) affordable housing development. The purpose was to get input from tribal members in creating parts of the Master Plan for the new SRH neighborhood. This event focused on the site and desired amenities. Those attending demonstrated keen interest in the sustainability principles and resource-saving results of green building.

HFH Issaquah Highland

The East King County (EKC) Affiliate of Habitat for Humanity® is preparing to construct ten affordable homes in upscale Issaquah Highlands with sweat equity and volunteers, as usual. Only this time they want to go as 'green' as possible. Some of the project's funding requires meeting the Evergreen Sustainable Development Standard. Habitat EKC requested help with integrating their designs and buildings on the site to easily meet or exceed the standard. They already understand the benefits of 'green' to their homeowners and the construction crews (healthier, more durable and resource-efficient homes).

2009 Quadruple Project, Habitat for Humanity of East Jefferson County

Habitat for Humanity of East Jefferson County (HFHEJC) held their first eco-charrette in Port Townsend, Washington. Participants focused on four homes scheduled to be built in 2009, and explored different aspects of sustainable building. The results of the brainstorming exercises and final discussion provided guidelines to meet and exceed requirements of the Evergreen Sustainable Development Standard (ESDS), which is required to receive funding from the Washington State Housing Trust Fund (HTF).

The Woods at Golden Given, Tacoma-Pierce County Habitat for Humanity

On July 29, 2009, Tacoma/Pierce County Habitat for Humanity (TPCHFH) held an integrated design eco-charrette in Tacoma, Washington. TPCHFH purchased a little more than five acres of land in Pierce County south of Tacoma on Golden Given Road for development as a residential community. The vision is to create a nationally recognized example of sustainable, affordable and multi-cultural residential development. Participants became familiar with the site's features, challenges and opportunities. They also explored different aspects of sustainable building and generated over 100 ideas that could improve the project's environmental and social performance. The TPCHFH's goal is to meet the Evergreen Sustainable Design Standard and potentially LEED® for Homes requirements.

Organizational Support for Private Sector Efforts

Many groups are instrumental in fostering sustainable building in the state. Ecology supports their membership and activities with technical assistance, planning and in-kind work, often as Board or Steering Committee Members. Following are some examples.

Habitat for Humanity

Green building staff continues to work with Habitat for Humanity of Washington State to ensure they have the tools necessary to implement the Evergreen Standard and effectively carry out the deliverables outlined in their Public Participation Grant. Currently staff serves on a statewide committee to make Evergreen Standard certification available to non-Washington Housing Trust Fund grantees. "The Greening Brief" is being developed for affiliates to give to volunteers.

Staff provided technical assistance and support to the Habitat for Humanity of Clark County's new ReStore in Vancouver, Washington. ReStore's goal is to become a focal point for the local community and businesses to donate and purchase used construction materials.

Staff serves on the Green Building Committee for Habitat for Humanity of Spokane and provides technical assistance for incorporating green construction practices into Habitat's construction standards.

Northwest EcoBuilding Guild

Staff sits on the Executive Committee of the Regional Board of Directors. A major focus of this year's work was on re-branding the organization: logo, mission statement, partnerships, etc. Ecology led the effort to create a scholarship program for up and coming professionals in the green building trades so they could attend the annual NWEBG conference free of charge.

Staff serves on the steering committee of the Inland Chapter of the Northwest EcoBuilding Guild. They also provide assistance in planning and development of educational events.

Built Green®

Built Green® has grown from a few local building association groups into the premier residential green building program in Washington. Ecology assisted to expand the program in Eastern Washington, helping form new local chapters. Staff continues to work with several regional Built Green® groups:

- *Built Green® Washington.* Staff edited their new *Sub-contractor Guides to Green* for all trades involved with residential and commercial construction.

- *Built Green® King/Snohomish Counties®.* Staff continues to serve on their Executive Committee and was part of the small team that revised their Remodel Checklist. It now contains an energy upgrade requirement as part of certifying as Built Green Remodel. Staff was also part of the revision committee for their Built Green® Communities Checklist and is assisting to create a more rigorous statewide examination to certify Built Green Realtors.

- *Built Green® Whatcom County.* Staff helped to edit a booklet and promotional materials for and participated in their Solar and Green Home Tour.

- *Built Green® Tri-Cities/Walla-Walla* . Staff participates on the Built Green® Steering Committee. Home certifications are steady and the program is thriving. In the short time the program has existed, it has been incredibly successful and well received by the local building community.

- *Inland Northwest Built Green® – Spokane Home Builders Association.* Staff serves on the Built Green® Council of the Inland Northwest Built Green®, a program of the Spokane Home Builders Association. In 2009 BuiltGreen launched the Built Green Communities checklist. They also launched a new website with added features and content for Built Green® members. Staff assisted with coordination of educational events such as building science expert Mark LaLiberte in Spokane on February 2-3. This was the first educational outreach effort of Built Green® to educate the general public on green building issues.

- *Central Washington Built Green® Association.* The Association used some of their PPG funds in the first half of 2009 to hire a PR consultant to facilitate a publicity blitz to get the word out about Built Green® to the community. This was an effort to generate revenues and demand for the program. The program successfully got Built Green® plenty of media attention. Staff continues to sit on the Board of Directors for the Central Washington Built Green Association, and works with the rest of the board to develop new strategies to generate revenue after PPG funds expire. They also helped represent the organization at the Central Washington Home and Garden Show, and the Central Washington State Fair.

- *Built Green® of Clallam County, North Peninsula Building Association.* Staff provided technical support for a Construction and Demolition Infrastructure Research Project and supported the launch of the Built Green® Clallam County website.

Green Building Councils

United States Green Building Council (USGBC) has been instrumental in encouraging adoption of green building practices by the commercial building sector nationwide with their Leadership in Energy and Environmental Design (LEED®) programs.

Staff co-chaired the Government Core Committee of the USGBC. A newsletter is distributed nationally and covers topics of interest to people working on green building in the public sector, new policies, implementation tools, etc. Strategy sessions are facilitated discussions for public sector employees working on specific 'hot topics' in green building.

Cascadia Region Green Building Council/BuiltGreen Washington

Staff attended the international meeting on planning next steps for this organization and is active in the North Puget Sound LEED Users Group. Green Building Group staff will help facilitate two 'Summits' in conjunction with the Living Future Conference in 2010: Green Jobs Summit and Local Government Summit.

CRGBC Inland Branch

Staff served on the steering committee of the Inland Branch. They provided assistance in event and program planning.

Organizational Support for Public Sector Efforts

Sustainable Development Task Force of Snohomish County

Staff serves on the Steering Committee and are technical advisors on their Public Participation Grant. Staff helped develop three case studies/fact sheets for public distribution on the LEED® Gold Mukilteo City Hall, the low-impact features installation at the Monroe State Fairgrounds, and on retaining soil and trees. Staff organized the demonstration worm bin event at Snoqualmie Gourmet Ice-creamery Solar Celebration, the first permitted LID development in Snohomish County.

Fort Vancouver Historic Reserve Visitor Center Rehabilitation Project – LEED Silver

Staff worked with a representative from the Reserve and Clark County Solid Waste staff on LEED® requirements for rehabilitation of the existing visitor's center. This project has many challenges: historic preservation, archeologically rich soils, high crime area and budget constraints, but all stakeholders were committed to using the most sustainable practices in the project.

Emerging Green Builders

Staff assisted with formation of an EGB group on the WSU Spokane campus. The EGB group has become very active in engaging local students in monthly green building educational events. Staff also coordinated collaboration between the EGB and the city of Spokane for creating and updating a green building display to be placed in the city of Spokane's Building and Planning Department.

Staff is also members of and/or participants in the following additional groups across the state:

- Clark County Sustainable Communities Stakeholders Group
- Thurston County "Green Codes" Development Taskforce
- City of Spokane Sustainability Task Force Built Environment Committee

Other Activities

Green Building Jobs of the Future DVD

The collaborative effort among the state departments of Ecology and General Administration, WIRED and the Construction Center of Excellence was completed. The DVD won a Bronze Telly Award (national award for documentaries and public films) in the education category. The film was posted to YouTube and has been viewed over 6,000 times. It was sent to every high school and trade school in the state and initiated a Green Building Group focus on green jobs.

Heritage Center (Secretary of State's Office Building)

Staff provided technical assistance to the project leads at General Administration. Use of regionally produced materials and wood grown in Washington was encouraged. Staff facilitated meetings on finishes and certified wood with the design team. Ecology's Water Resources Program was involved and committed to expedite the water permitting process should they decide to capture rainwater for grey-water use. The project did not receive funding during the 2009 Legislative Session and all plans are currently tabled.

Low-Impact Development (LID)

Significant effort was put into outreaching to other Ecology programs that deal with LID issues: Water Quality and Water Resources. This effort resulted in new collaborative projects that look to integrate LID principles in the built environment with stormwater management needs of Western Washington. Because the partnerships are strong, Green Building Group members were asked to sit on agency committees tasked to develop LID strategies and programs.

Climate Education Team

Staff participated in an agency group on Climate Education, recognizing the relationship of buildings on climate change. This group provided input to the agency's "Green" page on the website.

Washington Manufacturing Sector

Work was initiated with Washington Manufacturing Service and workforce development organizations with an emphasis on the manufacturing sector to explore avenues to manufacture green building products in Washington. This work has strong linkages to efforts that encourage using Washington wood in public buildings.

GREEN + SOLAR Home and Landscape Tour

Staff organized the first GREEN + SOLAR Home and Landscape Tour in Spokane County. In its first year, over 300 people visited 9 homes in this educational event. The event received significant press coverage including a story on the front page of the Spokesman Review: http://www.spokesman.com/stories/2009/sep/21/sustainability-showcase/.

Ecology's Green Building Website

The completely redesigned and enhanced website was launched in October 2009 and is at http://www.ecy.wa.gov/programs/swfa/greenbuilding/.

Partnering for the Environment by Reducing Small-Volume Hazardous Materials and Wastes (Moderate Risk Waste)

Chemicals permeate every aspect of our lives. Some chemicals, such as those found in medicines, greatly enhance the quality of our lives. Others can have negative impacts on our health and the environment. Because of their pervasiveness and potential harm, reducing small-volume hazardous materials and wastes is a primary initiative in the *Beyond Waste* plan. The goal of the initiative is to eliminate risks associated with products containing hazardous

substances commonly used in households and in relatively small quantities by businesses, along with any associated hazardous wastes. The state classifies this type of hazardous waste as moderate risk waste (MRW). More information is in Chapter 5 of this report.

Historically, MRW programs have focused on developing infrastructure to collect and dispose of household hazardous waste and conditionally exempt small quantity generator waste (CESQG), with the goal of protecting human health and the environment. However, Ecology estimates these facilities only collect a very small percentage of the MRW waste stream. To collect a greater percentage would be prohibitively expensive. We have also become increasingly aware of the risk to human health and the environment when people ***use*** products containing toxic substances, as well as when they dispose of them.

While some recommendations in the Beyond Waste plan address the current system, many of them go further. Reducing risks from MRW goes beyond safe handling and disposal. It is regulating hazardous substances according to hazard, toxicity and risk. It is optimizing reuse and recycling. Ultimately, it is eliminating use of toxics in products and increasing use of safer products and services.

One of Ecology's priority initiatives is reducing toxic threats, which is linked to many of the MRW recommendations in the Beyond Waste Plan. Some specific activities include:

- Legislative work, including the Children's Safe Products Act
- Work on chemical action plans for persistent bio-accumulative toxins
- Promoting product stewardship for mercury containing devices, paint and electronics
- Promoting environmentally preferable purchasing, and
- Supporting product stewardship.

The following pages will discuss some of this work in more detail to explain how we hope to limit the amount of toxic chemicals put into the environment.

Partnering for the Environment by Reducing Toxic Threats

Reducing threats caused by historical and ongoing releases of toxic chemicals is the rationale behind many of Ecology's successful regulatory programs. But we are finding that cleaning up or managing these releases is not enough. These approaches are expensive and usually leave some contamination behind. New research is increasingly finding that very low levels of some types of toxic chemicals can cause serious harm.

Reducing toxic threats by preventing releases in the first place is the smartest, cheapest and healthiest approach. Increasing Ecology's investment in prevention strategies is the focus of the agency's Reducing Toxic Threats priority initiative and is a fundamental principle of the Beyond Waste Plan.

This initiative, building on work already being done at Ecology, is aimed at fostering development of prevention approaches to avert exposures to toxic chemicals and avoid future costs that come when toxic chemicals find their way into the environment. Two focus areas have been identified: preventing use of toxic chemicals in consumer products and preventing toxics from entering Puget Sound.

With resources at a premium, it will be increasingly important to keep expenses low and build on positive results achieved by others. Ecology is working with several other states to develop ways to share data, influence federal policy reform and establish a more standardized approach to identifying safer alternatives for toxic chemicals still being used.

Prevention strategies are not without their challenges, including the following:

- *Insufficient data.* Information on the presence of toxic chemicals in products is often not available. Without this data it is difficult to evaluate risk.
- *Understanding how to consider lifecycle impacts*. Backend consequences such as cleanup or disposal costs are usually not factored into frontend design decisions. As a result, costs for cleanup and disposal are often disproportionately born by the taxpayer.
- *Lack of incentives and assistance to reduce toxics use*. Using fewer toxic chemicals in products is the surest way to avoid exposures and costly cleanups, but there are not enough incentives and assistance to do so.
- *Inadequate protections at the federal level*. States need to act because of the absence of an effective national system to provide consistent protections from toxic chemicals.

The W2R Program developed a work plan to address these challenges and focus our limited resources. The work plan includes the following elements:

- Implement the Children's Safe Products Act (CSPA), including developing the list of chemicals of high concern for children.
- Work collaboratively with other states to develop consistent approaches. Avoid duplication and leverage resources.
- Continue to focus on persistent, bioaccumulative and toxic chemicals (PBTs) and implementing the PBT rule.
- Continue to develop and implement strategies to reduce diesel emissions and wood smoke.
- Develop a toxics reduction strategy to protect Puget Sound.
- Develop a multi-program strategy to prevent toxics in stormwater.

Significant Accomplishments in the Last 12 Months to Reduce Toxic Threats

Children's Safe Products Act

The Children's Safe Products Act (CSPA) requires Ecology to develop a list of chemicals of high concern for children. Manufacturers of children's products that contain any of these chemicals will have to report on them to Ecology. Ecology is in the process of developing this list and will use the pilot rule provisions of the Administrative Procedures Act to test new rules to implement the act. Currently, Ecology expects to complete a draft list of chemicals of high concern for children and a draft pilot rule by January, 2010. Implementing this act will provide significant new data on the presence of toxic chemicals in children's products, helping us to develop programs and strategies to protect children.

Interstate Chemicals Clearinghouse

A group of about 10 states have been working together to create the Interstate Chemicals Clearinghouse. Issues of governance, data sharing and developing a protocol to use to identify safer alternatives to toxic chemicals are being addressed. In addition, a number of states are working together to articulate a set of principles to guide reform of federal chemicals policy.

Chemical Action Plan for Lead

The Chemical Action Plan (CAP) for lead was finalized in July 2009. Priority recommendations focus on protecting children, who are the most vulnerable. These recommendations include actions to find and help children who are already exposed AND actions to prevent exposures from the largest sources.

The largest source of lead exposure is lead-based paint. Implementing these priority recommendations will require new legislation, funding and cooperation of a number of other agencies, especially the departments of Health, Labor and Industries, and Commerce. Work continues to implement the PBDE and mercury CAPs. Ecology submitted a report to the Legislature in January 2009 which will trigger a ban one type of PBDE (deca-BDE) in televisions, computers and residential upholstered furniture as of January 2011. Ongoing work on the mercury CAP has resulted in collection of 14,300 pounds of mercury since 2003.

Reducing Toxic Diesel Emissions

Ecology's strategy to reduce toxic diesel emissions is on track with projected targets. Retrofit control technologies, mileage improvements, anti-idling programs, alternative power units and electrification strategies have been successfully deployed in publically owned engines such as school buses. Future efforts will focus on privately owned engines. The woodstove change-out program focused on the dirtiest units in the highest risk communities. Reductions are on track with targets. Woodstove change-outs in the next year will focus on high use, low income units in high-exposure communities.

Toxics Loading Study

Ecology's Toxics Loading Study will form the basis for the Puget Sound toxics reduction strategy due in December 2010. The study, now well underway, addresses 17 indicator toxic chemicals in 9 different pathways for 4 different land uses. In addition, major sources for these chemicals are now being identified.

Partnering for the Environment through Washington's Electronic Product Recycling Law

In January 2007, Ecology began implementing C*hapter 70.95N RCW, Electronic Product Recycling*, by registering manufacturers of desktop computers, portable computers, computer monitors and televisions into the Electronic Product Recycling Program (now known as the E-Cycle Washington Program). As of January 1, 2007, to legally sell these products in or into the state of Washington, manufacturers were required to:

- Register annually with Ecology and pay a program administration fee.
- Label their products with their brand.
- Participate in a plan to provide services for collection, transportation, processing and recycling these electronic products at the end of their useful life.

Manufacturers are automatically members of the Washington Materials Management and Financing Authority (Authority) and beginning on January 1, 2009, they must participate in the Standard Plan for recycling electronic products. Starting in 2010, if a manufacturer or a group of manufacturers meets certain requirements they can opt out of the Standard Plan and form an independent recycling plan with approval by Ecology. The Standard Plan will be managed by a board of directors of the Authority, comprised of eleven large and small computer and television manufacturers. The board of directors will prepare, submit and implement the Standard Plan for recycling electronic products covered by the law.

Great progress was by January 1, 2009, when households, charities, school districts, small businesses and small governments were able to drop off electronic products covered by this law for recycling at no charge.

E-Cycle Washington Program Accomplishments as of October 2009

Highlights

- 230 manufacturers registered and participate in the E-Cycle Washington Program.
- A network of 230+ collection sites across the state has been established.
- Eight processors (recyclers) of electronic products have undergone the required compliance audit to prove they will meet the performance standards and have registered to provide recycling services for the E-Cycle Washington Program.

- In the first nine months of the program more than 29.6 million pounds of computers, monitors and TVs were collected and recycled under sound environmental standards.

TVs	17.0 million lbs.
Monitors	9.6 million lbs.
Computers	3.0 million lbs.
Total	29.6 million lbs.

- The E-Cycle Washington Program is not just about recycling. Charitable organizations acting as collection sites have indicated that thousands of units received through the E-Cycle Washington Program have been sold for reuse.

Comprehensive Rules

Comprehensive rules, C*hapter 173-900 WAC, Electronic Product Recycling Program*, were adopted, delineating requirements of this program for manufacturers, collectors, transporters, and processors of electronic products covered by the law see http://www.ecy.wa.gov/pubs/0707042.pdf .

E-Cycle Washington Website

The website developed for the Electronic Product Recycling Program continues to be augmented to provide up-to-date and detailed information for all affected parties on registration requirements, fees, public involvement opportunities and more (see http://www.ecyclewashington.org).

Public Information and Education Campaign

A public information and education campaign was launched. A program name, logo and easily identifiable web address were developed through a stakeholder workgroup. A toolkit full of information was also developed and distributed to local governments to help them promote the E-Cycle Washington Program. A similar toolkit and public outreach materials were made available for electronics retailers. Public education materials prepared by Ecology and the Authority are being distributed. Outreach and communication to the media was initiated and will continue over the coming months, leveraging public interest in the program and generating some free publicity.

Partnering for the Environment through Environmentally Preferable Purchasing (EPP)

Environmentally Preferable Purchasing (EPP) means considering environmental and human health effects when purchasing decisions are made. Each year, state and local governments in Washington have the opportunity to leverage over $4 billion in purchasing power to buy products and services that:

- Protect human health.
- Create less greenhouse gas emissions over the lifecycle.
- Reduce or eliminate use and release of toxic chemicals.
- Boost energy and water efficiency.
- Create less waste.
- Support markets for green products and green jobs.
- Save money through increased product life, fewer health and safety claims, and lower maintenance and disposal costs.

The state *Beyond Waste Plan* encourages state government to increase purchases of environmentally preferable goods and services. Ecology's EPP team, including staff from the W2R and Hazardous Waste and Toxics Reduction programs, helps state and local agencies meet *Beyond Was*te EPP goals. By promoting safer products and services, EPP also supports Ecology's key initiatives on Reducing Toxic Threats, Washington Waters and Climate Change.

At the national level, President Obama issued Executive Order 13514 which sets sustainability goals for federal agencies. The Executive Order requires federal agencies to ensure 95% of new contract acquisitions for products and services (not including weapons systems) meet a list of sustainability criteria. These criteria include energy efficiency, water efficiency, bio-based, green electronics certified (EPEAT), recycled content, or non-toxic or less toxic alternatives. EPP products must meet agency performance requirements and will be targeted to foster markets for sustainable technologies.

EPP Legislation

The Governor's Climate Action Team recommended that an intergovernmental workgroup examine legislative barriers to EPP and consider legislation to address barriers. In 2009, Ecology and General Administration (GA) agreed to be partners in integrating environmental performance into state purchasing law with the goal of a bill for the 2011 session. The agencies are leading a legislative workgroup to recommend changes to state laws to make environmental performance of goods and services standard criteria in state purchasing. The effort will result in a stronger framework for both Ecology and GA to meet agency missions and goals.

By incorporating the strongest environmental criteria possible into purchasing decisions, Washington can save money, avoid hidden costs during the life of a product, and protect the

environment. This will stimulate the green economy by encouraging Washington companies to make greener products for state contracts. Ecology and GA will work together to make it easier for agencies to "buy green" by identifying safer, more energy efficient products.

Outreach to State and Local Governments

Since more than 90% of state spending occurs off of state contracts, the EPP team does outreach to governments to help them achieve their EPP goals. Ecology provides training and technical assistance to purchasing, facilities and sustainability staff.

The EPP Team responded to more than 90 technical assistance requests from state and local governments and other entities in 2009. As an agency, Ecology has had many EPP successes and is continuing to strengthen internal EPP policies and procedures.

During 2009, Ecology expanded the environmentally preferable purchasing section of the *Beyond Waste* website, which includes:

- Concise product fact sheets on how to purchase electronic products, cleaning products, vehicles and automotive products, and building materials and landscape management.
- How to use standards and certification programs to add EPP language to contracts.
- EPP-related laws and directives.
- EPP and green meeting resource guides.

Go to http://www.ecy.wa.gov/beyondwaste/epp.html to view the Beyond Waste EPP website.

Laws and Directives

State government is required by laws and directives to make progress in environmentally preferable purchasing.

Executive Orders 02-03 and 5-01

These executive orders direct state governments to lead by example in environmentally preferable purchasing. Agencies are directed to:

- Increase purchases of environmentally preferable products to help expand markets.
- Reduce energy use.
- Reduce greenhouse gas emissions.
- Reduce water use.
- Institute green building practices.

Governor's Climate Change Challenge

Executive Order 07-02 was signed by Governor Gregoire in 2007. It establishes goals for reducing greenhouse gas emissions and building a clean energy economy for Washington State.

- By 2009, reduce total energy purchases by state agencies by 10% from 2003 levels, thus achieving goals established in Executive Order 05-01.
- Retrofit the most polluting diesel engines in school buses and local government vehicles.
- Construct high performance green buildings.

House Bill 2287

In 2009, the Washington State Legislature passed House Bill 2287 to amend RCW 43.19A and RCW 70.95. The bill requires state agencies to:

- Use 100% recycled content white cut sheet bond paper for printing and copying.
- Develop and implement a paper conservation program to reduce use of printing and copy paper by at least 30% of current use.
- Develop and implement a paper recycling program that will achieve a recycling goal of 100% of all copy and printing paper.

Promoting Strong Product Standards and Certification Programs

Standards and certification programs are important tools for encouraging design of products and services with positive attributes. Standards establish specific human health, environmental and social criteria by which products can be measured and compared. Certifications or "eco-labels" are awarded to products that meet the standard. This makes it much easier for purchasers to "green" their contracts, as the standard can be incorporated in bid documents in just a few sentences.

To evaluate the environmental impact of products and services, widely accepted standards and certification programs are typically designed to:

- Address product lifecycle stages from raw materials to end-of-life to the extent possible.
- Require onsite testing and verification by an independent laboratory or certifying group.
- Incorporate performance and safety standards the product must meet or exceed.

The proliferation of eco-labels in the marketplace currently exists. reliable standards and certification organizations:

- Are independent of ties to product manufacturers.
- Use a broad-based stakeholder consensus process (typically involving manufacturers, users, government, environmental advocates and academia) or other rigorous process to develop standards.

- Provide information on their organizational structure, funding and standards development process.
- Periodically review standards to stay current with new technology and emerging information about human health, environmental and social impacts.

By leveraging a significant portion of the state's buying power, strong standards encourage the design of products and services with positive environmental and human health attributes.

Partnering for the Environment through Recycling and Beneficial Use of Organic Materials

With an overarching goal to turn organic wastes into resources, *Beyond Waste's* Organics Initiative supports and promotes increased organic materials collection and recycling.

Communities have stepped up organics collection through new curbside programs, and businesses are looking for ways to increase organics diversion from their waste stream. This explains the 100,000 ton increase in collection of material for composting, recycling and diversion over 2007 as seen in Table 2.2.

Table 2.2
Organics Recovery Comparison

	2007	2008
Recycled/Composted		
Yard Waste	684,101	641,130
Wood Waste	228,146	381,866
Food Waste	50,304	45,169
Total Recycled Materials	**962,630**	**1,068,165**
Diverted		
Agricultural Organics		41,317
Food Processing Wastes		3,494
Industrial Organics		45,586
Land Clearing Debris	168,007	169,428
Other Organics	149,492	76,674
Wood for Energy Recovery	353,683	331,528
Yard Waste for Energy Recovery	161,274	167,435
Total Diverted Materials	**832,456**	**835,462**
Total Recovery (Organics + Diverted)	**1,795,086**	**1,903,627**

2008 was a year for review as we began the five-year update process for all *Beyond Waste* initiatives. Most apparent is the need to broaden the perspective on organics recovery and processing. Continuing to encourage increased collection programs without corresponding facilities to process the material is shortsighted. The updated Organics Initiative will continue to support the viable, traditional collection and composting programs, but add a new emphasis on developing new processing technologies and organic waste prevention programs.

This emphasis is reflected in **new Beyond Waste milestones** for the next five years which include:

- Technical assistance, research and/or capital expense funds support development of at least two biomass-to-energy and biomass-to-fuel and co-products "organic refinery" projects.
- Food waste prevention is a focus of state and local government. This includes edible food recovery for redistribution to organizations serving hungry people and food waste prevention programs at the residential, commercial and institutional level . Work will be supported by a guidance document developed by Ecology.
- Organics recovery (including landscaping and food scraps) occurs in 50% of all state and local government buildings and institutions, including the Capitol Campus. State and local agencies and institutions are required to use compost as a landscape management tool to reduce water and pesticide use.
- A beneficial use hierarchy is created for residual organic material processing and uses.

Partnering with Schools and Universities to Promote Organics Recycling

In order to take further steps in *Beyond Waste* and increase organics recovery, we need to focus on new processing technologies while supporting healthy existing technologies. Projects supported by the Organic Waste to Resources grant program must incorporate sustainable, closed-loop, full cycle uses of organic materials to meet the following objectives:

- Produce renewable fuels to help replace current fossil fuels.
- Create carbon neutral and carbon negative solutions for fuels, energy and products.
- Recover valuable industrial and agricultural nutrients in process technologies.
- Support durable, secure systems through distributed production.
- Create sustainable economic vitality, social equity and environmental balance.
- Produce transferable research and technology that can be replicated around the state.

The following projects received grants through Ecology's Organic Waste to Resources Program:

- *Converting Lignocellulosic Rich Urban Waste to Ethanol*, University of Washington.
- *Bio-refinery Concept to Convert Softwood Bark to Transportation Fuels*, Washington State University.

- *Use of Biochar from the Pyrolysis of Waste Organic Material as a Soil Amendment*, Washington State University.
- *Organic Soil Amendments, A True Path to Zero Waste?*, Washington State University with collaboration from University of Washington.
- *Biohydrogen and Biodiesel Co-production with Treatment of High Solid Food Waste*, Washington State University.
- *Evaluate Pretreatment Technologies for Converting Washington Biomass to Bioethanol*, Washington State University.
- *Vermicomposting Demonstration Project*, Sierra Heights Elementary, Renton School District.
- *The Next Step for Biomass Energy Development in Clallam County*, Northwest Sustainable Energy for Economic Development.

As these projects are completed, final reports will be published and available at the Beyond Waste Research and Demonstration Projects website.

Partnering with the Environmental Protection Agency, Seattle Public Utilities and Washington State University Extension to Increase Home Composting

In 2008, we completed a Home Composting Grant project that resulted in the *Washington State Compost Educator's Guide* (available soon as a WSU Bulletin), a home composting workshop for educators and the Natural Yard Care guide, adapted from Seattle Public Utilities' original guide. We will continue to build a network between educators and develop home composting program tools.

Partnering with the Washington Organic Recycling Council (WORC) to Promote Beyond Waste Goals

WORC is a nonprofit association dedicated to support and promote all aspects of organic recycling. WORC members include compost facility owners and operators, local and state government representatives, and others with an interest in all things organic.

Through WORC's Washington State Compost Market Expansion and Education Project funded by an Ecology Public Participation Grant, they have helped expand compost markets, encourage greater organics recycling, and educate professional audiences and the public about environmental benefits of using recycled organic materials. The following activities were part of the project development:

- Public education events for topsoil manufacturers, landscape contractors and architects, composters and builders and developers.

- Soil blending trials, looking at effects of blending compost with soils.
- Education and outreach materials.

Commercial Sector Role in Reaching a Closed-Loop Organics Recycling System

Ecology views commercial composting as a key element in the closed-loop organics recycling system. To build consumer confidence, compost facilities that process organics like yard debris and food scraps must use well-trained staff to produce a consistent, high-quality product. At the same time, commercial composters must operate their facilities to ensure they protect human health and the environment.

Composting facilities are regulated under C*hapter 173-350 WAC, Solid Waste Handling Standards*. The composting standards include design and operating requirements for permitted facilities. In addition, testing criteria must be met for the final product to be considered "composted material." *WAC 173-350-220, Composting Facility Standards,* also offers several categories of composting activities that are exempt from solid waste permit requirements. The exemption categories were designed to "promote composting while protecting human health and the environment."

In 2008, 41 commercial facilities reported more than 816,653 tons of organics which were processed into more than 1,153,172 cubic yards of compost. There was an increase of 61,757 cubic yards of compost produced compared to 2007. Organic materials processed by these facilities, if generated as a waste in Washington, are included in recycling and diversion data in Chapter 5 of this report listed by type of feedstock. This data is also available at http://www.ecy.wa.gov/programs/swfa/solidwastedata/.

Food scraps were composted at 14 compost facilities throughout the state (an increase from 10 in 2007). Food scrap categories include pre-consumer vegetative, food processing waste, yard debris/food scraps and post-consumer food scraps. Of these facilities, four accepted pre-consumer vegetative food scraps, four accepted food processing waste, one reported yard/food scraps and ten accepted post-consumer food scraps. Three facilities accepted more than one category of food scraps.

Ecology continues to work with Washington State University Cooperative Extension researchers, consultants and local governments to educate potential composters about new opportunities and their responsibility to use best practices when composting even small volumes of material. We also continue to partner with the Washington State Department of Transportation to promote compost use for erosion control and stormwater management along roadways.

Compost Facility Operator Training (CFOT)

2009 marked the 15th year of CFOT. This training program provides an invaluable opportunity for students and instructors to learn and share ideas on proper operation and regulation of compost facilities in Washington. It is coordinated by the Washington Organics Recycling Committee (WORC), Washington State University Puyallup Research Station and Washington State Department of Ecology. 400 students have taken the training since its inception.

The 2009 training was held on October 19-23 at WSU/Puyallup with 37 students, 7 instructors, and 10 guest presenters/panelists. Since this is the only training of its kind in the state and surrounding area, it attracted seven students from out of state (HI, ID, OR, CA, UT, DE), and one from Mexico.

The training included lectures, fieldwork and field trips. Presentations were made by compost facility operators, a compost system consultant, WSU professors and Ecology representatives. In addition to classroom time learning about odor control, facility design and soil biology, students received hands-on experience building their own compost piles, sampling compost, touring compost facilities and evaluating pre-built piles. Students learned safe, effective ways to make compost from a multitude of feedstocks. Fieldtrip tours included Sequalitchew Creek Earthworks (Fort Lewis); Silver Springs Organics (Tenino/Rainier); Ecology's Compost Central (Lacey) and the HVL Compost Factory (Puyallup).

Instructor Craig Cogger (WSU/Puyallup) demonstrating a soil texture field technique.

Carrie Gregory (Pierce County Recycling, Composting, and Disposal) leading a tour through the HVL Compost Factory.

Partnering for the Environment through Anaerobic Digestion

In 2009 the Legislature passed Substitute Senate Bill 5797 providing an exemption from solid waste handling permitting for co-digesting dairy manure and organic waste under specific conditions (http://apps.leg.wa.gov/billinfo/summary.aspx?bill=5797). As directed in the bill, the W2R Program published guidelines to help digester operators manage the additional organic materials (such as food waste) and the resulting digestate under conditions of the permit

exemption (http://www.ecy.wa.gov/pubs/0907029.pdf) . These digesters must obtain and comply with other applicable state and local permits. A digester that does not meet these conditions is required to obtain and comply with a solid waste handling permit from the jurisdictional health department.

Manure Management

A full-grown dairy cow generates 100 pounds of manure per day. That means the 200,000 full-grown dairy cows in Washington produce up to 20 million pounds of manure each day. Historically, dairy cows wandered around family farm fields in pastoral bliss, spreading manure (or *nutrients* as some farmers like to say), effectively fertilizing the lands as they grazed. Today, dairies often confine cows in feedlots where manure is flushed into a lagoon for storage until it is used to fertilize crops. Open lagoon storage of manure causes serious odor issues from methane, hydrogen sulfide and ammonia releases.

Anaerobic digesters help address manure odors, capture greenhouse gases and recycle nutrients. Digesters also provide revenue streams for dairies in these difficult economic times. Digester use in Europe is well developed with more than 600 manure digesters in use. EPA estimates 107 of the 65,000 dairy farms in the U.S. use manure digesters. Washington State is just starting to dip its toe in the world of anaerobic digestion of manure with four operating digesters. The Climate Action Team Study estimated that 135 of the 500 dairies in this state could manage manure in an anaerobic digester (dairies with more than 500 cows).

Four manure digesters in Washington are concrete structures built to hold 21 days of manure at roughly 100°F. Dairy manure is piped or trucked to the digester where it is often mixed with other organic materials like dairy, chicken, seafood or fruit processing wastes. This manure mix is continuously fed into the digester. One of these operating digesters takes in 55,000 gallons of manure each day.

In the digester, anaerobic bacteria convert the manure and organics into biogas, solids and liquids. The biogas consists mostly of methane (a greenhouse gas 20 times more potent than carbon dioxide) and carbon dioxide. Biogas pressure builds up in the concrete digester and a pipe delivers the biogas to a modified natural gas engine. Methane fuels the engine, which in turn spins an electric generator to create electricity.

Waste heat from the engine is used to keep the digester warm and can offset fuel purchases on the farm. Excess electricity is sold back to the local utility. After 21 days, the output from the digester is mechanically separated into solid and liquid digestate. Solid digestate can be used to replace sawdust or sand, which the dairy would normally purchase for cow bedding. Liquid digestate is returned to the dairy manure lagoons for storage and later used as fertilizer. The nutrients in the liquid digestate can be used in place of synthetic fertilizer.

Dairy Digesters in Washington

Today, a handful of dairy farms in Washington use anaerobic digesters to put their cow manure to work generating renewable energy. Four manure digesters in Washington currently operate under the conditions of the solid waste handling permit exemption outlined in Senate Bill 5797. The W2R Program is responsible for oversight of anaerobic digesters that co-mingle manure and other organics.

Qualco digester and generator building

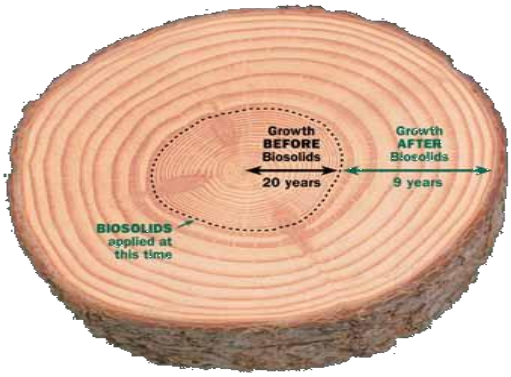
The Washington State Department of Agriculture (WSDA) continues to oversee dairies as required under the Dairy Nutrient Management Act. The W2R Program and WSDA collaborate on inspections, record reviews and annual reports. At the end of 2009, operators will report volumes of organics and manure digested. Next year's annual report will include a summary of that information. The four digester operations include:

- Vander Haak Dairy, Lynden, Whatcom County, started up November 2004, 450 kilowatt (kW) generator capacity.
- DeRuyter Dairy, Outlook, Yakima County, started up December 2006, 1,200 kW.
- Qualco Energy, Monroe, Skagit County, started up December 2008, 450 kW.
- Farm Power Rexville, Snohomish County, started up August 2009, 750 kW.

Partnering for the Environment through Biosolids Recycling and Beneficial Use

Managing biosolids by recycling/beneficial use is the main choice in Washington. Ecology's biosolids program supports the state's goal and statutory preference for beneficial use of biosolids. In accordance with C*hapter 70.95J RCW, Municipal Sewage Sludge – Biosolids,* municipal sewage sludge that meets the quality standards for beneficial use is considered a "biosolid" and regulated as a commodity, not solid waste. We strongly encourage all producers of biosolids to pursue beneficial use.

In 2008, approximately 99,000 dry tons of biosolids were managed. Of this amount ~83% was land applied, ~16% incinerated and ~0.5% landfilled. The following photos represent just some of the many uses of biosolids.



Use of Biosolids in Commercial Forestry in Pierce County (Douglas-fir Growth Before and After Biosolids)

Use of Biosolids in Slope Stabilization Along U.S. Highway 97A in Chelan County (Background, No Biosolids; Foreground, Biosolids Compost)

Use of Biosolids in Agriculture in Douglas County (Left, Control; Middle, Commercial Fertilizer; Right, Biosolids)

Use of Biosolids in Horticulture in King County
(Left, Control; Right, Biosolids Compost)

Permit Program & Fees

Biosolids management is regulated through *Chapter 173-308 WAC, Biosolids Management* (the state biosolids rule), and the *General Permit for Biosolids Management* (biosolids general permit). Ecology staff, with assistance from local health jurisdiction (LHJs), oversees the state biosolids program.

The state biosolids rule was revised in 2007 and went into effect on June 24, 2007. The current biosolids general permit went into effect on June 5, 2005, and will expire June 5, 2010. The process to review the biosolids general permit will begin in late 2009.

The state biosolids rule and the biosolids general permit govern the quality of biosolids applied to the land and practices at land application sites. Biosolids must meet standards for pollutant limits, pathogen reduction and vector attraction reduction appropriate to the intended end use. Biosolids used where future exposures are uncontrolled (e.g. lawns, home gardens, golf courses, top soils, etc.) must meet higher standards than biosolids applied to areas where access and crop harvest restrictions can be put in place. The 2007 revision of the state biosolids rule also requires screening and sets a standard for allowable recognizable manufactured inerts in biosolids similar to that for composts under the state solid waste rule.

There are about 380 facilities required to be covered under the biosolids general permit. The majority of facilities are publicly owned wastewater treatment plants, including those at state and federal facilities. Other types of facilities required to seek coverage under the biosolids general permit are:

- Privately owned treatment facilities that treat only domestic wastes.
- Certain composting facilities that use biosolids as a feedstock.
- Biosolids beneficial use facilities (land appliers who obtain a permit to reduce the permitting requirements for their clients).
- Septage management facilities (persons who treat or land apply septic tank materials).

Coverage under the general permit is provided in two phases:

1. Provisional approval.
2. Final approval.

A facility obtains "Provisional" approval by submitting a *Notice of Intent* and a complete *Application for Coverage* as provided in the state biosolids rule and the biosolids general permit. Under provisional approval, a facility is authorized to carry out biosolids management activities according to the conditions of the biosolids general permit, conditions in any submitted plans, conditions in the state biosolids rule, and conditions in any other applicable state, local or federal regulations.

"Final" approval may be granted after a full Ecology review of the permit application and operating practices. In issuing final approval, Ecology often imposes "additional or more stringent" conditions necessary to ensure proper biosolids management and protection of human health and the environment. Any such conditions are subject to appeal.

By streamlining the permitting process through changes to the state biosolids rule and the biosolids general permit, and making greater effort toward getting necessary information from all permittees, we expected the rate of final approvals provided during the current permit cycle would be much greater than during the first permit cycle. This has been shown to be the case. During the 7 years under the first biosolids general permit cycle, only 85 final approvals were granted. However, during the 4 years since the revised biosolids general permit was issued, Ecology issued 174 final approvals.

Ecology charges a fee to permittees to support the state biosolids program. Currently, the permit fee brings in about $710,000 and supports about 6.0 FTEs committed to implementing the biosolids program.

Delegation to Local Health Jurisdictions

Currently a total of 5 local health jurisdictions (LHJs) have accepted some degree of delegation to carry out the state biosolids program. Each delegated LHJ has entered into a formal Memorandum of Agreement with Ecology.

The delegated LHJs have actively taken the lead to conduct various aspects of the biosolids management program within their jurisdictions. Most other LHJs provide some degree of assistance to Ecology. Funding and workload demands on staff continue to be the major reasons LHJs do not pursue delegation of the biosolids program.

Partnering for the Environment through Beyond Waste Performance Indicators (aka Measuring Progress Initiative)

Beyond Waste is the state plan for managing hazardous and solid waste. This 30-year plan has clear, simple vision: Eliminate wastes whenever we can and use the remaining wastes as resources. The goal of the fifth *Beyond Waste* Initiative, *Measuring Progress*, is to help Ecology and its partners make the transition to a long-term data tracking system that measures progress toward the overall vision as well as individual initiatives.

How are We Doing on Achieving the Vision?

Ecology's W2R and Toxic Reduction programs worked together to develop and update a series of indicators that track progress toward *Beyond Waste* goals. We made major strides on developing effective, rational ways to measure Washington's success at reducing the use of toxic substances and generation of both solid and hazardous wastes. Ecology is also addressing the broader themes of *Beyond Waste* by developing and maintaining measures that show how our progress toward these goals relates to economic, environmental and social vitality.

Ecology released the third update of the *Beyond Waste Progress Report* (http://www.ecy.wa.gov/beyondwaste/bwprog_front.html) in October 2009. The indicators track progress toward the *Beyond Waste* initiatives - industries, green building, organics recycling and small-volume hazardous wastes, as well as progress toward overall goals of reducing waste and toxics.

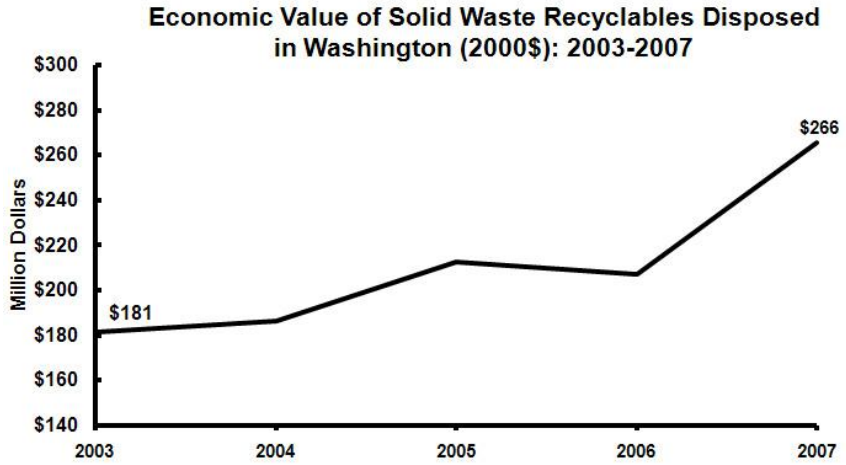
The recently updated *Progress Report* has 16 indicators and measures 3 major areas of focus:

- Eliminating wastes and toxics, and using waste as resources
- Economic, environmental and social vitality
- Reducing risks

We are beginning to see some trends related to implementation of *Beyond Waste* in some of the specific indicators. Baselines by which we can gauge our progress have been established, and the trends are available in the *Beyond Waste Progress Report*. Specific indicators include solid waste generation, hazardous waste generation, risk from toxic releases, solid waste recycling, hazardous waste recycling, electronics recycling, organics recycling and green building.

We are making significant progress in some key areas. We have recycled more solid waste (garbage), organics (compostables) and electronics (old computers, monitors and televisions) over the last few years. However, some trends are disappointing. Despite our recycling efforts, in 2007 we threw away $266 million worth of recyclables (Figure 2.3).

Figure 2.3



Good news includes hazardous waste generation is decreasing and green building versus conventional construction is increasing. In addition, many businesses are creating less hazardous waste per dollar earned. Progress in these areas shows how moving toward the *Beyond Waste* vision can help individual businesses, the economy and the environment.

The five-year update of the Beyond Waste Plan will be completed by December 2009. With this update, the Measuring Progress Initiative will undergo some revisions. The initiative has new recommendations and milestones in these areas:

- Analyzing and evaluating the indicators;
- Tying indicators to staff work plans;
- Completing waste characterization studies;
- Tying indicators to policy decisions;
- Expanding the communication strategy for the Progress Report; and
- Updating and enhancing the Consumer Environmental Index (CEI).

Implementation of the new recommendations for the Measuring Progress Initiative will begin in 2010.

To see the full Beyond Waste Progress Report, including detailed information about each indicator, see http://www.ecy.wa.gov/beyondwaste/bwprog_front.html.

Partnering for the Environment through Waste Tire Pile Cleanup

An environment free of waste tires is important to the public health of all Washington citizens. Piles of waste tires harbor mosquitoes, snakes and other vermin. West Nile Virus, transmitted by mosquitoes, threatens health. Tire piles also present a dangerous fire hazard. Many tire piles exist for a significant length of time. Ecology has been working with local agencies to clean up unauthorized dumpsites and prevent further waste accumulation.

Waste Tire Pile Cleanups 1989 - 1998

In 1989, the Washington State Legislature passed Substitute House Bill (SHB) 1671 (Sections 92 – 95) which established a $1 per tire fee on the retail sale of new vehicle tires for the Vehicle Tire Recycling Account (VTRA). This account provided approximately $14.4 million to clean up 34 unpermitted tire piles in 9 counties around Washington (Map 2.A). Collection of the tire fee ended in 1994 and the account was fully spent in 1998 (Table 2.3).

Map 2.A – Tire Pile Cleanups 1990-98

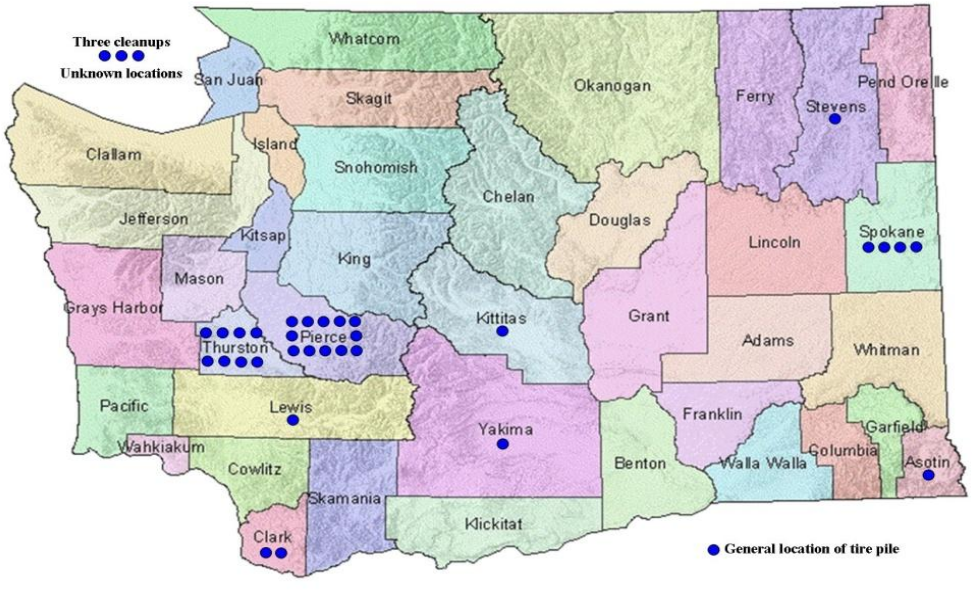


Table 2.3
Tire Pile Cleanup 1990-98

Year	# Sites	Estimated # of Tires	Cost
1990	1	92,200	$102,667
1991	15	794,000	$1,816,894
1992	5	1,263,300	$1,241,133
1993	2	57,000	$65,394
1994	2	932,000	$694,947
1995	2	4,158,600	$4,114,859
1996	5	2,380,200	$3,235,372
1997	1	175,000	$310,200
1998	1	2,800,000	$2,850,000
Total	**34**	**12,652,300**	**$14,431,466**

Tire Cleanup Fund

In 2005, the Legislature passed SHB 2085, creating a Waste Tire Removal Account to fund cleanup of unauthorized and unlicensed tire piles. Funds for this account come from a $1 fee charged on each new replacement tire sold in Washington. The 2009 Legislature removed the sunset on this fee and allocated a biennial budget of $1 million to Ecology (Senate Bill 5796). The balance of this account transfers to the Washington State Department of Transportation's Motor Vehicle Account on September 1 of odd numbered years.

Waste Tire Removal Account funds will continue to be used for tire pile removals. However, these limited funds will not be available for tire piles created by businesses that collected tires as a function of their business. For example, auto dealers, tire dealers and auto wrecking operations are no longer eligible for the cleanup program. Previously these facilities were eligible for cleanup for only legacy tire piles. Eligible tire piles must contain more than 800 waste passenger tires (or the combined weight of 16,000 pounds of tires).

Ecology will continue to coordinate cleanup of waste tire piles with local health departments, fire departments, businesses, tribes, and private citizens. Tire pile prevention activities may be funded using this account.

Continued Waste Tire Pile Cleanups

By November 2009, Ecology identified 201 tire pile sites in Washington State containing more than 5.6 million waste tires. Cleanup information in the following tables and charts are provided in tons of tires. One ton of tires equals about 100 passenger tires. Common recycling and reuse of waste tire materials includes crumb rubber, stamped rubber bumpers, tire rings, fuel for cement kilns and scrap steel (wheel rims).

Tire pile cleanup activities started in May 2007. By the end of 2007, a total of 27 tire pile sites containing more than 3 million tires (over 30,000 tons of tires) were removed. To remove the largest single tire pile (containing over 2 million tires) as quickly as possible, 92% of the tires

from the Goldendale-Wing Road site were shredded and landfilled. Nearly 60% of the tires from the other 26 sites were recycled or reused. Table 2.4 provides the cleanup totals for the entire 2008 calendar year. Last year's report did not include December 2008. The 2009 totals reported in Table 2.4 do not include efforts in November or December 2009.

In the past 3 years more than 5 million tires (50,678 tons) were removed from 149 tire pile sites. After the first year (2007), tire recycling and reuse improved to greater than 80%. Tire pile removal efforts at the remaining 52 sites will likely continue into 2011.

The average cost per year in Table 2.4 is provided for reference. The cost per site experienced in 2007 is due to several very large cleanups conducted at the start of the program. The largest tire pile cleanup was at the Goldendale tire pile which contained over 2 million tires. More than 200,000 tires each were removed from Pumphouse Road, Petty and Napavine cleanups. Excluding those four large cleanup efforts, tire pile size across the state averaged 15,600 tires with a median size of 9,000 tires.

Table 2.4
Summary of Completed Tire Pile Cleanups by Calendar Year
(1 ton of tires = 100 passenger tires)

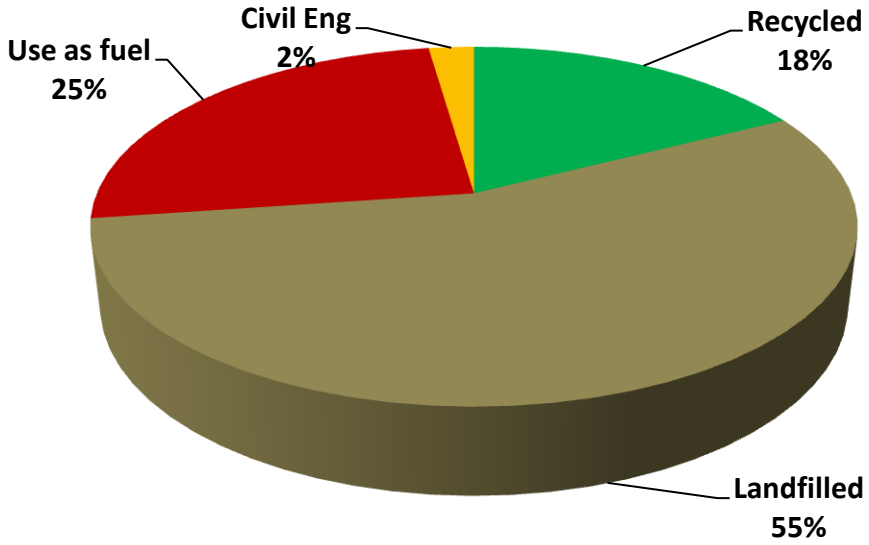
Year	Sites	Tons	Recycled or Reused	Total Cost	Average Cost/site	Average Cost/ton
2007	26	32,671	55%	$ 4,300,079	$ 165,388	$ 132
2008	53	8,324	86%	$ 1,933,954	$ 36,490	$ 232
2009	70	9,683	92%	$ 2,139,094	$ 30,558	$ 221
Completed	149	50,678	83%	$ 8,373,127	$ 56,195	$ 165
Remaining	52	6,079	> 80%	$ 1,417,704	$ 27,264	$ 233
Total	**201**	**56,757**	> 80%	**$ 9,790,832**	**$ 48,711**	$ **173**

Recycling and Reuse of Tire Pile Cleanup Tires

Figure 2.4 shows recycling, reuse and landfilling of cleanup program tires for the 2007 through 2009 cleanups.

- Landfilled tires represent the overall greatest end (55%). Most of these landfilled tires came from the 2007 cleanup activities at Goldendale, Washington.
- Reuse of tires as fuel represented 25%.
- Recycled tires were 18%.
- Civil engineering use of cleanup tires was 2%.

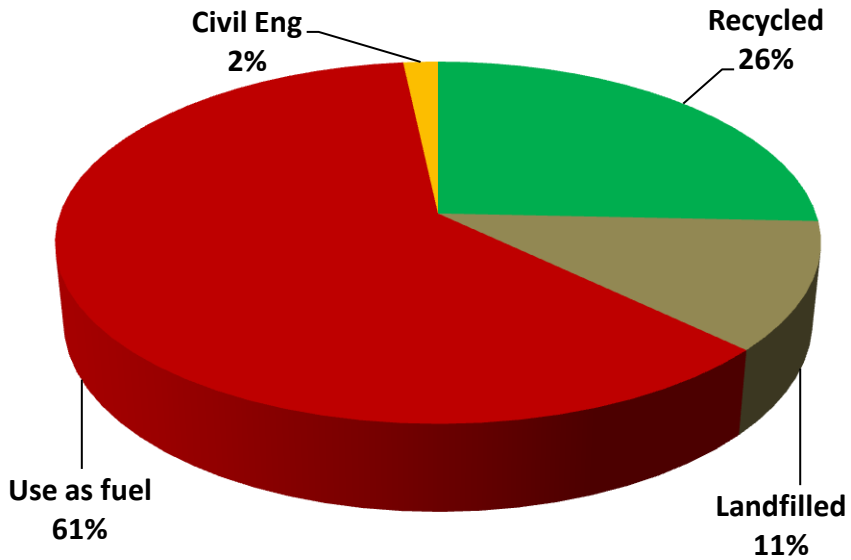
Figure 2.4 – Tire Cleanup End Use: 2007-09



Cleanup activities for 2008 and 2009 in Figure 2.5 shows greater end use alternatives to landfilling.

- Reuse of tires as fuel increased to 61%.
- Recycled tires increased to 26%.
- Landfilled tires reduced to 11%.
- Civil engineering remained small at 2%.

Figure 2.5 – Tire Cleanup End Use: 2008-09



Waste Tire Pile Cleanup Status by County

In collaboration with local governments, Ecology continues to identify tire pile sites across the state. Table 2.5 summarizes the status of tire pile cleanup efforts in 32 counties in Washington.

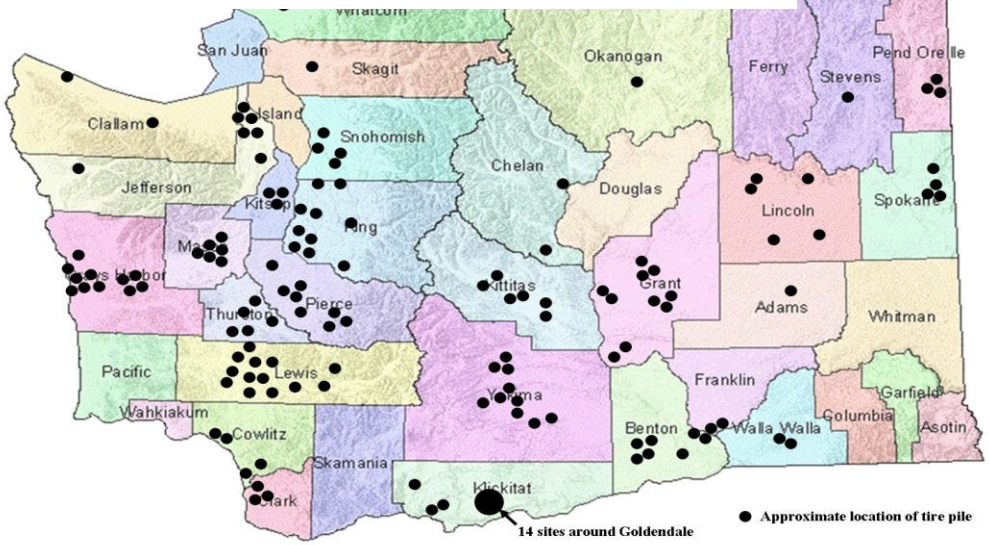
Table 2.5
Tire Pile Cleanup Progress by County (2007-09)

County	Completed Tire Piles				Remaining Tire Piles		
	# Sites	Tons	Cost	Recycle Reuse	# Sites	Estimated Tons	Projected Cost
Adams	1	213	$ 51,659	100%	1	24	$ 5,601
Benton	7	972	$ 210,244	85%	1	125	$ 29,548
Chelan	2	700	$ 162,668	68%	2	265	$ 59,971
Clallam	2	99	$ 31,257	96%	7	1,400	$ 375,396
Clark	3	742	$ 144,209	94%	-	-	-
Cowlitz	4	328	$ 69,473	93%	1	50	$ 10,404
Ferry	-	-	-	-	1	50	$ 13,850
Franklin	2	341	$ 85,235	100%	3	735	$ 187,577
Grant	10	2,251	$ 617,325	76%	5	370	$ 84,232
Grays Harbor	11	1,620	$ 289,573	92%	3	300	$ 60,000
Island	-	-	-	-	1	50	$ 9,098
Jefferson	7	1,046	$ 221,390	78%	1	100	$ 20,000
King	10	2,130	$ 384,473	91%	2	150	$ 36,380
Kitsap	2	249	$ 42,630	99%	-	-	-
Kittitas	6	965	$ 242,169	100%	-	-	-
Klickitat	17	21,489	$ 2,464,005	13%	-	-	-
Lewis	13	6,390	$ 1,036,278	39%	1	100	$ 20,000
Lincoln	5	424	$ 136,559	86%	3	290	$ 75,489
Mason	6	1,303	$ 237,354	97%	1	100	$ 20,000
Okanogan	1	363	$ 104,005	100%	1	50	$ 13,850
Pacific	-	-	-	-	1	100	$ 20,000
Pend Oreille	3	213	$ 26,693	98%	2	200	$ 40,000
Pierce	8	823	$ 158,789	95%	1	100	$ 28,615
Skagit	1	62	$ 13,154	91%	1	100	$ 20,000
Snohomish	4	486	$ 122,858	92%	2	200	$ 40,000
Spokane	4	1,225	$ 236,948	100%	2	200	$ 43,456
Stevens	1	97	$ 23,367	100%	-	-	-
Thurston	5	1,225	$ 244,165	97%	3	300	$ 60,000
Walla Walla	2	202	$ 53,153	100%	2	160	$ 34,760
Whatcom	2	159	$ 42,444	99%	1	60	$ 14,891
Whitman	-	-	-	-	2	400	$ 74,588
Yakima	10	4,560	$ 921,052	20%	1	100	$ 20,000
Totals	**149**	**50,678**	$ **8,373,127**	**24**	**52**	**6,079**	$ **1,417,704**

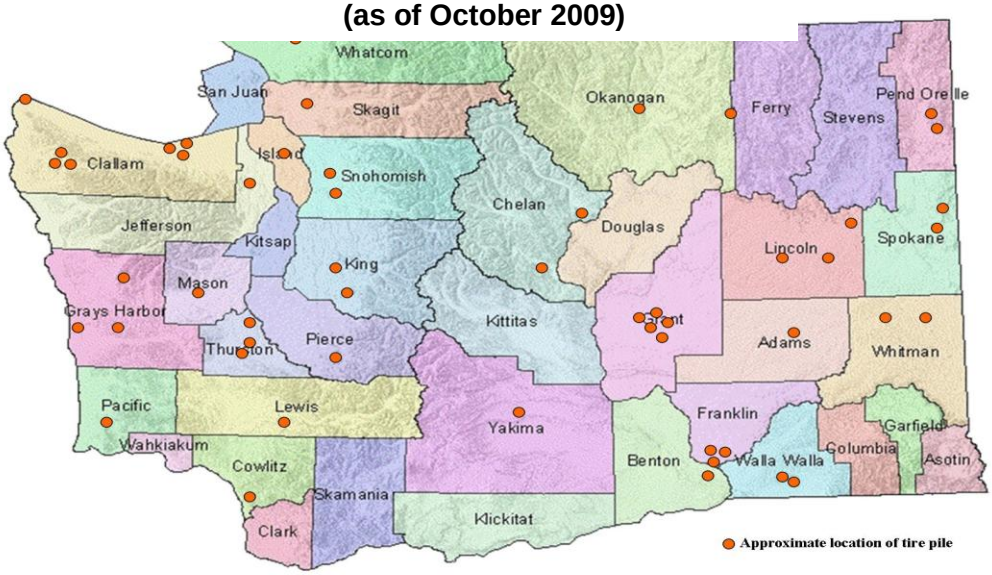
The following two maps show the progress of tire pile cleanup by county as of October 2009.

- Map 2B shows approximate locations of completed tire cleanups. The 14 tire piles in the Goldendale area are represented by one large black dot.
- Map 2C shows approximate locations of remaining tire cleanup sites.

Map 2.B – Completed Tire Pile Cleanups (as of October 2009)



Map 2.C – Remaining Tire Pile Cleanups (as of October 2009)



Examples of 2009 Tire Pile Cleanup Efforts

Japanese Gulch, Everett, Snohomish County

After a year of collaboration with the Cities of Everett and Mukilteo, the Japanese Gulch cleanup was completed. A total of 27 tons of tires were removed from Japanese Gulch with assistance of the Washington Conservation Corps. 76% of these tires were recycled or reused with a cleanup cost of $26,250 (which is about $9.72 per tire). This cleanup was completed during the dry season in August 2009.

Japanese Gulch during tire removal

Japanese Gulch after cleanup

Auto Wrecking Yard Cleanups

Thirty-seven of the 72 tire pile cleanups completed in 2009 were collections of waste tires at auto wrecking yards across Washington. A total of 7,047 tons of tires were removed from them. More than 92% of the tires at these sites were recycled or reused. Cleanup of these sites cost a total of $1,439,702, which averaged $38,910 per site or about $2.04 per tire (or $204 per ton).

Moses Lake Auto, Grant County

Competitive Auto, Yakima County

Golden Pheasant Auto, Mason County

Monster's Auto, King County

IKAN Auto, Grays Harbor County

Hiway Auto, Benton County

Other Tire Piles in Washington

Thirty-three of the 72 tire pile cleanups completed in 2009 were collections of waste tires at sites other than auto wrecking yards. A total of 6,012 tons of tires were removed from these sites. More than 92% of the tires at these sites were recycled or reused. Cleanup of these sites cost a total of $653,554, which averaged $19,805 per site or about $2.51 per tire (or $251 per ton).

Flood debris tires, Lewis County

Lamona Property, Lincoln County

Partnering for the Environment through Financial Assistance

Grants to Local Governments - Coordinated Prevention Grants

Coordinated Prevention Grants (CPG) are funded by the Local Toxics Control Account (LTCA).[1] The CPG Program is administered by Ecology through WAC 173-312, following the intent of the *Model Toxics Control Act (Chapter 70.105D RCW)* to:

Fund local government projects that greatly reduce contamination of the environment.

Provide funding assistance to local governments for local solid and hazardous waste planning and for carrying out some projects in those plans.

Encourage local responsibility for solid and hazardous waste management and improve grant administration.

Promote regional solutions and cooperation between governments.

LTCA revenue is from the Hazardous Substance Tax (HST), a tax on the first possession of hazardous substances in the state. Projected revenues to LTCA available each biennium for CPG are divided into two portions: 80% for Solid and Hazardous Waste Planning and Implementation grants and 20% for Solid Waste Enforcement grants.

Eligibility

Eligible applicants for CPG grants include:

- Local planning authorities.
- Agencies designated as lead implementation agencies for Local Comprehensive Solid Waste Management Plans.
- Jurisdictional health departments (JHDs).

Ecology allocates the available funds on a county-by-county basis, using a base amount for each county plus a per capita amount. Cities that are independent planning authorities and coordinate with counties are eligible to ask for and may receive funding up to the per capita allocation for their city. The availability and amount of funding depends upon legislative appropriations to the LTCA.

[1] Authorized by RCW 82.21.030 (Chapter 82.21 RCW, *Hazardous substance tax -- Model toxics control act).*

Awards

The Coordinated Prevention Grant Program awards funds in two cycles, regular and offset:

- **Regular Cycle.** Ecology allocates regular cycle funds based on the 80% allocation for Solid and Hazardous Waste Planning and Implementation grants and 20% for Solid Waste Enforcement grants. CPG funds are distributed to recipients requesting their full or partial allocation in the regular cycle.
- **Offset Cycle.** Funds for the offset cycle come from funds that no one requests in the regular cycle ("unrequested" funds) and from funds that no one spent during the regular cycle ("unspent" funds). Funds can also come from any special legislative appropriations. Ecology awards offset cycle funds through a competitive process.

The 2007-09 Biennial Budget was approved by the Legislature and appropriated $25.5 million:

- $19.5 million for the regular cycle to help local governments carry out their solid and hazardous waste management plans including recycling, household hazardous waste collection and solid waste enforcement.
- $4 million for grants to fund new organics composting and conversion, green building and moderate risk waste initiatives described in the state's *Beyond Waste Plan*. Allocation of these funds occurred during the 2009-10 offset cycle. These projects began January 1, 2009.
- Up to $2 million of the appropriation may be used for grants to local governments to provide alternatives to backyard burning of organic materials. This assisted local communities impacted by the ban of outdoor burning imposed through Washington's *Clean Air Act (RCW 70.94.743*).

The 2008-09 regular cycle funds were awarded to 140 Washington counties, cities, and JHDs totaling $21,066,232. Of these, 20 received Alternative to Burning (ATB) and Beyond Waste proviso funds totaling $2,382,916.

For the competitive 2009-10 offset cycle, CPG awarded $5 million for local environmental tasks (projects) from green building and composting/chipping to waste reduction/recycling and product stewardship. Ecology received $10 million in requests for the available $5 million in grant funds.

Sixty-five successful tasks were awarded in grant amounts ranging from $3,975 to $487,500. The tasks began January 1, 2009 and run until December 31, 2010. Of the $5 million in grants awarded, $630,000 went to economically hard-hit communities to implement programs that provide alternatives to burning yard waste.

Table 2.6 shows how CPG funds were distributed in each project category.

Table 2.6
CPG Grant Funds Distribution

	Offset Cycle 1/1/09 – 12/31/10	Regular Cycle 1/1/08 – 12/31/09
Organics	$2,294,520	$1,378,603
Organics (ATB)	-	$2,382,916
Moderate Risk Waste	$574,513	$9,140,146
Waste Reduction and Recycling	$270,550	$4,956,801
Solid Waste Enforcement	$763,333	$3,126,951
Green Building	$603,520	$72,439
Other	$371,250	$8,375
LTCA Funds	**$4,877,686**	**$21,066,232**
Total LTCA Funds: $ 25,943,918		

Local Government Efforts Implementing Beyond Waste Vision Using CPG Funds

Local governments are carrying out programs that support the *Beyond Waste* vision. Examples of a number of completed and current projects are described below, highlighting efforts in Green Building, Recycling of Organics, and Reducing Threats from Small-Volume Hazardous Wastes. Local government projects that Ecology typically funds include:

- **Organics:** Local governments are helping communities reduce waste of organic materials. Many local governments are building regional composting facilities, setting up commercial and residential food waste collection programs, and offering yard waste chipping options. They are also offering discounts on mulching lawnmowers and educating citizens on options to reduce waste. These options include home composting and planting native plants. Some examples of projects include:

  - King County Solid Waste Division in partnership with suburban cities implemented a multifaceted media and education campaign to increase participation in food and organic waste curbside collection.
  - Kittitas County Solid Waste located, designed and began construction on a county-wide composting facility as a community alternative to burning.
  - The city of Quincy expanded their infrastructure to receive, process and compost wood and grass material collected from residents in Grant and Douglas counties.

- **Green Building:** "Green Building" as defined by the U.S. Green Building Council is *". . . design and construction practices that significantly reduce or eliminate the negative impact of buildings on the environment and occupants in five broad areas: sustainable site planning; conservation of materials and resources; energy efficiency and renewable energy; safeguarding water and water efficiency; and indoor air quality."* Local governments are

encouraging construction of high-performance "green" buildings. They educate builders and give public recognition to those who "build green." Local governments also help builders reuse materials and construct demonstration buildings. Examples of projects include:

- Kitsap County Public Works worked with a nonprofit agency and its architect to develop specifications to ensure their building project would qualify for a LEED certification.
- Clallam County Environmental Health Services partnered with the North Peninsula Building Association (NPBA) to increase awareness and mastery of green building concepts, resources and opportunities.

- **Waste Reduction and Recycling:** Local governments provide residential and commercial recycling, technical help to businesses, recycling collection events, education programs, onsite waste audits and recycling drop-off locations. These activities help raise Washington's recycling rate. Examples of projects include:

  - City of Carnation held yearly special recycling collection events to provide more convenient recycling options for citizens to recycle hard-to-recycle materials.
  - Garfield County Public Works improved their existing recycling facility by making changes to alleviate traffic congestion, increase accessibility and convenience.

- **Hazardous Waste:** Local governments help businesses and residents properly dispose of hazardous waste by building and maintaining hazardous waste collection facilities and conducting special collection events. Local governments also help small businesses with technical matters, promote use of less toxic products, and work with others to find solutions for problem wastes such as electronics and mercury. Examples of projects include:

  - Chelan County received funds to acquire a one-acre parcel of property for the creation of a permanent hazardous waste collection facility.
  - Thurston County Public Health and Social Services uses grant funds to support their ongoing program to conduct one-on-one site visits to help small businesses reduce and properly dispose of their hazardous wastes. This effort reduces non-point source pollution and protects wellhead areas throughout the county.
  - Lincoln County Public Works operates a household hazardous waste facility, providing free collection of household and small business hazardous waste.

- **Solid and Hazardous Waste Planning:** Local governments work in cooperation with public officials, local solid waste advisory committees and the public to develop plans for their communities. These plans outline effective approaches to reduce their solid and hazardous wastes.

- **Solid Waste Enforcement:** Local governments enforce the solid waste laws and local ordinances. They enforce them by permitting and inspecting facilities; responding to complaints about illegal dumping and improper waste handling or storage; and issuing citations.

Grants to Citizens - Public Participation Grants (PPG)

Purpose

Washington's *Chapter 170.105D RCW, Hazardous Waste Cleanup - Model Toxics Control Act* provides for a Public Participation Grant (PPG) Program. Public Participation Grants provide funding to citizen groups and not-for-profit public interest organizations. These grants encourage public involvement in monitoring cleanup of contaminated sites and pollution prevention through waste reduction/elimination. PPG can fund up to $120,000 for a two-year project and there is no requirement for matching funds. There are two types of PPG Projects:

Middle school students dissect albatross bolus to form a baseline of how much plastic the birds are ingesting, while gaining valuable hands-on scientific experience. This was one part of the Port Townsend Marine Science Center's 2008 Public Participation Grant.

1. **Contaminated Site Projects** encourage public involvement in the investigation and cleanup of contaminated sites. Examples include community oversight of the Hanford, Duwamish River, and Spokane River cleanups.

2. **Waste Management Projects** encourage public involvement to eliminate and reduce waste. Examples include:

    - Providing information on recycling and sustainability to low-income communities.
    - Providing information for homeowners about the dangers of pesticides and hazardous household products.
    - Educational campaigns to keep toxic materials out of Puget Sound.

Fiscal Year 2008

Fiscal Year 2008 saw the PPG Program manage and close out its most successful biennium to date. During the 2007-09 Biennium (fiscal years 2007-08) the program awarded and managed 68 grants worth more than $3.7 million. PPG awarded approximately $1.9 million for contaminated site and waste management education projects specifically focused on Puget Sound. PPG also awarded approximately $1.85 million for other contaminated site and waste management projects. A sample list of projects carried out in 2008 is included in Table 2.7.

Table 2.7
Sample PPG Projects for 2008

Organization	County	Purpose	Funding Awarded
North Peninsula Building Association	Clallam	Provide community outreach on green building practices and sustainable living tailored to the region.	$58,800
The Lands Council	Spokane	Educate communities on the dangers of heavy metals and PCBs in the Spokane River.	$60,000
EcoSolutions	Kitsap	Host educational workshops to reduce the amount of high-hazard pesticides, herbicides and synthetic fertilizers entering the environment.	$45,000
Walla Walla Resource Conservation Commission	Walla Walla	Provide workshops and outreach to encourage use of green building materials and methods for new construction and remodeling projects.	$28,000
Citizens for a Healthy Bay	Pierce	Protect post-Superfund health of Commencement Bay through education and citizen involvement.	$71,500
Columbia Riverkeepers	Klickitat	Protect Columbia River water quality by educating and involving students on Hanford cleanup issues and public involvement activities.	$90,000
Leavenworth Recycles	Chelan	Establish and promote recycling within the Leavenworth community through education and advertising campaigns.	$15,000
Puget Soundkeeper Alliance	King	Certify 20 new marinas representing 5,000 boaters into the water contamination prevention Clean Marina Program.	$72,000
People for Puget Sound	King	Educate citizens on the dangers of toxic chemicals to the marine ecosystem.	$60,000
Spokane Neighborhood Action Program	Spokane	Promote environmental awareness with an emphasis on economically disadvantaged neighborhoods.	$35,000
Northwest Straits Foundation	Skagit	Provide technical information to Puget Sound shoreline residents on toxics reduction, shoreline armoring, and other relevant issues.	$120,000
Port Townsend Marine Science Center	Clallam	Prevent plastics pollution in the Puget Sound area through awareness and monitoring campaigns that target both students and adults.	$54,700
San Juan Nature Institute	San Juan	Educate residents on the threats of water contaminants and form volunteer groups to monitor water quality.	$46,000

Organization	County	Purpose	Funding Awarded
Lake Roosevelt Forum	Spokane	Facilitate communication between environmental agencies and the Lake Roosevelt community in an effort to increase public participation in the lake's cleanup.	$52,500
Habitat for Humanity of Washington State	Pierce	Educate Habitat for Humanity affiliates to the Evergreen Sustainable Development Standard (RCW 39.350.080).	$83,500
Foundation for Private Enterprise Education	King	Incorporate environmental consideration into traditional business week classes given to local area high schools.	$32,600
Center for Justice	Spokane	Promote public support and involvement in Spokane River cleanup between the Upper Dam and the Idaho state line.	$77,000
Stillwaters Environmental Center	Kitsap	Provide information packets on sustainable living to Kitsap community.	$3,500
Stilly Snohomish Fisheries	Snohomish	Promote environmental stewardship through classes and field trips examining the Puget Sound watersheds.	$34,440
Sustainable Connections	Whatcom	Promote solid waste reduction and recycling through presentations and distribution of learning tools.	$30,000
Automotive Recyclers of Washington	King	Ensure auto recyclers remain in compliance with environmental regulations by holding a series of six half-day workshops.	$34,000
Lighthouse Environmental Programs	Island	Promote reduction/elimination of plastics through public presentations and outreach at two Sound Water events.	$52,600
Washington Citizens for Resource Conservation	King	Provide information on how to recycle "hard to handle" products like unwanted medicines, rechargeable batteries and fluorescent bulbs.	$27,100
International District Housing Alliance	King	Encourage waste reduction in multicultural restaurants through multilingual tools and resources.	$72,200

Partnering for the Environment through Local Planning

Local solid waste planning is the cornerstone of solid waste management in Washington State. The state Legislature asks counties and cities to make sound decisions about solid waste handling based on approved and "current" comprehensive solid waste management plans *(RCW 70.95.110(1)).*

Comprehensive plans detail all solid waste handling facilities within a county. The plans estimate the long-range needs for solid waste facilities over a 20-year period. The state intended these plans to guide a county as it lays the foundation for its solid waste system. Since 1989, the state has required counties and cities to provide detailed information on waste reduction strategies and recycling programs, along with schedules to carry out the programs. They are to maintain the plans in "current condition."

In 1985, the Legislature amended the *Hazardous Waste Management Act*, C*hapter 70.105 RCW*, to require local governments, or a combination of neighboring local governments, to prepare plans to manage moderate risk waste (MRW). By 1991, all local governments submitted local hazardous waste plans. Every local hazardous waste plan includes parts on MRW public education, MRW enforcement, household hazardous waste (HHW) collection and technical and disposal assistance to conditionally exempt small quantity generators (CESQGs).

In 1991, the Legislature enacted the *Used Oil Recycling Act*, C*hapter 70.95I RCW*, which required local governments to amend their hazardous waste plans to include used motor oil from households.

Since their hazardous waste plans were completed, some counties have revised them. Some have combined their solid waste and hazardous waste plans. One recommendation of the *Beyond Waste Plan* is to fully implement local hazardous waste plans.

Ecology is current updating the *Solid Waste Planning Guidelines* and the *Hazardous Waste Planning Guidelines.* Ecology sent out both sets of guidelines for public review in November 2009 and will finalize them in early 2010. When completed, both documents and other planning information will be available at http://www.ecy.wa.gov/programs/swfa/localplan.html.

Ecology provides technical assistance to local governments as they prepare and carry out their plans, and also approves them. Table 2.8 lists local solid waste plans and hazardous waste plans for each county and one city (Seattle) that do individual plans.

Table 2.8
Current Status of Solid & Hazardous Waste Plans
in Washington as of December 2009

County	SW Plan Last Approved	WR/R Goal	HW Plan Last Approved	Combined Plans? (Yes/No)	Comments
Adams	2005	50% WR/R BY 2012	1992	No	Comprehensive Solid Waste Management Plan (CSWMP) updated April 2005. Hazardous Waste Plan (HW) is joint with Adams, Lincoln and Grant Counties.
Asotin	1998	26% by 1997	1993	No	CSWMP update began January 2007. Resolved status of agreements with Lewiston, Idaho. Preliminary Plan in process

County	SW Plan Last Approved	WR/R Goal	HW Plan Last Approved	Combined Plans? (Yes/No)	Comments
Benton	2007	50% by 2020	1991	Yes	CSWMP approved July 2007
Chelan	2007	25% recycling rate by 2010 5% reduction from the current waste stream by 2010	2007	Yes	CSWMP updated April 2007.
Clallam	2007	30% in next 5 years, 40% long term goal	1991	No	No plans to update HW plan.
Clark	2008	50% WRR by 1995	2002	Yes	CSWMP approved.
Columbia	2003	20% WR/R	1991	No	CSWMP approved. HW Plan being split from joint plan with Walla Walla and written as new standalone for Columbia County. Consultant hired, SWAC reconstituted. Preliminary plan update in process.
Cowlitz	2008	50% WRR by 1995	1993	Yes - See comments	CSWMP approved. Scheduled to update the hazardous waste plan as a chapter within the CSWMP during 2010.
Douglas	2002	25% by 2008	2002	Yes	The CSWMP was to be updated in 2007. The county received preliminary comments from Ecology and UTC. Preliminary draft expected early 2010.
Ferry	1993	35% WR/R by 1995 50% WR/R by 2013	1994	No	SWAC reviewing drafts of plan update. Final plan adoption expected by mid-year 2010.
Franklin	1994	35% R by 1995 5% WR by 1998	1993	No	Preliminary plan reviewed. Adoption of final plan expected in first quarter 2010.
Garfield	2008	26% WR/R by 1997	1992	No	CSWMP approved September 2008.
Grays Harbor	2001	50% WRR by 1995	1991	No	Requested Ecology to do an informal review of their draft plan, expect a final draft by January 2009. As of 1/2010: no update. Will start on HW plan after completing SW plan.
Island	2008	Assist the State in achieving its goal of 50%	2008	Yes	Plan approved April 1, 2008.

County	SW Plan Last Approved	WR/R Goal	HW Plan Last Approved	Combined Plans? (Yes/No)	Comments
Jefferson	2007	At 46.1% using state definition, goal of 50%	1991	No	Considering a review of HW plan.
King	2002	50% residential by 2006 43% nonresidential by 2006	1997	No	Latest CSWMP calls for targets to be evaluated every 3 years as new data becomes available. CSWMP out for public comment. Because the City of Seattle and King County have independent CSWMPs, the HW plan remains independent. HW draft plan out for public comment December 2009.
King - Seattle	2005	Recycle or compost: 60% of all waste generated in Seattle by 2012; 70% by 2025	1997	No	Because the City of Seattle and King County have independent CSWMPs, the HW plan remains independent. HW draft plan out for public comment December 2009.
Kitsap	2000	Supports the state goal of reaching 50% recycling.	2000	Yes	CSWMP includes an update to the 1990 HW Plan. The text is fully integrated into the 2000 CSWMP. CSWMP revisions began in 2007. Expected completion early 2010.
Kittitas	2003	50% by 2008	2003	Yes	Plan is currently under revision. Preliminary draft expected early 2010.
Klickitat	2000	50% diversion	2000	Yes	Will begin work on plan amendment or revision in 2010.
Lewis	2008	18% WRR by 1995, no goal	2000	Yes	Scheduled to update the hazardous waste plan within the CSWMP during 2010.
Lincoln	1999	35% WR/R by 1997	1992	No	Preliminary plan under review.
Mason	2007	Mentions state goal of 50% by 2007	1991	No	Currently in review to update HW plan; plan will continue to be standalone.
Okanogan	2006	Supports the state goal of reaching 50% recycling	2006	Yes	Plan is currently in the early stages of revision.
Pacific	2007	At 14.4% in 2005, goal to reach 25%	1990 – 2000 Operations Plan	No	No plans to update HW plan.

County	SW Plan Last Approved	WR/R Goal	HW Plan Last Approved	Combined Plans? (Yes/No)	Comments
Pend Oreille	2002	45% WR/R by 2015	1993	No	Plan currently undergoing preliminary draft, expected by end of 2009.
Pierce	2008	50% WRR by 1995	1990	No	Updating a separate HW plan during 2009/2010.
San Juan	1996	50% by 1995	1991 (with 1998 update that includes used oil plan)	No	Wanting to update CSWMP, but just had staff turnover. Hope to begin in early 2010. Considering combining the SW and HW plans.
Skagit	2005 (amended 2008)	50% diversion	1992	No	Currently getting all cities aboard for an updated CSWMP.
Skamania	2002	40% WRR by 1998 50% long range goal	2001	Yes	Started updating CSWMP April 2006. Scheduled to complete update of CSWMP with hazardous waste chapter during 2010.
Snohomish	2001	50% recycling goal to be reached approximately 2008	1993	Partially	The 2001 CSWMP is intended to begin consolidation of the HW Plan, to update but not replace it. The CSWMP was updated in 2004 to include replacement of two solid waste facilities and include the city of Everett under the county's solid waste system. CSWMP and HW Plan revisions beginning in 2009, expected completion 2010.
Spokane	1998	50% recycling by 2008	1993	No	Final CSWMP draft adopted by County Commissioners and circulated to local governments for adoption. Expect completion by end of first quarter 2010.
Stevens	2008	36% WR/R by 2012	1993	No	CSWMP completed and approved in July 2008.
Thurston	2001	Increase recycling rate by 2.5% by 2005	1993	No	Preliminary draft expected by March 2010. Currently reviewing HW plan.
Wahkiakum	2008	20% WRR by 1996	2001	No	Plan approved 2008. Will not have a county hazardous waste plan. Wahkiakum service is included in the Cowlitz County plan.

County	SW Plan Last Approved	WR/R Goal	HW Plan Last Approved	Combined Plans? (Yes/No)	Comments
Walla Walla	1994	40% by 2002	1991	No	City of Walla Walla by inter local agreement assumed responsibility for preparation of CSWMP. New staff hired. SWAC reconstituted. Consultant RFQ under preparation. Waiting for new CPG funding cycle to qualify for planning grant.
Whatcom	1999	50% diversion	1991	No - Soon.	County currently updating CSWMP. Received draft in November 2008, and is almost in final form. The City of Bellingham is no longer the lead on MRW, and the county has combined SW and HW plans.
Whitman	2006	40% WR/R by 2001	1992	No	Plan approved and current. Plan revisions currently under consideration.
Yakima	2003	35% by 2005 40% by 2007	2009	Yes	Preliminary draft submitted for 2009 plan. Approval expected in early 2010.

Partnering for the Environment through Outreach, Assistance and Information Sharing

Washington State Solid Waste Information Clearinghouse

In June 2009, Ecology completed the final scoped phase of the web-based "Washington State Solid Waste Information Clearinghouse" (https://fortress.wa.gov/ecy/swicpublic/). The final phase included adding a Training/Conference Calendar and a Classified Ads section. Ecology also addressed user comments and feedback in 2009. Ecology will continue to maintain and market the site to ensure it becomes the resource local governments envisioned nearly a decade ago.

A committee of several local government staff worked with Ecology to plan and develop the information-sharing website. The Information Clearinghouse allows CPG recipients to report work accomplished online and share lessons learned with others statewide. This helps all recipients to strengthen their programs. The site also contains information on PPG projects. The system will collect and maintain information about county and city programs, and facilitate sharing tools and resources.

The main audience for this site is local government: solid and hazardous waste and health department staff. The site became accessible to the public in late 2008. The Information Clearinghouse includes:

- State Profile
- County and City Profiles
- Outreach Materials
- Calendar of Events
- Classified Ads

To learn more about the Information Clearinghouse, contact Shannon McClelland, Project Coordinator, at 360-407-6398 or Shannon.McClelland@ecy.wa.gov.

Landfill and Incinerator Operator Certification Programs

Washington State law requires solid waste landfills and incinerators to have certified operators onsite at all times (*Chapter 70.95D RCW, Solid Waste Incinerator and Landfill Operators*). The Legislature created the Landfill and Incinerator Operator Certification program in 1989 through the "*Waste Not Washington Act."* To carry out the law, the state adopted a rule in June 1991 (*Chapter 173-300 WAC, Certification of Operators of Solid Waste Incinerators and Landfill Facilities*).

The requirement to have certified operators onsite at all times apply to the following types of facilities:

- Municipal solid waste landfills.
- Inert landfills.
- Limited purpose landfills.
- All incinerators that burn solid waste.

The law also requires any person officially inspecting these solid waste facilities to be a certified operator.

In February 2004, Ecology reached an agreement with the Solid Waste Association of North America (SWANA) to conduct training, testing, continuing education, recertification and program administration for landfill certification. Annually SWANA provides Ecology with a list of currently certified persons. Ecology notifies interested parties of upcoming training and testing. The incinerator certification program continues to be Ecology's responsibility.

In 2008, there were 169 active certifications for landfill operators and 61active certifications for incinerator operators.

Recognizing Waste Reduction and Recycling Efforts: Terry Husseman Sustainable Public School Award Program

Ecology's award program recognizes Washington's kindergarten through 12th grade public schools for developing and managing waste reduction, recycling, environmental education and sustainability programs. Schools are selected for the creative features of their programs, purchasing practices and overall success at reducing waste and increasing recycling. The program rewards schools for developing innovative environmental curriculum or operating longstanding programs that inspire a sense of environmental stewardship in students. Also, schools that submit outstanding plans for future programs will receive funds to assist with startup costs.

On May 21, 2009 Polly Zehm, Ecology's Deputy Director, and Laurie Davies, W2R Program Manager, presented $52,800 in cash awards to 65 schools across the state. About 150 schoolchildren filled the auditorium of the Department of Social and Health Services headquarters building in Olympia to celebrate their schools' exceptional efforts to conserve resources, reduce waste and preserve the environment.

Guests and other visitors enjoyed the educational displays and activities hosted by the Ecology Youth Corps, Litter Program and Ecology Composting Program. After enjoying organic refreshments, guests could contribute their leftovers to the Ecology composting bin.

This was the first year private schools were eligible to compete in the environmental awards program. Of the 67 applications received, 12 were from private schools and 11 received awards.

There are three award categories:

1. The *Seed Award* assists schools with costs of starting waste reduction, recycling and sustainability programs. In 2009, 29 schools received awards ranging from $300 to $2,400.
2. The *Sustainable School Award* helps schools continue and expand ongoing programs that focus on waste reduction, recycling and sustainability. In 2009, 30 schools received awards ranging from $200 to $500.
3. The *Environmental Curriculum Award* encourages schools to develop curricula to teach environmental awareness in Washington schools. It should introduce students, teachers, staff and administrators to concepts of sustainability including social, economic and environmental relevance. In 2009, six schools each received awards ranging from $500 to $1,000.

The awards for creating an original curriculum went to programs that have children take part in day-to-day operations of the school's recycling program and experience the social issues involved to run it. Other awards help fledgling programs with startup costs, and some awards encourage established programs to continue operating.

Many of the programs add composting and green purchasing plans to the more common recycling activities. Some schools help their communities by creating recycling and compost centers, mapping shorelines and providing the maps to businesses and citizens, and planting useful wetland areas.

Table 2.9 lists the 2008-09 winners of the Terry Husseman Sustainable Public School Awards.

Table 2.9
2008-09 Terry Husseman Sustainable Public School Award Recipients

School	School District	County	Award Amount
Seed Awards			
Wilkes Elementary	Bainbridge Island	Kitsap	$505
Highlands Middle	Kennewick	Benton	$1000
Washington Elementary	Auburn	King	$1420
Coupeville Juvenile Detention Center	Coupeville	Island	$920
Centennial Middle	Snohomish #201	Snohomish	$900
Okanogan Detention	Okanogan	Okanogan	$793
Olympia High	Olympia	Thurston	$1000
Voyager, Artondale, Purdy Elementaries	Peninsula	Pierce	$2000
Columbia Elementary	Bellingham	Whatcom	$2365
Community School of West Seattle	NA	King	$2120
Maple Grove Middle	Battle Ground	Clark	$800
Neah Bay Elementary	Cape Flattery	Clallam	$1200
John Sager Middle	College Place	Walla Walla	$2200
Northshore Christian Academy	NA	Snohomish	$300
Lakes High School	Clover Park	Pierce	$865
St. Alphonsus Catholic School	Archdiocese of Seattle	King	$1500
Giddens School	Seattle	King	$1015
Gonzaga Preparatory School	Spokane #81	Spokane	$1630
Pioneer Primary	Pioneer	Mason	$2487
Cape Horn-Skye Elementary	Washougal	Skamania	$1302
Prairie High	Battle Ground	Clark	$2000
Montessori Children's House	Lake Washington	King	$1045
Roxhill Elementary	Seattle	King	$490
Somerset Elementary	Bellevue	King	$2000
North Hill Elementary	Highline	King	$1000
Skyridge Middle	Camas	Clark	$1700
Custer Elementary	Ferndale	Whatcom	$250
David Wolfe Elementary	North Kitsap	Kitsap	$2400
Kent Phoenix Academy	Kent #415	King	$1650
Sustainable School Awards			
Washington Elementary	Auburn	King	$500
Garfield Palouse Middle	Garfield	Whitman	$200
Gatewood Elementary	Seattle	King	$300
Curtis High	University Place	Pierce	$300
Wilkes Elementary	Bainbridge Island	Kitsap	$200
Sehome High	Bellingham	Whatcom	$200
Ten Mile Creek Elementary	Meridian #505	Whatcom	$300
Secondary Academy for Success	Northshore	King	$500
Liberty Lake Elementary	Central Valley	Spokane	$200

School	School District	County	Award Amount
Nooksack Valley High	Nooksack Valley	Whatcom	$500
St. Edward School	Archdiocese of Seattle	King	$300
Montlake Elementary	Seattle	King	$300
Washington-Hoyt Elementary	Tacoma	Pierce	$300
Lynden High	Lynden	Whatcom	$200
Mount Baker Junior/Senior High School	Mt. Baker	Whatcom	$500
Acme Elementary School	Mt. Baker	Whatcom	$500
Harmony Elementary School	Mt. Baker	Whatcom	$500
Kendall Elementary School	Mt. Baker	Whatcom	$500
Immaculate Conception Regional School	Archdiocese of Seattle	Skagit	$300
Edison Elementary	Burlington-Edison	Skagit	$300
New Market Skills Center	Tumwater	Thurston	$500
Aberdeen High	ASD%	Grays Harbor	$300
St. Joseph School	Archdiocese of Seattle	King	$300
White Pass Jr/Sr	White Pass	Lewis	$200
Montessori Children's House	Lake Washington	King	$300
Tenino High	Tenino	Thurston	$200
Wedgwood Elementary	Seattle	King	$500
Central Valley Kindergarten	Central Valley	Spokane	$300
Explorer Community School	Lake Washington	King	$300
Sandburg & Discovery Elementaries	Lake Washington	King	$200
Environmental Curriculum			
Explorer West Middle	Seattle	King	$500
Eastside Preparatory School	Lake Washington	King	$1000
Timber Ridge Alternative High	Mt. Baker	Whatcom	$1000
Global Connections High	Highline	King	$500
New Market Skills Center	Tumwater	Thurston	$500
West Valley City School	West Valley #363	Spokane	$500

For more information, visit the Terry Husseman Sustainable Schools Awards site at http://www.ecy.wa.gov/programs/swfa/terryhusseman.html.

The Closed-Loop Scoop Newsletter

The W2R Program publishes a quarterly newsletter called *The Closed-Loop Scoop*. The newsletter shares important information among public works departments, health districts, private recyclers, Ecology, and other clients and stakeholders. The editor encourages all interested parties to contribute articles to update readers on legislative matters, solid waste program successes and ideas, and upcoming meetings. More than 700 individuals and organizations across the state subscribe. Many parties opt to receive their copy electronically. *The Closed-Loop Scoop* is available on the Ecology W2R Program Publications and Forms website at http://www.ecy.wa.gov/programs/swfa/nav/publication.html.

Recycling Information Line

W2R operates a toll-free information line to help citizens find ways to reduce waste and recycle. In 2009, staff helped more than 16,000 callers on the 1-800-RECYCLE hotline. While many callers just want to know where and how to recycle common items, others have more complex questions.

Information line operators use a database to direct callers to locations for safe disposal of household hazardous waste, in addition to recycling facilities across the state. Information on a wide variety of recyclable materials including construction, demolition and land clearing debris, used motor oil, and electronics is available. The information line also lists companies that offer commercial pickup for business recycling and residential curbside haulers.

While many local governments operate information lines in their own areas, the statewide information line continues to serve as a first contact for many. Ecology's statewide hotline can also provide callers with information on specialized recycling opportunities including one-time collection events, and targeted waste streams like mercury-containing items. Participating collection sites for the new E-Cycle Washington (electronics recycling) Program were added to the database. Hotline activity has greatly increased since the program began on January 1, 2009.

Recycling information from the database is available on the information line's website at http://1800recycle.wa.gov. Ecology staff maintains the database by periodically contacting all recyclers to determine commodities handled, location (or areas served) and hours. This website also provides links to other online databases and material exchanges, along with local government and recycling organization websites.

The 1-800-RECYCLE website also includes a web page developed for kids of all ages. The Kids Page at http://www.ecy.wa.gov/programs/swfa/kidspage/ has clever links to other environmental education sites and fun environmental games to play. It also has interesting trivia facts on different recyclable materials.

Chapter 3: Statewide Litter Prevention & Cleanup Programs

Chapter 70.93 RCW, *the Waste Reduction, Recycling, and Model Litter Control Act*, makes Ecology the lead agency to manage statewide litter programs. Work in 2009 focused on increasing awareness of and compliance with Washington's secured load laws, and promotion of the Litter Hotline. The W2R Program carries out the following core elements of the statewide litter program:

- Helping to coordinate litter control and prevention activities.
- Carrying out the litter prevention campaign.
- Conducting periodic statewide litter surveys.
- Managing allocations from the Waste Reduction, Recycling and Model Litter Control Account.
- Running Ecology Youth Corps litter cleanup crews (EYC).
- Managing the Community Litter Cleanup Program (CLCP).
- Strengthening partnerships with other state agencies and local governments.

Litter Prevention Campaign

The *Litter and it Will Hurt* campaign is the statewide social marketing campaign aimed at reducing litter on Washington roadways. The campaign has used multiple strategies over several years to raise awareness, alter beliefs and ultimately change behaviors about litter. Key elements of the campaign include:

- Television, radio, and outdoor (billboard) media.
- A litter hotline.
- A roadway signage program.
- A website.
- Distribution of litterbags and campaign materials.
- Enforcement activities.

The *Litter and it Will Hurt* campaign is based on ongoing research on why people litter. The research indicates strong messages about littering fines and penalties are the most effective deterrent to litter. The *Litter and it Will Hurt* slogan premiered in 2002, and campaign materials featured the fines for littering and the Litter Hotline number.

In 2006, Ecology completed a thorough campaign evaluation. The evaluation confirmed the campaign's messages were having a positive impact on the public's awareness of litter issues, attitudes toward littering behavior and most importantly, the amount of litter in the state. The evaluation led to a new three-year campaign plan to focus the campaign on enforcement and potentially dangerous litter, especially unsecured loads. Work to implement the new plan continued from 2007-09.

Secured Load Materials and Website

In the last three years, Ecology spent significant time promoting the secured load issue: the need to properly secure all vehicle loads to prevent escape of debris. A telephone survey of Washington residents shows that people have become more aware of the issue. After several weeks of advertising, awareness rose to 51% in June 2008, compared to 38% in March 2007. Awareness went down to 44% in June 2009.

Feedback indicated people still had many questions about what "secured" means and exactly "how to" secure a load. Ecology produced a couple of secured load videos and companion brochures. The 2006 *Secure Your Load* video explains the importance of securing your load. The 2007 *Tips for Secured Loads* video shows how to properly secure your load. Both videos have companion brochures. To see the videos and brochures, please visit http://www.ecy.wa.gov/programs/swfa/litter/secure.html .

The secured load webpage also has a list of Washington counties with secured load ordinances, and other states with secured load laws.

Enforcement Activities

For a fifth year, Ecology collaborated with law enforcement to conduct litter emphasis patrols. In April 2009, the Clark County Sheriff's Office and the Clark and King County Washington State Patrol (WSP) district conducted unsecured load emphasis patrols. The emphasis patrols continue to be an efficient way to have law enforcement focus on litter. In 8 weeks, law enforcement officers logged 532 hours and made 515 educational contacts resulting in 195 litter citations.

To promote the emphasis patrols in Clark and King Counties, Ecology and WSP staff did interviews with Portland and Seattle radio stations. Staff successfully emphasized the importance of properly securing loads during the time of spring cleaning and college students moving out.

Litter Hotline Program

The Litter Hotline is a toll-free phone line (866-LITTER-1) available for the public to report littering incidents they witness, such as a person throwing something out the window of a vehicle or an item falling from an unsecured load.

Ecology operates the Litter Hotline in cooperation with WSP and the Washington State Department of Licensing. WSP sends letters to registered owners of vehicles reported via the hotline to notify them of reported incidents and littering fines. . The hotline continues to be a key component of the campaign.

In May 2009, Ecology produced a Litter Hotline jingle and paid for advertising on radio stations statewide. As a result of the jingle, the Litter Hotline received its highest call volume: 4,111 calls in June 2009. From January through October 2009, the hotline logged 19,592 calls. This is 2,100 more than January to October in 2007, the year when the hotline recorded the second highest volume of calls. Online reports are steadily increasing. In 2008, there were 1,591 online reports. As of October 2009, Ecology has received 1,889.

Ecology evaluated the effectiveness of the Litter Hotline program by analyzing responses to an anonymous survey of those who receive hotline letters. Since the 2006 evaluation of the hotline, there was a 5% increase in those who thought they would be caught and fined by law enforcement (68% in 2006 and 73% in 2009). There was no increase in those who said they would not litter in the future (92% in 2006 and 92% in 2009). There was a decrease in those who thought the hotline program was effective as an educational tool and litter preventative (78% in 2006 and 68% in 2009).

Litter Program Fund Allocation

The Waste Reduction, Recycling and Model Litter Control Account (WRRMLCA) supports a variety of programs. The legislation (Chapter 70.93 RCW) directs fund allocation as follows:

- 20% to local government programs
- 30% to waste reduction and recycling efforts within Ecology
- 50% to litter cleanup and prevention efforts, as well as administrative costs.

Besides providing monies for the Ecology Youth Corps (EYC), the 50% dedicated to cleanup efforts also pays for litter activities carried out by other state agencies. Funding for the litter prevention campaign, litter staff and litter survey also comes from the 50%.

For this biennium (July 2009 – June 2011), there was a $4.4 million cut to the Litter Account. The final budget from the WRRMLCA was $14.55 million divided as follows:

- $2.91 million to Local Government Funding Programs
- $5.13 million to Waste Reduction & Recycling Activities
- $6.51 million to Litter Cleanup & Prevention

Funding cuts will result in more litter created and less litter picked up. Some specific results of the cuts will be:

- Hire 100 fewer youth in the summer statewide. Hire fewer median crews during spring and fall. Crews will also be smaller and work a shorter season due to budget restrictions.
- Suspend most of the Litter and it will Hurt campaign. Only the toll-free hotline, roadway signs and the Ecology-hosted website will remain to discourage state residents from littering by providing the public a way to report it.
- WSP will still enforce state litter laws, but there won't be any Ecology funded emphasis patrols. Many local governments will continue to educate the public about the need to properly secure vehicle loads.
- Reduce funding to other state agencies for their litter pickup efforts.
- Reduce Ecology's program by four positions, including the litter program's statewide coordinator position.

Ecology Youth Corps

2008 marked the 33rd year of operation for the Ecology Youth Corps (EYC). The Ecology Youth Corps website at www.ecy.wa.gov/programs/swfa/eyc/index.html includes regional hiring information, applications and photos of the EYC in action.

RCW 70.93.020 requires creation of "*jobs for employment of youth in litter cleanup and related activities.*" The EYC operates two types of crews: youth crews and median crews. Youth crews operate in the summer months (June - August). Most median crew activity occurs in the spring and fall, with reduced median crew activity in the summer.

Youth crews consist of 14 - 17 year olds. They mostly clean shoulder areas and interchanges of major state routes and interstates. Additional work occurs on county roads, state and county parks, recreational lands, and other public areas. More than 2,000 youths from across the state apply annually for approximately 300 positions. Youth crews work two four-week summer sessions with a complete turnover of crews occurring mid-summer.

Median crews consist of young adults 18 years and older. They clean challenging areas of roadways, including medians, complex ramps and interchanges, and exceptionally high-traffic areas.

In 2008, EYC crews collected litter on roadways and public land in the following counties:

- **Central Region (CRO)**: Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, and Yakima. **Eastern Region (ERO)**: Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, and Whitman.
- **Northwest Region (NWRO)**: King, Kitsap, Skagit, Snohomish, and Whatcom.
- **Southwest Region (SWRO)**: Clark, Cowlitz, Grays Harbor, Lewis, Mason, Pierce, and Thurston.

The EYC also ensures youth learn about broader issues of waste reduction, recycling, litter control, composting and other environmental concerns such as global warming, air and water quality, salmon recovery, and principles of sustainability. Crews may take field trips to a landfill, a wastewater treatment plant, an estuary, a "green building," or a local organic farm as part of their work experience.

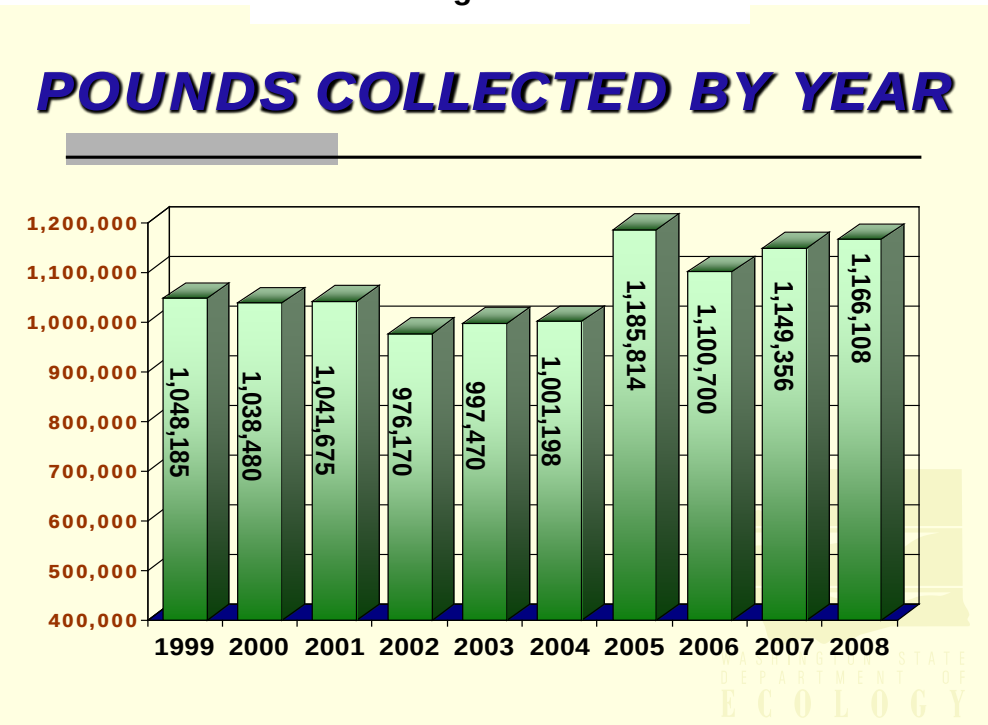
Table 3.1 summarizes EYC work for 2008.

Table 3.1
Ecology Youth Corps Program Outputs
January 1 – December 31, 2008

Total Hours Worked (Supervisor + Crew)	78,216
Total Pounds Collected (Litter + Illegal Dump + Recycled)	1,165,918
Miles	5,247
Acres	475
Number of Illegal Dumps Cleaned	150

Figure 3.1 shows the amount of litter the EYC has picked up from 1999 – 2008.

Figure 3.1



Ecology continues to operate the EYC in partnership with the Washington State Department of Transportation (WSDOT). WSDOT hires the crew supervisors, and Ecology manages all other aspects of the program. The interagency agreement covering this arrangement between Ecology and WSDOT expires in June 2011.

Litter Survey

Ecology conducts a litter survey every five years to measure the amount and types of litter around the state. The litter survey is a year-long field research project with EYC crews accomplishing a majority of the fieldwork. In the summer of 2008, Ecology staff completed a sampling plan that includes 120 randomly selected roadway sites. The sampling plan includes interstate, state route, county road and highway interchange sites in both urban and nonurban areas.

Ecology cancelled the 2008-09 Litter Survey because of budget cuts. It may resume when there is enough funding in the budget. Information on previous litter studies are on the litter webpage at http://www.ecy.wa.gov/programs/swfa/litter/public.html#a1.

Community Litter Cleanup Program

In 1998, Ecology created the Community Litter Cleanup Program (CLCP) with the goal of providing financial assistance to local governments to combat litter and illegal dumps on roadways and other public land. CLCP contracts are written on a biennial schedule (two-year period from July-June) and a key component of statewide litter and illegal dump cleanup programs.

Most local governments participating in CLCP use in-custody (jail) or community service crews to do litter cleanup work. The use of these crews provides significant savings to local jails and returns labor value to communities that participate. Several jurisdictions also use volunteer groups to assist in cleanup and or educational efforts. For the budget cycle that began in July 2009, Ecology awarded $2.685 million in CLCP funding. All 39 counties applied for and received funds.

Ecology published new guidelines for CLCP in the fall of 2008. Ecology did not change the three-part formula used in previous cycles to determine the funding amount awarded to each applicant: 40% of the total is equally divided among applicants to ensure minimum funding for a basic program in each jurisdiction; 37.5% of the total is split based on geographic and demographic factors (area, population, miles of road and miles driven) to ensure jurisdictions with higher populations or more road miles receive more funds; and 22.5% is allocated based on

additional needs criteria, based on the efficiency and effectiveness of individual programs. Activities completed through CLCP are responsible for over half of all miles cleaned and pounds collected with state litter funding.

Table 3.2 highlights the work accomplished in 2008. The2.8 million pounds picked up account for 56% of the total reported to Ecology for the year.

Table 3.2
Community Litter Cleanup Program Outputs
January 1 – December 31, 2008

Total Hours Worked (Supervisor + Crew)	175,452
Total Pounds Collected (Litter + Illegal Dump + Recycled)	2,849,326
Miles	25,154
Acres	3,712
Number of Illegal Dumps Cleaned	3,384

Litter Cleanup by Other State Agencies

The state agency litter workgroup continues to meet once or twice a year to review activities, improve coordination and discuss funding. The workgroup is comprised of representatives from the departments of Corrections, Natural Resources, Transportation, Fish and Wildlife, Ecology, and the Parks and Recreation Commission. Using a consensus process, the workgroup negotiates the amount each agency receives through interagency agreements to fund litter and illegal dump activities.

All workgroup agencies received a decrease in funding for the 2009-11 Biennium. A majority of it went toward litter pickup and addition of a new correctional crew. Table 3.3 shows the budget for the current biennium.

Table 3.3
Ecology Interagency Agreements for Litter Activities
July 1, 2009 – June 30, 2011

Department of Corrections	$620,000
Department of Fish and Wildlife	20,000
Department of Natural Resources	415,000
Department of Transportation	85,000
Parks and Recreation Commission	40,000
Total	$1,180,000

Parks and Recreation Commission

The Parks and Recreation Commission (Parks) traditionally uses litter funds for waste reduction and recycling efforts, as well as litter and illegal dump cleanup. Park rangers, park users and volunteers do most litter collection. For information on Park's accomplishments, see the "Parks" section on the litter website at http://www.ecy.wa.gov/programs/swfa/litter/who.html#a7.

For the 2009-11 Biennium, Parks litter funding was reduced by $35,000, bringing the current interagency agreement total to $40,000. Parks has continued to clean up litter and illegal dumps, and increase recycling in parks statewide. Their limited funds support enforcement projects such as purchase of surveillance cameras and additional signage.

Any law enforcement officer can enforce litter laws, but it is often not a priority for natural resource agencies. This additional funding provides focus for Parks law enforcement staff.

Department of Corrections

The Department of Corrections (DOC) receives funding through Ecology to run community based correctional litter crews on state roads, state lands, and in local communities. For the 2009-11 Biennium, DOC's litter funding was reduced by $5,000, bringing the current interagency agreement total to $620,000. The funds support crews in Seattle, Tacoma, Monroe, Wenatchee, Ellensburg, Yakima, the Tri-Cities, Moses Lake, Spokane and Walla Walla. Table 3.4 summarizes DOC's litter crew activity in 2008.

Table 3.4
Department of Corrections Litter Removal Activity
January 1 – December 31, 2008

Total Hours Worked (Supervisor + Crew)	42,206
Total Pounds Collected (Litter + Illegal Dump + Recycled)	710,112
Miles	2,028
Acres	841
Number of Illegal Dumps Cleaned	573

Department of Natural Resources

The Department of Natural Resources Camps Program, in partnership with DOC, puts offender crews to work on state lands. As illustrated by the data in Table 3.5, this program has considerable impact on litter cleanup and illegally dumped materials in state-owned forests. For the 2009-11 Biennium, DNR's litter funding was reduced by $105,000, bringing the current interagency agreement total to $415,000. Table 3.5 summarizes DNR crew activity in 2008.

Table 3.5
Department of Natural Resources Litter Removal Activity
January 1 – December 31, 2008

Total Hours Worked (Supervisor + Crew)	17,975
Total Pounds Collected (Litter + Illegal Dump + Recycled)	350,094
Miles	1,331
Acres	151
Number of Illegal Dumps Cleaned	403

Department of Transportation

The Department of Transportation (WSDOT) is responsible for picking up litter along state roads, including bags of litter collected by Adopt-a-Highway groups, the Ecology Youth Corps and DOC. The old interagency agreement between Ecology and WSDOT provides $85,000 to offset costs of litterbag disposal. A new 2009-11 interagency agreement between Ecology and WSDOT will provide $85,000 to help promote the Adopt-A-Highway Program and recruit participants.

In 2008, WSDOT crews removed and disposed of 23,033 cubic yards of litter from state roadways (roughly 172,748 pounds).

Looking Ahead

This biennium will be challenging with a limited budget. Plans for the Litter Program in 2010 include promotion of the Litter Hotline and coordinating statewide litter pickup programs. Coordination of the litter pickup effort by the various state agencies needs to continue to be strong to achieve the greatest efficiencies.

Chapter 4: Solid Waste Generation, Disposal & Recycling in Washington State

One of the basic aspects of carrying out the *Beyond Waste Plan* is to prevent wastes in the first place, rather than manage them at the end of the pipe. Recognizing we will continue to generate many wastes, the *Beyond Waste Plan* also calls for valuing these materials as resources, and moving them into closed-loop recycling systems and other diversion options instead of disposing of them.

To measure the progress of *Beyond Waste*, a record of the amount and types of waste generated is essential. To determine the amount of waste generated in Washington State, Ecology uses the amount of materials disposed each year, plus the amount of materials recycled and diverted from disposal. The way we calculate this number is changing as we gain more understanding of the waste stream and get better information on how wastes are managed.

The long-term trend in the total amount of waste generated is climbing, although recent drops in 2006 and 2007, and an even bigger drop in 2008 may indicate we are on our way to improving this trend.

Washington State's population has continued to grow since Ecology began to track disposal and recycling. Population growth rates in Washington have averaged 1.9% per year from 1988 to 2008, with the total population increasing by almost two million during that period.[1]

With an increasing population often comes an increase in waste generated, and this has certainly been true for the long-term trend in Washington. However, the trend in the amount of waste disposed of, as well as the amount recycled and diverted, has increased faster than the population trend, adding up to a steep rise in waste generation in the last two decades (see Figure 4.1).

Since 1994, when Ecology began measuring the disposed solid waste stream by tracking annual reports from disposal facilities such as landfills and incinerators, the amount of waste generated per person has grown at an average annual rate of 4%. The total amount of waste generated annually since 1994 has increased by more than eight million tons.

Since 1994, Washington citizens have generated more than 178 million tons of solid waste, or about 30% more than the amount of solid waste discarded in the United States in one year. This is roughly equivalent to disposing of 90 million cars in a landfill.[2]

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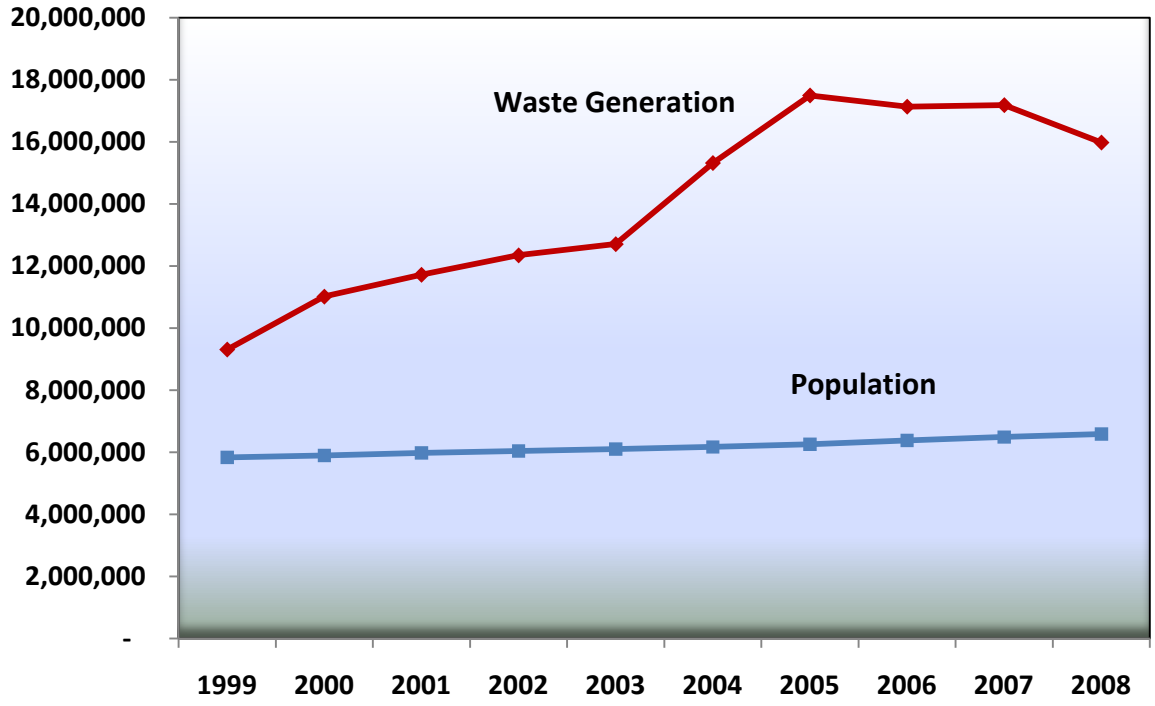
[1] Population figures from Office of Financial Management at http://www.ofm.wa.gov/

[2] U.S. Environmental Protection Agency: http://www.epa.gov/otaq/.

Figure 4.1
Solid Waste Generation and Population Growth in Washington



Waste Generated by Washington "Citizens" [3]

Determining the Amount of Waste Generated

Total waste generation is determined by adding the amount of waste disposed to the amount of material recycled and diverted from disposal. It is easy to see why materials we dispose of in landfills and incinerators are considered part of our "waste." However, materials we separate from disposal for recycling, or some other useful activity other than disposal are also part of our total waste generation. These materials enter the stream of discarded materials that will not be used again in their original form, hence the term "waste," even though these materials will be put toward better uses than landfilling.

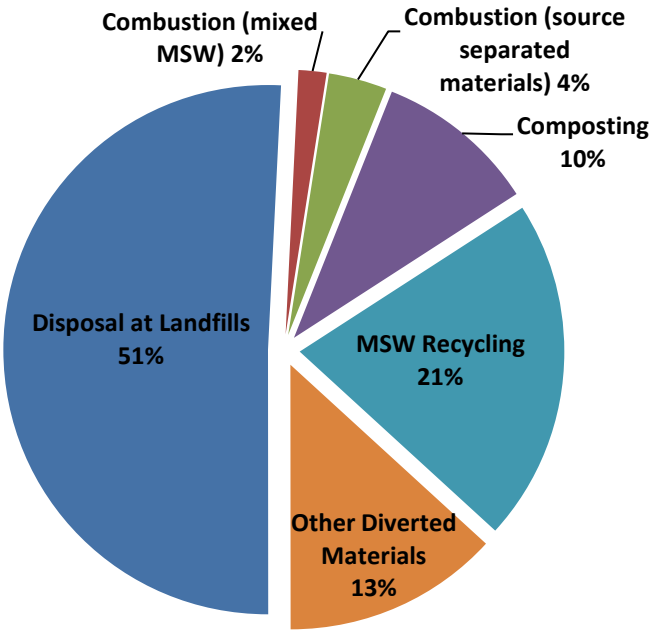
Ecology is currently measuring six types of final disposal and waste management methods:

1. Disposal in landfills.
2. Combustion of mixed municipal solid waste (MSW).
3. Combustion of source separated material (burning for energy).
4. Composting.
5. Recycling (transforming material into the same or other products – MSW only).
6. Other Diversion (includes recycling of non-MSW materials and reuse).

[3] "Citizens" as used in this chapter refers not only to each person in the state, but includes business, industries, manufacturers and other activities that produce solid wastes.

Figure 4.2 shows a breakdown of the statewide waste management methods in 2008.

Figure 4.2
Waste Management Methods 2008



Some material types have one unique final use, such as aluminum cans that are recycled rather than composted or burned for energy. However, there is often more than one final use for a material reported as "recycled" or "diverted," depending on market shifts and demand. For example, some wood collected for recycling may be used to make composite lumber. Some may be composted and some burned for energy recovery. In 2006, Ecology began asking for a more detailed breakdown of these uses for all materials reported. As recyclers develop systems to track this type of information, data quality is improving.

The largest measured part of Washington's waste generation number is the disposed waste stream. This number has increased over the long-term, but decreased in recent years. The overall long-term increase could be occurring for several reasons. In some cases we are simply throwing away more. In addition, because of reporting requirements in *Chapter 173-350 WAC, Solid Waste Handling Standards*, we are getting more details on wastes we dispose of through annual reports from facilities. We are also getting information on waste disposed of in other states (e.g. waste tires generated in Washington that are disposed in Oregon and some other states).

We include all materials disposed in landfills that may not have been reported as waste materials in the past. Examples are clean soil and rock, which are not defined as solid waste by our regulations, but are disposed as waste at a landfill.

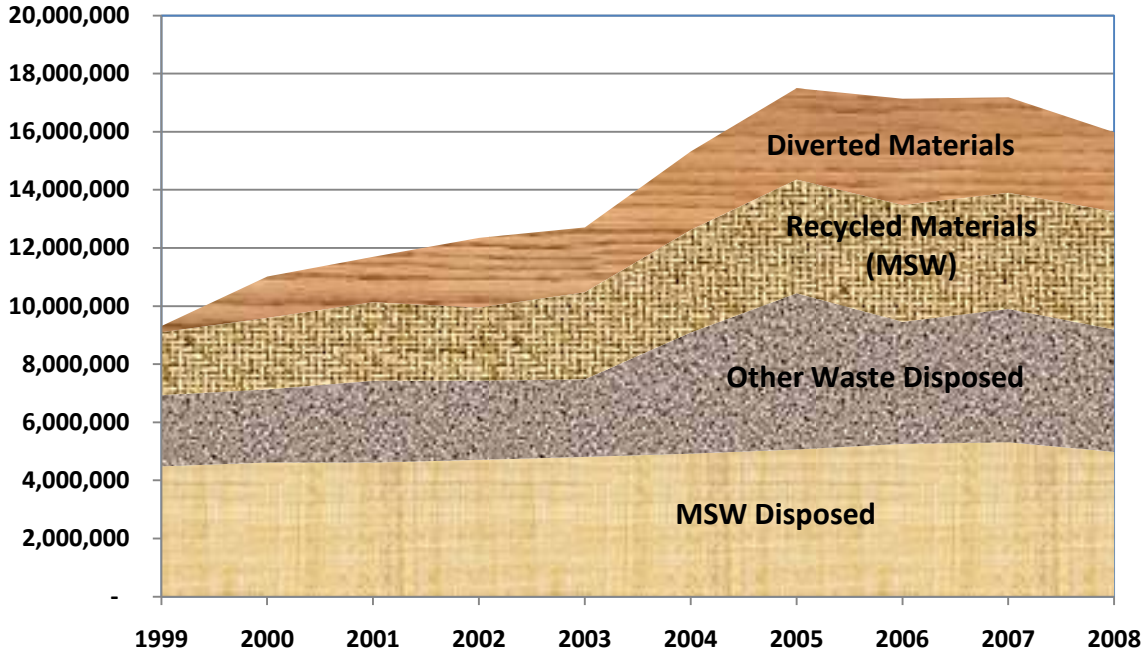
The other measured part of Washington's waste generation number is made up of materials recycled and diverted from disposal. The reported list of materials included under recycling and diversion has increased over time. Since 1986, largely materials defined as municipal solid waste by the Environmental Protection Agency have made up the recycling number (see *Appendix A: Municipal Solid Waste Recycling* for complete details on MSW recycling).

In 1999, along with MSW recycling which is sometimes referred to as "traditional" recycling, we started tracking other materials "diverted" from disposal. We now track materials reported as diverted from the waste stream but are outside the state's definition of municipal or traditional recycling. This expanded measure of recycling that we call "waste diversion" includes recyclables such as construction and demolition debris, materials burned for energy recovery and reused materials. As more types of materials are diverted from disposal, the list of items will increase.

We continue to increase our efforts to get better reporting from recyclers and those who divert waste from disposal. Due to Ecology tracking additional materials, improved tracking and reporting from recyclers, as well as actual increases in recycling and diversion, the total tonnage reported has increased over time. In 2005, the total annual waste generation in Washington reached a maximum of 17,494,320 tons, and has since decreased to 15,977,572 tons in 2008.

Figure 4.3 shows the categories of solid waste tracked by Ecology under the broad categories of municipal solid waste (MSW) disposed, other waste types disposed, MSW recycled and solid waste diverted from disposal (such as recycled construction and demolition materials).

Figure 4.3
Total Solid Waste Generation in Washington



Per Capita Waste Generation

In addition to looking at the overall picture of total waste generation, it is important to evaluate the amount of waste we produce in Washington on an individual basis or "per capita." That means the amount of waste generated by each person each day. We use the term in different ways in this report.

The recycling rate in *Appendix A: Municipal Solid Waste Recycling* looks at the portion of the waste stream termed the "municipal solid waste stream." This is waste that mainly households and commercial businesses **g**enerate. It includes such items as durable goods, nondurable goods, containers and packaging, food waste and yard trimmings. It does not include materials like industrial waste, inert debris, asbestos, biosolids, contaminated soils, or construction, demolition and land clearing debris. Materials recycled in the first category make up the "traditional" recycling rate. Materials in the second category diverted from disposal, combined with the "recycled" materials, make up the "diversion" rate.

Per capita numbers from *Appendix A: Municipal Solid Waste Recycling* for just the municipal solid waste stream are shown in Table 4.1. The per capita generation of municipal solid waste in the state in 2008 was 7.52 pounds per person per day; 4.14 pounds were disposed and 3.38 pounds were recovered for recycling. For per capita MSW numbers for 1986 – 2008, go to the web page at http://www.ecy.wa.gov/programs/swfa/solidwastedata/.

Table 4.1
Municipal Solid Waste Disposed, Recycled & Generated
(Pounds/Person per Day)

Per Capita MSW Only	2000	2001	2002	2003	2004	2005	2006	2007	2008
MSW Disposed	4.29	4.23	4.27	4.32	4.37	4.43	4.52	4.48	4.14
MSW Recycled	2.29	2.48	2.28	2.69	3.14	3.43	3.46	3.38	3.38
MSW Generated	6.58	6.71	6.55	7.01	7.51	7.86	7.97	7.86	7.52

Municipal solid waste is not all of the waste produced in the state. Waste is also generated during industrial activity, such as manufacturing, construction projects, demolition and environmental cleanup activity.

To determine the total waste generation, we add *all* of the materials recycled, diverted and disposed. This includes not only MSW disposed, but all other waste types disposed at landfills and incinerators, as well as recycled and diverted materials. This resulted in a much higher generation number for the state - 13.29 pounds per person per day, with 5.65 pounds recycled/diverted and 7.64 pounds disposed (Table 4.2).

Table 4.2
All Solid Waste Disposed, Recycled/Diverted and Generated
(Pounds/Person per Day)

Per Capita Solid Waste	2000	2001	2002	2003	2004	2005	2006	2007	2008
Disposed[4]	6.63	6.83	6.74	6.71	8.07	9.14	8.12	8.36	7.64
Recycled/Diverted	3.61	3.91	4.46	4.70	5.54	6.18	6.60	6.16	*5.65*
Generated	10.24	10.75	11.19	11.41	13.61	15.32	14.72	14.51	13.29

These numbers are not just waste disposed by each person from their household. These include wastes produced by business, industries and other manufacturing activities in our state. They also include wastes cleaned up from our environment, like petroleum contaminated soils from leaking gas tanks at service stations, asbestos removed from buildings that are torn down or remodeled, and contaminated soils dredged from Puget Sound. These types of wastes should be disposed in a landfill.

Much of the waste stream includes wastes that could be recycled or reused, or just not made in the first place. These are wastes we need to focus prevention and reduction efforts on as described in the state's *Beyond Waste Plan*. We want to see less waste in the categories of municipal and commercial solid waste, industrial waste, construction and demolition waste, inert waste, wood waste, other organic wastes and tires.

Waste Disposed by Washington "Citizens"

The amount of waste disposed each year increased until 2008. Some reasons for the decrease are probably the poor economy and slow construction activities. Waste reduction programs and availability of recycling are likely to play a part. In 2008, a total of 9,184,975 tons were disposed. Table 4.3 shows the amounts and general types of waste disposed of since 1996 by Washington citizens[5].

As part of the annual reporting requirements of *Chapter 173-351, Criteria for Municipal Solid Waste Landfills* and *Chapter 173-350 WAC, Solid Waste Handling Standards,* all landfills and energy recovery facilities report the source, types and amounts of waste received from their county, other counties, other states or other countries. We also include data from three municipal solid waste landfills in Oregon (Finley Butte, Wasco, and Columbia Ridge) that receive waste from Washington State. Spreadsheets identifying the disposal location, type and amount of waste for each county for 2008, and previous years' information can be found at http://www.ecy.wa.gov/programs/swfa/solidwastedata/.

4 Disposed amounts include all waste generated from Washington disposed in MSW, limited purpose, and inert landfills and incinerators, both in-state and exported.

5 "Citizens" in this chapter does not only refer only to an individual, but includes business, industry, public and private sectors - anyone who produces waste.

Table 4.3
Waste Disposed by Washington Citizens

Waste Type	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
MSW/ Commercial	3,800,114	4,203,507	4,276,276	4,480,761	4,610,914	4,611,406	4,703,879	4,805,202	4,917,870	5,060,502	5,258,076	5,309,296	4,978,497
Demolition	502,425	462,784	529,515	530,417	685,799	759,586	835,400	650,473	884,567	1,014,526	1,127,022	1,085,977	857,135
Industrial	184,220	206,169	208,398	325,135	157,634	563,249	546,299	743,042	1,356,415	1,092,305	512,277	530,835	361,017
Inert	4,091	117,512	107,452	23,875	19,542	428,789	321,451	280,358	419,115	1,337,372	1,029,559	1,402,421	1,362,143
Wood	58,355	221,437	89,142	158,022	197,929	246,754	91,697	90,303	89,905	61,918	52,833	40,579	39,926
ASH (other than SIA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	536,651	420,222	148,545	88,093	76,943
Sludge	55,584	72,747	65,440	62,919	95,050	1,473	1,762	22,835	10,171	12,458	33,490	30,432	35,682
Asbestos	9,385	13,130	13,044	12,961	11,777	10,929	11,177	15,455	18,252	21,951	29,700	103,686	11,914
Petroleum Contaminated Soils	270,980	474,907	198,082	372,734	284,778	616,725	784,703	568,681	489,385	957,788	740,341	735,773	1,057,069
Other Contaminated Soils	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	146,554	231,428	225,488	321,762	125,440
Tires[6]	5,226	2,724	12,129	10,362	40,908	7,752	4,919	22,226	15,212	22,446	33,698	50,704	25,541
Medical	5,213	7,469	7,704	5,474	6,349	5,255	2,417	2,498	2,624	2,651	2,899	3,998	3,013
Other	121,051	10,794	41,866	28,450	178,156	198,259	124,512	270,992	196,793	197,010	256,627	189,316	250,656
Total[7]	**5,016,644**	**5,793,180**	**5,549,048**	**5,537,142**	**6,288,836**	**7,450,177**	**7,428,216**	**7,472,065**	**9,083,516**	**10,432,576**	**9,450,554**	**9,892,871**	**9,184,975**

[6] In 2003 started adding tires that were reported disposed out-of-state.
[7] In 2001 started reporting waste disposed in all types of landfills and energy recovery facilities.

The types of wastes reported by landfills are very general and it is hard to know exactly the types of materials that are included. For example, municipal solid waste as reported by disposal facilities would include anything a household or business throws away. We do not know how much of that waste is paper, food, cans, plastics, bottles, or other recyclable materials, or who actually made the waste – a household or a business.

We also do not know the specific content of wastes reported as industrial or inert. It is difficult to focus waste reduction and recycling efforts on a particular type of waste or on a producer of that waste without having more details. The details can only be determined through a rigorous sampling study, such as a waste characterization study.

A waste characterization study provides a much more detailed look at what is in the waste stream. There are various ways to conduct a waste characterization study. A statewide study could take samples of waste from various sources. For example, a garbage truck from a known residential area or business sector would be emptied at a transfer station. The waste from that truck would be sorted into several different material groups. This would be repeated during all four seasons. Other sampling would be done in other locations around the state. Depending on the needs of the study, various sources of the waste (that is the sector of society where the waste was generated – residential single-family, multi-family, commercial, institutional, industrial, agricultural, etc.) could be sampled.

These studies provide very valuable information that is critical for us to understand the makeup of the waste stream, know who is producing the waste, and know what materials are in the waste stream that we should reduce or eliminate. To be the most useful, waste characterization studies need to be repeated on a regular basis, but they are expensive to conduct.

A statewide waste characterization was last completed in 1992. Since then some individual counties have conducted waste characterizations studies. Information from them has been extrapolated for use statewide.

In 2009, Ecology began work on a new statewide waste characterization study that will combine data from three recent county studies with new sampling in ten counties across the state. The data will be grouped to represent six waste generation areas of the state. Four sectors of generators will be sampled and characterized: commercial, residential, self-hauled construction and demolition wastes, and self-hauled other wastes. The study is scheduled for completion by July 2010.

As we move forward to implement the *Beyond Waste Plan*, specific information on the contents of our waste will be essential to understand the makeup of the solid waste stream. This will help us focus efforts to eliminate and reduce specific types of wastes or materials, and allow us to measure our progress.

Waste Recycled and Diverted from Disposal[8]

Measuring Recycling and Diversion Rates

To determine a recycling rate consistent and comparable to past years, Ecology has measured a very specific part of the solid waste stream since 1986. It is roughly the part of the waste stream defined as municipal solid waste (MSW) by the Environmental Protection Agency.[9] However, since the mid-1990s, Ecology has noted very large increases of material recovery in "non-MSW" waste streams. Most notable are the growing industries in recycling asphalt, concrete, and other construction, demolition and land clearing debris. The recovery of these materials for uses other than landfill disposal is termed "diversion."

Increasingly, Washington counties and cities have put efforts into recovering and recycling these wastes that are outside the traditional MSW stream. The construction and demolition waste stream provides the best example. We are now recycling many of these materials, including asphalt, concrete, roofing material, lumber, various metals and more. Knowledge of this waste stream is increasing, although it is not easy to characterize.

Measuring diverted materials is as simple as collecting the number of tons of material diverted from landfills. In the past, many recycling survey respondents voluntarily listed this information on the recycling survey. In 1999 Ecology began asking for it more specifically.

Ecology is now calculating a "diversion" rate alongside the traditional "MSW recycling" rate. Calculating the diversion rate takes two steps. First, we measure non-MSW materials diverted from the waste stream along with recyclables that are part of MSW. Ecology then compares the resulting figure to total waste generation (minus a subset of landfilled materials that were not available for recycling or diversion).[10] Washington shows a diversion rate of 47% in 2008 (Table 4.4[11]).

Table 4.4
Diversion Rates
1999 - 2008

Year	Diversion Rate
1999	28%
2000	37%
2001	41%
2002	45%
2003	46%
2004	49%
2005	48%
2006	50%
2007	47%
2008	47%

Wood waste makes up a large portion of the recovered materials stream in Washington. A major portion of the recovered wood is eventually burned for energy recovery. A percentage of it is also being used in new wood and paper products, as a

[8] See *Appendix A: Municipal Solid Waste Recycling* for a complete discussion of MSW Recycling.

[9] The recyclable portion of the waste stream is municipal solid waste as defined by the Environmental Protection Agency in the *Characterization of Municipal Solid Waste in The United States: 1996 Update*. This includes durable goods, nondurable goods, containers and packaging, food wastes and yard trimmings. It does not include industrial waste, inert debris, asbestos, biosolids, petroleum contaminated soils, or construction, demolition and landclearing debris disposed of at municipal solid waste landfills and incinerators.

[10] Waste types used to calculate diversion include municipal, demolition, inert, commercial, wood, tires, medical and other. Excludes industrial wastes, asbestos, sludge and contaminated soils.

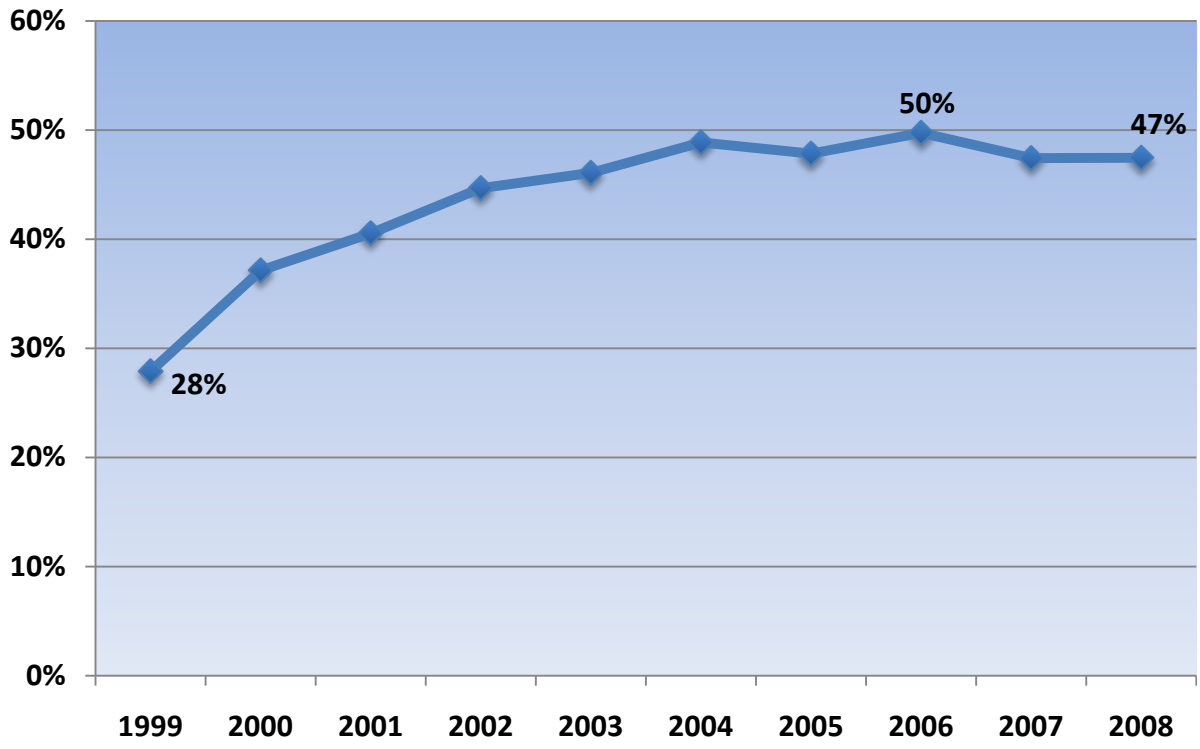
[11] Diversion rates were adjusted retroactively in 2006 to reflect the deletion of the category of topsoil (soil blends).

feedstock in composting operations and as mulch. In 2002, Ecology began to gather figures on recovered wood that is burned to measure it as a diverted material. Ecology believes an undetermined amount of the wood reported as "recycled" is actually burned for energy recovery or used as "hog fuel."

In agriculture, organic waste materials are being composted and processed for land application as soil amendments. Ecology recognizes these and other uses of discarded material as potentially beneficial and includes them in the diversion numbers.

Figure 4.4 shows the diversion rate in Washington since Ecology began measuring it in 1999.

Figure 4.4
Washington State Diversion Rates – 1999 to 2008[12]



Ecology maintains that we need to study the non-MSW waste stream in more detail. We lack definite information on the total volume of waste created, especially in the industrial sector. If the facility diverting material is conditionally exempt from permitting under *Chapter 173-350 WAC, Solid Waste Handling Standards*, the reporting requirement for solid waste recyclables covers these activities.

[12] Diversion rates are adjusted retroactively each year to reflect adjustments in disposal and recycling or diversion data, and methodology for determining rates.

However, if the facility does not fall under requirements for conditional exemption from solid waste permitting, reports are voluntary, as with out-of-state facilities or haulers with no fixed facility. This makes it difficult to figure a recycling or diversion rate for many of these materials.

Measurement Methodology

The Legislature requires Ecology to measure the recycling activity in the state each year and report the results. From 1986 until 2002, tools to measure recycling activity in Washington included only the annual recycling survey. With the new reporting requirements under *Chapter 173-350 WAC, Solid Waste Handling Standards*, measurement tools now include annual reports for recycling facilities and intermediate solid waste handling facilities, along with the annual recycling survey. Ecology is receiving more information with these additional reporting requirements.

Ecology sends the survey and annual reporting forms to recycling facilities, other firms involved in recycling (such as brokers), haulers and local governments. They reply with information about the types and quantities of recyclable materials they collected. Though the recycling survey portion of the measurement tool is mandatory, there is no penalty for not returning the information and some firms do not respond. Some firms respond with estimates of the amount and origin of materials. These factors offer challenges to compiling good county-specific recycling and diversion information.

This situation also creates the need for intensive cross-checking of data. This is done through a phone and e-mail survey of the end-users of recyclable materials, recycling facilities, other intermediate collectors of recyclables and local governments. Ecology develops aggregate figures for each commodity and compares them to the reports collected.

The recycling survey is essentially voluntary in that the solid waste rules do not include a penalty for those who do not respond. The annual reports for facilities are mandatory. Facilities could receive a penalty for failing to submit an annual report.

Ecology bases the reliability of the results on review of draft numbers sent to local governments, and comparisons to waste characterization, disposal data and commodity end-user information. Companies reporting on the recycling survey may just report tonnage they collected directly from generators. However, facilities responding to annual reports need to submit tonnage information for all materials handled at their facility. Also, county recycling coordinators and solid waste managers are asked to review the figures.

Finally, Ecology checks figures against double-counting by verifying exchange of materials between reporting entities. Companies are asked to report the destination of materials and final use on their recycling survey and annual report forms, and this data is verified by phone and e-mail to the extent possible.

For the 2008 reporting year, both the recycling survey forms and the annual reporting forms became available on Ecology's website. Respondents can print and complete the forms, or download, complete electronically and e-mail them to Ecology. This system is very successful

because it provides crucial and time-saving computer access to the forms. It also allows Ecology staff to check them and follow up on errors or clean the data before entering it into the offline database. These quality control steps help maintain data integrity.

Results – 2008 Diversion

When Ecology began to measure other materials along with the traditional MSW recycling, this expanded measure was termed "diversion." It continued to include the same materials used since 1986 to calculate the MSW recycling rate. These materials are part of the MSW stream, as Ecology defined it when designing the recycling survey in the mid-1980s (see *Appendix A: Municipal Solid Waste Recycling*). Table 4.5 provides tonnage figures for each material included in the diversion rate from 2005-08, including recycled MSW materials and non-MSW materials such as construction and demolition debris.

Table 4.5
Diverted & Recycled Materials Reported (Tons)[13] Diversion Rates

Diverted & Recycled Materials Reported	2005	2006	2007	2008
Agricultural Organics[14]	-	-	-	31,800
Aluminum Cans	15,441	14,951	14,005	12,842
Antifreeze	8,767	7,507	7,055	6,586
Ash, Sand & Dust used in Asphalt Production	14,588	4,008	2,521	-
Asphalt & Concrete	1,783,418	2,295,278	2,089,972	1,510,051
Carpet and Pad	186	897	1,193	3,297
Construction & Demolition Debris	521,087	300,820	302,089	339,066
Container Glass	82,773	90,992	96,934	94,077
Corrugated Paper	565,698	570,802	555,757	569,688
Electronics	8,534	11,386	12,325	17,265
Fats and Oils[15]	-	-	-	124,289
Ferrous Metals	974,535	1,048,885	1,009,826	1,013,552
Fluorescent Light Bulbs	729	1,063	979	1,600
Food Processing Wastes (pre-consumer)	38,823	25,369	-	3,494
Food Scraps (post-consumer)[16]	125,390	171,744	167,268	48,664
Gypsum	56,618	62,482	52,767	86,603
HDPE Plastics	9,319	8,000	11,348	7,742
High-Grade Paper	58,661	71,774	82,806	57,929
Household Batteries	294	1,350	1,755	2,270
Industrial Organics[17]	-	-	-	45,586
Land clearing Debris	475,015	258,563	168,007	169,428
Land clearing Debris for Energy Recovery[18]	-	208,010	136,205	141,406
Large Appliances	47,302	49,796	44,667	43,401
LDPE Plastics	16,209	14,928	13,695	14,040
Milk Cartons/Drink Boxes-Tetra	4,529	5,755	5,787	5,475
Miscellaneous	139	2	-	-
Mixed Paper	322,732	316,874	361,043	367,834
Newspaper	259,157	294,887	289,250	282,981

[13] Detail may not add due to rounding. See *Appendix A: Municipal Solid Waste Recycling* for a list of materials counted as MSW recycling. Data includes organic materials processed by commercial composting facilities. See http://www.ecy.wa.gov/programs/swfa/solidwastedata/ for facilities reporting composting activities.

[14] Prior to 2008, included in Other Organics category.

[15] Includes animal fat and used cooking oil collected for rendering or processing in commercial quantities. Prior to 2008, included in Food Scraps category.

[16] Prior to 2008, this category included fats and oils reported for recycling.

[17] Prior to 2008, included in Other Organics category, or classified as Wood Fiber/Industrial Paper.

[18] Included with Landclearing Debris prior to 2006.

Diverted & Recycled Materials Reported	2005	2006	2007	2008
Nonferrous Metals	122,490	135,976	115,718	94,340
Oil Filters	2,721	2,189	2,635	2,639
Other Fuels (Reuse & Energy Recovery)	16	1	.25	-
Other Organics[19]	81,904	121,454	149,492	86,191
Other Recyclable Plastics	7,247	7,776	12,350	11,245
Other Rubber Materials	-	39	50	6
Paint (Reused)	912	1,051	344	928
PET Plastics	8,534	7,558	14,024	9,827
Photographic Films	487	458	429	442
Post-Industrial & Flat Glass	4,870	5,404	1,706	-
Post-Industrial Plastics	697	-	-	-
Reuse (Clothing & Household)	2,891	804	4,346	2,678
Reuse (Construction & Demolition)	1,929	1,120	1,374	-
Reuse (Miscellaneous)	435	627	286	105
Roofing Material	2,353	9,120	10,188	10,205
Steel/Tin Cans	12,133	13,936	22,315	10,526
Textiles (Rags, Clothing, etc.)	28,750	28,724	65,286	19,946
Tires (Recycled)	53,777	23,528	27,869	40,124
Tires (Baled)[20]	-	-	9,660	5,912
Tires (Burned for Energy)	5,167	9,236	16,735	8,440
Tires (Retread/Reuse)	4,089	13,266	4,764	3,829
Used Oil	111,692	87,304	86,174	78,443
Used Oil for Energy Recovery	306	1,283	129	33
Vehicle Batteries	28,903	25,414	25,734	25,219
Wood Waste	351,855	289,612	228,146	381,866
Wood Waste for Energy Recovery	163,408	372,678	353,683	331,528
Yard Debris	643,376	665,902	684,181	641,130
Yard Debris for Energy Recovery	30,859	21,607	25,069	26,029
Total Diverted + Recycled Materials	**7,061,745**	**7,682,189**	**7,289,943**	**6,792,597**
Total Waste Disposed[21]	**7,696,424**	**7,760,714**	**8,082,291**	**7,516,909**
Total Waste Generated	**14,758,169**	**15,442,903**	**15,372,234**	**14,309,506**
Diversion Rate	**47.85%**	**49.75%**	**47.42%**	**47.47%**

[19] Prior to 2008, includes Agricultural Organics and Industrial Organics.
[20] Began to measure as separate category in 2006.
[21] For purposes of calculating a diversion rate, this analysis includes only the wastes that are potentially recyclable. Waste types used in this calculation include MSW, demolition, inert, wood, tires, medical waste and other unclassified wastes. It excludes industrial wastes, asbestos, sludge and contaminated soils.

Waste Diversion Benefits

Waste prevention and diversion from landfill disposal (or recycling) are potent strategies to reduce greenhouse gas emissions and conserve energy. Products that enter the waste stream have energy impacts and associated greenhouse gas (GHG) emissions at each stage of their lifecycle: extraction, manufacturing, and disposal.

Decomposing waste in a landfill produces methane, a greenhouse gas more potent than carbon dioxide. Waste prevention and recycling reduce the amount of waste sent to landfills, lowering the greenhouse gases emitted during decomposition. Additionally, transporting waste to a landfill emits greenhouse gases through combustion of fossil fuels.

Fossil fuels are also required to extract and process raw materials necessary to replace those materials disposed with new products. Manufacturing products from recycled materials typically requires less energy than manufacturing from virgin materials. Waste prevention and recycling delay the need to extract some raw materials, lowering greenhouse gases emitted during extraction. Waste prevention means more efficient resource use, and making products from recycled materials requires less energy. Both lower greenhouse gases emitted during manufacturing.

As an additional benefit to climate change impacts, waste prevention and diversion can help store carbon. Carbon storage increases when wood products are source reduced and recycled. Carbon storage also increases when organic materials are composted and added to the soil.

Washington's measured diversion efforts for 2008 reduced greenhouse gas emissions over landfilling by about 2.8 million tons (MTCE) or 860 pounds per person. This is similar to removing 1.9 million passenger cars from the roadway each year - almost half the passenger cars in Washington.[22]

The 6.8 million tons of material diverted from disposal in Washington in 2008 saved more than 127 trillion BTUs of energy. This is roughly equivalent to the amount of electricity used in all homes in the state annually or one billion gallons of gasoline.[23]

[22] Figures derived using EPA Waste Reduction Model (WARM), http://epa.gov/climatechange/wycd/waste/calculators/Warm_home.html; EPA Emission Facts, http://www.epa.gov/otaq/climate/420f05004.htm; and Washington Department of Licensing, http://www.dol.wa.gov/about/vehvesselreports.html.

[23] Figures derived using EPA Waste Reduction Model (WARM), http://epa.gov/climatechange/wycd/waste/calculators/Warm_home.html; and U.S. Energy Information Administration, http://www.eia.doe.gov/emeu/states/_seds_updates.html.

Waste Disposed in Washington State

Another way to look at waste disposed is to include all waste that goes to landfills or incinerators in the state. This includes waste brought from out-of-state, but does not include waste sent out-of-state for disposal. With all categories included, 7,339,573 tons of waste were disposed in all types of landfills and incinerators in Washington in 2008 (Table 4.6). For total solid waste disposed from 1993 – 2008, see http://www.ecy.wa.gov/programs/swfa/solidwastedata/.

Table 4.6
Total Amounts of Solid Waste Disposed in Washington

Disposal Method	2001	2002	2003	2004	2005	2006	2007	2008
Municipal Solid Waste Landfills	4,525,019	4,744,561	4,572,275	5,506,112	5,517,342	5,398,008	5,354,005	5,157,547
Incinerated Waste	496,152	311,474	303,978	327,837	335,533	326,584	312,006	297,832
Woodwaste Landfills[24]	53,298	33,171	34,188	*	*	*	*	*
Inert / Demolition Landfills	733,843	476,917	476,214	509,927	1,531,642	1,231,565	1,708,445	1,261,131
Limited Purpose Landfills	645,592	605,284	586,670	1,075,102	1,387,934	760,088	600,928	623,063
Total	**6,453,904**	**6,171,407**	**5,973,325**	**7,418,978**	**8,772,451**	**7,716,245**	**7,975,444**	**7,339,573**

Municipal Solid Waste Landfills

Amount of Waste Disposed of in Municipal Solid Waste Landfills

In 2008, 15 municipal solid waste landfills accepted waste totaling 5,157,547 tons.[25] Of the 15 landfills, 12 were publicly owned and 3 were privately owned.

Six of the 15 landfills received over 100,000 tons of waste in 2008. Three of the largest landfills in Washington, Cedar Hills in King County, LRI – 304th Street in Pierce County, and Roosevelt Regional Landfill in Klickitat County, received 930,617 tons, 904,385 tons, and 2,421,161 tons, respectively. In 2008, two landfills received less than 10,000 tons, Delano Landfill in Grant County and Northside Landfill in Spokane County, compared with 12 MSW landfills in 1994.

[24] The category of woodwaste landfills is no longer included under *Chapter 173-350 WAC, Solid Waste Handling Standards.*

[25] Throughout this report, different disposal amounts are discussed. These numbers vary based on the types of facilities discussed, source of the waste and purpose of the discussion. For example, the recycling survey only accounts for "traditional" municipal waste in the disposed amount used to calculate the statewide recycling rate.

Figure 4.5 shows that several smaller and a few mid-sized landfills closed between 1995 and 1996 in response to more stringent regulations for MSW landfills (*Chapter 173-351 WAC, Criteria for Municipal Solid Waste Landfills*). Other landfills are reaching their remaining capacity and not planning to expand. There has been a gradual decrease in the number of landfills since 1996. At this time no new MSW landfills are planned in the state, although some are planning expansions.

Figure 4.5
Number of MSW Landfills
(Based on Tons Disposed)

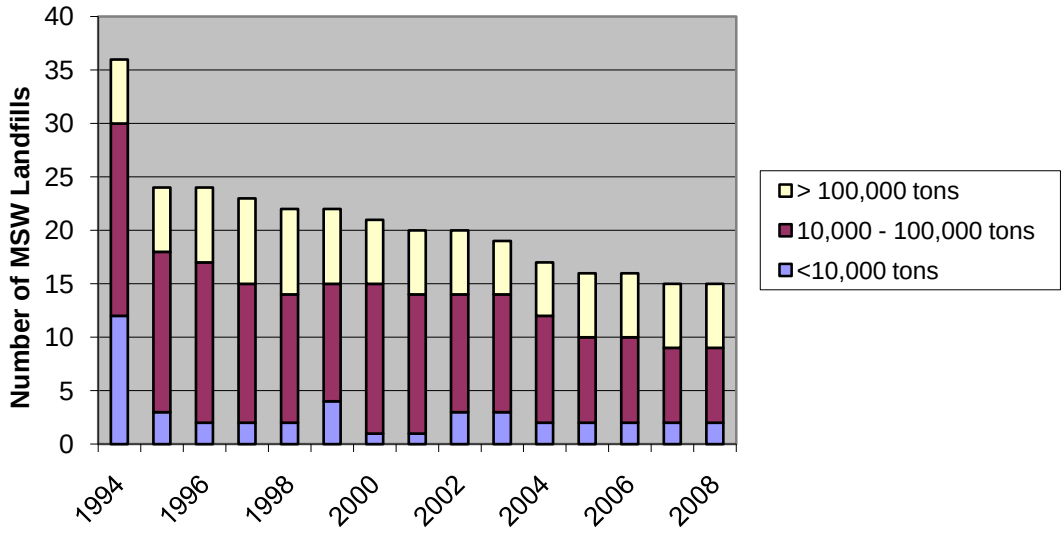


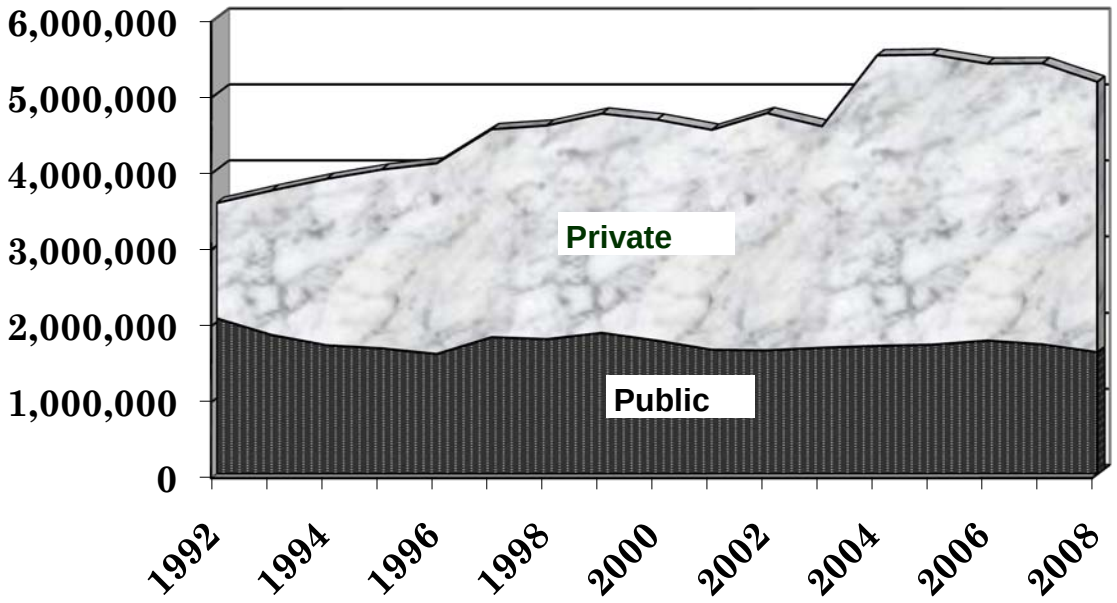
Table 4.7 shows the relationship of waste disposal to public/private ownership. As the table illustrates, 1,605,530 tons of solid waste disposed went to publicly owned facilities (31%), with the remaining 3,552,017 tons going to private facilities (69%).

Table 4.7
Waste Disposed in MSW Landfills – Public/Private

Ownership	Number of MSW Landfills		Amount of Waste Disposed (Tons)		% Total Waste Disposed	
	1991	2008	1991	2008	1991	2008
Public	36	12	2,696,885	1,605,530	69	31
Private	9	3	1,192,207	3,552,017	31	69
Total	**45**	**15**	**3,889,092**	**5,157,547**	**100**	**100**

The amount of waste disposed in MSW landfills shows movement from the publicly owned facilities to those owned by the private sector (Figure 4.6). The trend has continued since 1991, when the state first started to track this type of information. The amount of waste disposed in the private facilities has increased from 31% since 1991 to 69% in 2008. The private Roosevelt Regional Landfill in Klickitat County and LRI-304th Street Landfill in Pierce County can account for the majority of this increase.

Figure 4.6
Comparison of Waste Disposed in Public and Private MSW Landfills (Tons)



Types of Waste Disposed in Municipal Solid Waste Landfills

Traditionally, many people think of the waste going into MSW landfills as being mostly household waste.[26] Annual facility reports show a much wider variety of waste is disposed in MSW landfills. These wastes need to be considered in terms of remaining available capacity. All landfills reported disposing types of solid waste other than MSW. Demolition, industrial, inert, sludge, asbestos, petroleum-contaminated soils (PCS) and other contaminated soils were the major waste streams.

[26] "Household waste" as defined in *Chapter 173-351 WAC, Criteria for Municipal Solid Waste Landfills*, means any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds and day-use recreation areas).

Most landfills report in only a few categories. This makes knowing exact amounts of specific waste types difficult. For amounts and types of waste individual MSW landfills reported in 2008, see http://www.ecy.wa.gov/programs/swfa/solidwastedata/.)

Table 4.8 shows changes in waste, types and amounts disposed in MSW landfills from 2000-08. MSW landfill data from 1992 – 2008 is available at http://www.ecy.wa.gov/programs/swfa/solidwastedata/.

Table 4.8
Waste Types Reported Disposed in MSW Landfills (Tons)

Waste Types	2000	2001	2002	2003	2004	2005	2006	2007	2008
Municipal/Commercial[27]	3,336,745	3,432,359	3,440,727	3,394,428	3,598,760	3,631,873	3,787,080	3,847,352	3,637,010
Demolition Waste	569,239	373,254	379,405	324,069	366,087	541,945	551,572	532,409	363,343
Industrial Waste	88,841	201,198	179,058	212,918	1,034,615	624,958	182,661	131,167	130,929
Inert Waste	19,349	26,376	17,092	2,635	1,705	15,780	15,842	22,491	11,055
Commercial Waste[28]	93,752	66,391	99,048	93,036	-	-	-	-	-
Wood	47,087	34,254	55,149	47,622	25,576	9,896	4,462	71	18
Ash (other than SPI)	-	-	-	-	3,444	2,857	2,432	3,959	2,102
Sewage Sludge	47,783	1,473	1,762	23,435	10,172	12,476	21,303	6,703	7,892
Asbestos	7,922	5,991	4,908	9,625	12,086	7,943	5,633	5,379	4,308
Petroleum Contaminated Soils	231,290	217,721	457,061	342,172	279,982	320,283	455,964	326,019	693,719
Other Contaminated Soils	-	-	-	-	49,454	212,692	224,608	295,930	119,711
Tires	43,188	8,567	5,776	9,512	7,462	6,942	8,525	11,797	13,162
Special	437	917	567	-	-	-	-	-	-
Medical	239	387	372	2,459	2,565	2,576	2,721	2,805	2,932
Other [29]	173,711	156,131	103,636	110,364	114,204	127,121	135,206	167,933	171,366
Total	**4,659,582**	**4,525,019**	**4,744,561**	**4,572,275**	**5,506,112**	**5,577,342**	**5,398,008**	**5,354,005**	**5,157,547**

[27] Some facilities include demolition, industrial, inert, commercial and other small amounts of waste types in the MSW total. In 2004, municipal and commercial categories were combined.

[28] Some facilities include demolition, industrial, inert, commercial and other small amounts of waste types in the MSW total. In 2004, the municipal and commercial categories were combined.

[29] Some of the "other" types of waste reported include auto fluff, vactor waste, WWT grit and uncontaminated soils.

Future Capacity at Municipal Solid Waste Landfills

As of September 2008, 14 MSW landfills were operating in Washington State. Ecology determined the amount of remaining capacity for them by asking them to report remaining permitted capacity, as well as the expected closure date. In 2009, the facilities estimated about 223 million tons, or about 45 years of capacity at the current disposal rate.

Changes in permit conditions, early landfill closures, projections of fewer expansions and changing volumes affect remaining capacity, which has fluctuated the past several years. Of the 14 currently operating landfills, 9 have greater than 5 years of remaining permitted capacity. Some landfills are planning expansions in the future. Table 4.9 includes an estimated number of facilities with specified remaining years of life.

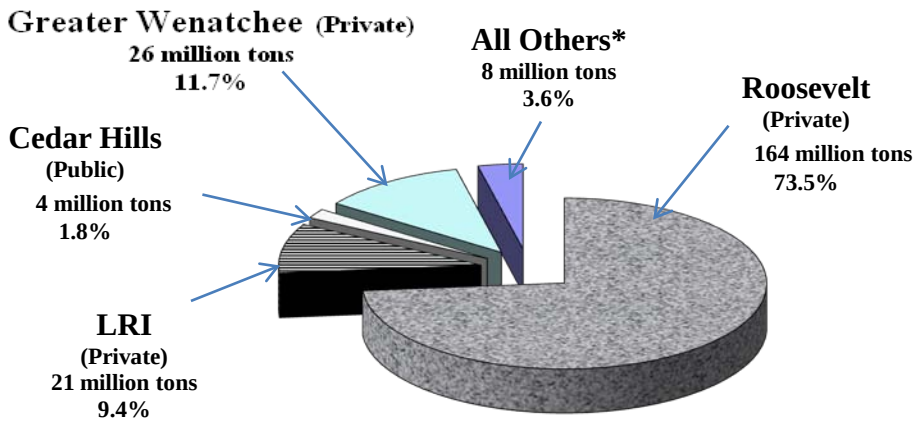
Table 4.9
Estimated Years to Closure for MSW Landfills

Years to Closure	% of total Remaining Capacity	Number of Facilities	Public	Private
Less than 5 years	0.3	3	3	0
5 to 10 years	2.5	2	2	0
Greater than 10 years	97.2	9	6	3
Totals	**100%**	**14**	**11**	**3**

Capacity numbers in 2009 indicated about 97% of remaining capacity was at landfills with more than 10 years before closure. Eleven of the 14 operating MSW landfills are publicly owned with about 6% of the remaining capacity (12.8 million tons). About 94% of the remaining permitted capacity (210.7 million tons) is at the three privately owned facilities, compared to 73% in 1993. The majority of the capacity, 73.5% of the total statewide capacity, is at the privately owned Roosevelt Regional Landfill in Klickitat County.

Two other private landfills have the next largest remaining capacity: Greater Wenatchee (11.7%) and LRI in Pierce County (9.4%). The publicly owned Cedar Hills landfill in King County has 1.8% of the remaining statewide capacity. The remaining 3.6% of capacity is spread among the other 10 landfills in the state (see Figure 4.7).

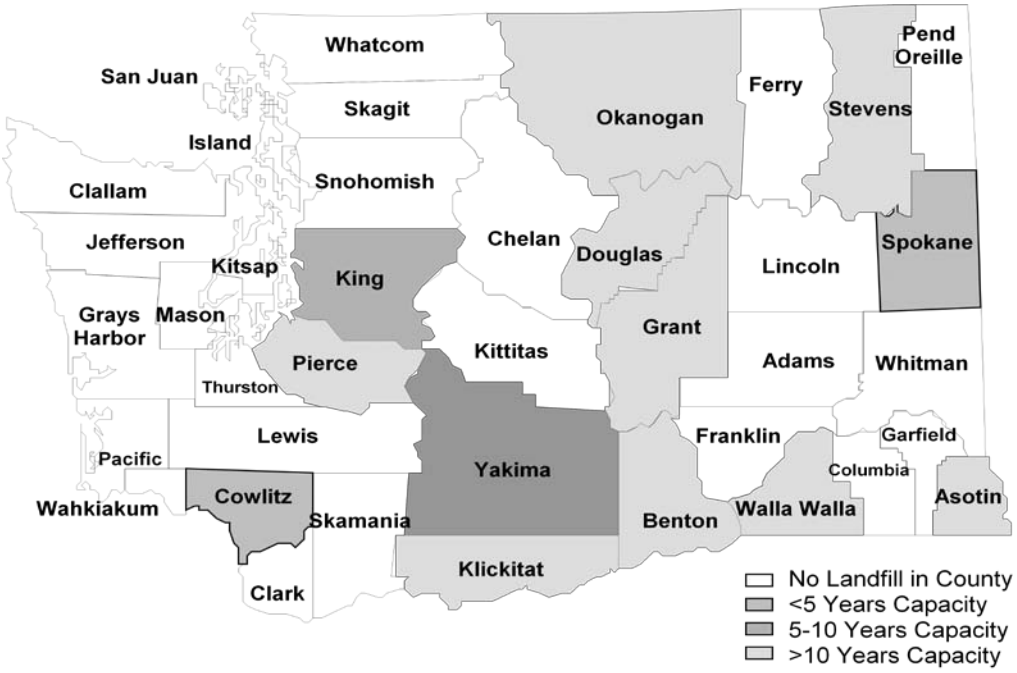
Figure 4.7
2009 Remaining Permitted Capacity at MSW Landfills



***All others are public landfills**

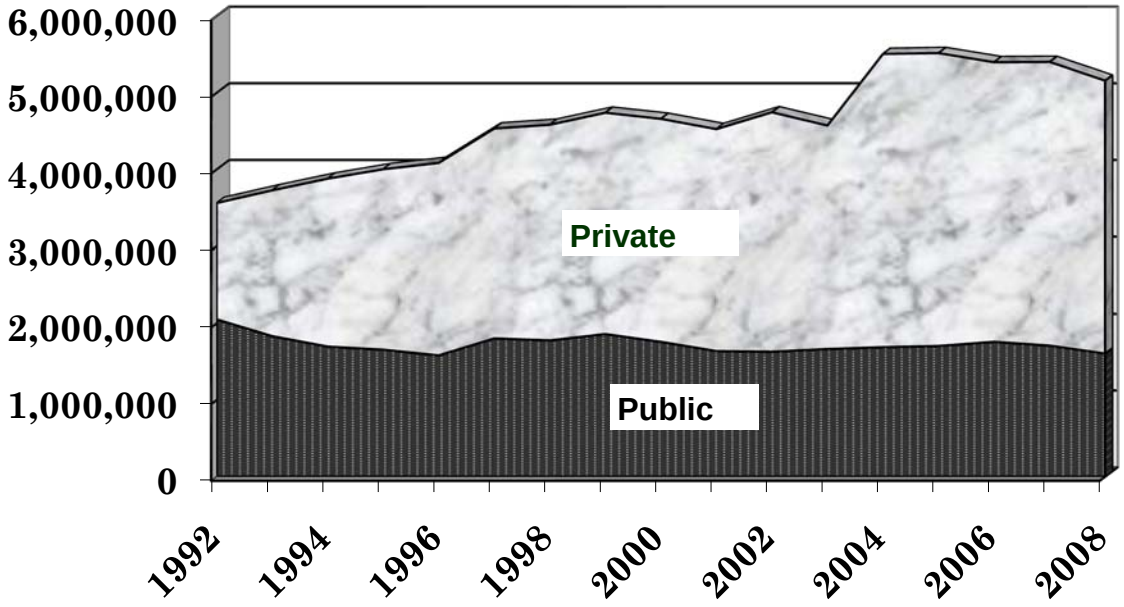
The Oregon Department of Environmental Quality was asked about the remaining capacity at the three municipal solid waste landfills that receive waste from Washington. Estimates are more than 200 million tons of remaining capacity, or between 80-100 years. Map 4.A shows the counties and the remaining years of capacity of their MSW landfills.

Map 4.A: Remaining Permitted MSW Landfill Capacity as of April 2009



The remaining capacity at private landfills has exceeded that for public facilities since the amounts were tracked in 1992 (Figure 4.8).

Figure 4.8
Remaining Capacity MSW Landfills
(Public/Private in Million Tons)



Besides the amount of remaining capacity, availability of that capacity needs to be considered. The Roosevelt Regional Landfill accepts waste from a wide variety of locations (see Map 4.C). In 2008, the facility received some type of solid waste from 26 counties in Washington, including the majority of the solid waste from 15 counties. They also received waste from Alaska, Oregon and British Columbia.

For other counties that do not have landfills, Roosevelt or the Oregon landfills have become the most utilized disposal option. Other landfills in the state accept the majority of waste from the county where they operate. To reserve capacity for local citizen needs, some are also using regional facilities for some of their disposal needs.

Ecology bases its 37-year estimate of total remaining permitted capacity on the amount of waste disposed in MSW landfills in 2008. This amount will vary depending on waste reduction and recycling activities, population growth or decline, and the economy. Other contributing factors include the impact of waste being imported into the state for disposal or a shift to in-state disposal of waste currently being exported. Cleanup activities, such as dredging contaminated sediments from Puget Sound, will add large volumes to the disposal totals.

Waste-to-Energy/Incineration

Three waste-to-energy facilities and incinerators statewide burned 297,832 tons of solid waste. Of that amount, 17,911 tons were wood waste at the Inland Empire Paper facility in Spokane, and 36,400 tons were waste at the Ponderay Newsprint Company in Pend Oreille County. These two incinerators do not burn MSW. The Spokane Regional Waste to Energy Facility is the only

incinerator that burns municipal solid waste in the state. For amounts and types of waste incinerated in 2008 using the new reporting categories, see http://www.ecy.wa.gov/programs/swfa/solidwastedata/).

MSW Landfill Disposal vs. Incineration

Table 4.10 compares the amount of solid waste disposed in MSW landfills, and waste-to-energy facilities and incinerators in 2008.

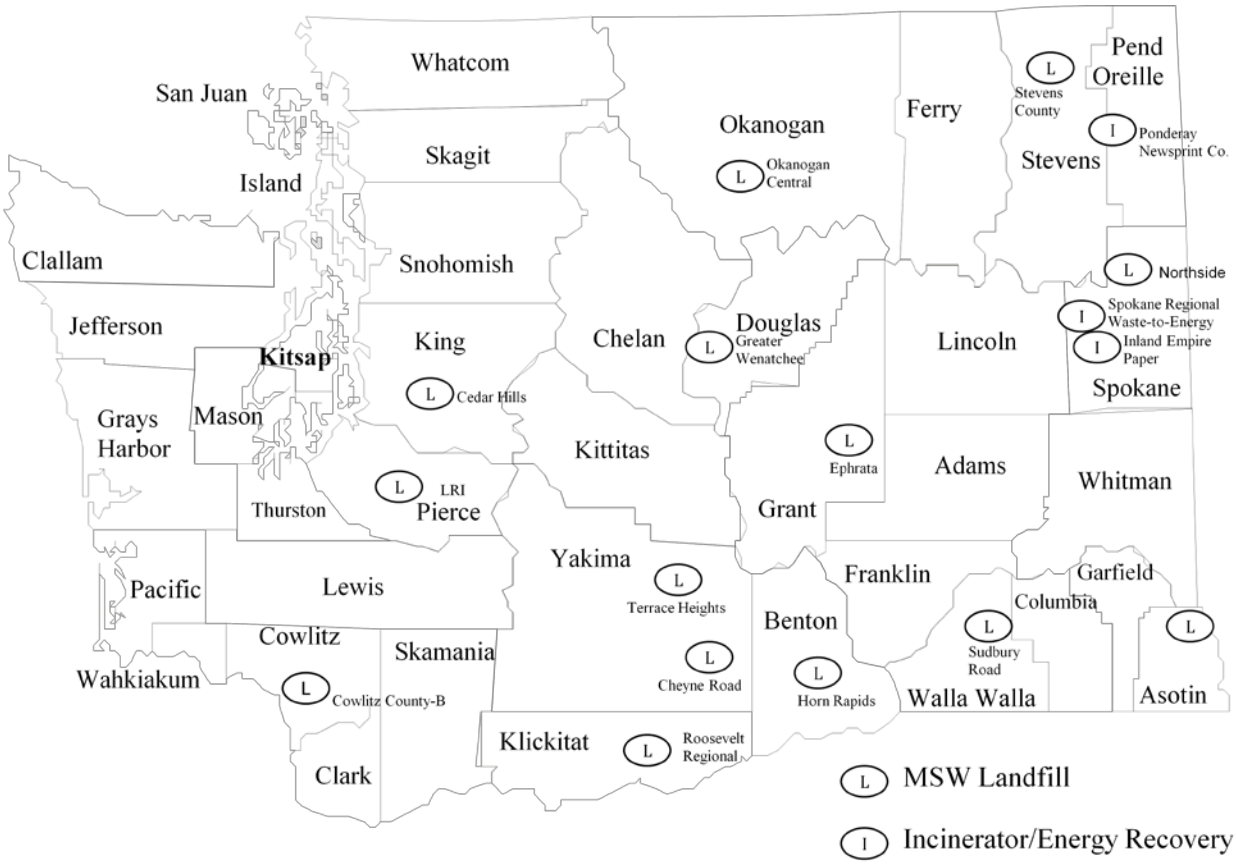
In 1991, 98% of waste was disposed in MSW landfills and 2% was incinerated. The highest percentage of incinerated waste in the state, 12%, occurred in 1995.

Table 4.10
Waste Disposed in MSW Landfills and Incinerators in 2008

Facility Type	Tons	Percent
MSW Landfills	5,157,546	95%
Incinerators	297,832	5%
Total	**5,455,378**	**100%**

In 2008, about 5% of the waste stream was incinerated. The amount of waste incinerated will likely remain fairly stable, with only one operating MSW energy-recovery facility and no new facilities planned. Map 4.B shows the location of MSW landfills and energy-recovery facilities in Washington.

Map 4.B: Location of MSW Landfills & Energy Recovery Facilities (as of October 2008)



Waste Disposed in Other Types of Landfills

Ash Monofill

Waste-to-energy facilities that generate more than 12 tons per day of MSW must dispose of their ash in a properly constructed ash monofill. *Chapter 173-350 WAC, Solid Waste Handling Standards,* and *Chapter 173-306 WAC, Special Incinerator Ash Management Standards,* now regulate these facilities. In 2008, the Spokane Waste-to-Energy Recovery facility, the only facility of this type in the state, sent 69,612 tons of special incinerator ash to the ash monofill at the Roosevelt Regional Landfill in Klickitat County.

Inert Landfills and Limited Purpose Landfills

In addition to MSW landfills, two other types of landfills currently exist in the state: inert landfills and limited purpose landfills. These are regulated under *Chapter 173-350 WAC,* Solid Waste Handling Standards, which took effect in February 2003. The former woodwaste landfill and inert/demolition landfill types no longer exist. Inert waste is narrowly defined for disposal in an *inert* landfill. Demolition waste will no longer be accepted at an inert landfill. Landfills accepting demolition or wood waste would need to be either limited purpose or MSW landfills. The limited purpose landfill permitted under the new rule has increased design and monitoring requirements.

The annual reporting forms for the inert landfills and limited purpose landfills under Chapter 173-350 WAC added more categories of waste. For detailed reports for the individual inert and limited purpose landfills, see http://www.ecy.wa.gov/programs/swfa/solidwastedata/.

For a more consistent look at inert landfills over time, some waste categories were combined for Table 4.11. For inert/demolition landfill data from 1992 - 2003 and inert landfill data for 2004-08, see http://www.ecy.wa.gov/programs/swfa/solidwastedata/.)

Table 4.11
Waste Types and Amounts Disposed at Inert Landfills (in Tons)[30]

Waste Types	2001	2002	2003	2004	2005	2006	2007	2008
Demolition	211,901	243,593	95,008	28,967	39,701	89,595	89,457	-
Industrial	-	-	81,474	-	-	-	2,150	1,940
Inert	199,256	112,457	163,435	379,298	944,153	973,855	1,324,663	1,250,973
Wood	167	445	1,082	2,526	402	610	-	-
Asbestos	3	6	11	-	-	-	-	-
Ash (other than SPI)	-	-	-	-	7,989	7,497	7,052	7,680
PCS	319,105	120,159	131,872	66,260	215,286	91,399	277,812	-
Tires	765	257	664	-	-	-	-	-
Other	2,646	-	2,668	33,472	324,110	68,609	7,311	538
Total Tons	**733,843**	**476,917**	**476,214**	**509,927**	**1,531,641**	**1,231,565**	**1,708,445**	**1,261,131**

[30] Chapter 173.350 WAC defines inert waste and limits the types of materials disposed in 'inert' landfills. These landfills were formerly permitted as inert/demolition landfills and accepted a wider variety of material. Some landfills reporting under this category are transitioning to a limited purpose permit or will be closing.

Table 4.12
Waste Types and Amounts Disposed at
Limited Purpose Landfills (in Tons)

Waste Types	2001	2002	2003	2004	2005	2006	2007	2008
Demolition	71,817	98,827	68,946	174,519	220,076	215,543	245,604	255,098
Industrial	325,114	282,747	325,863	262,560	420,285	257,297	173,992	149,978
Inert	202,577	195,303	157,431	36,155	53,597	39,928	48,784	100,115
Wood	6,841	2,747	8,420	32266	21,494	19,629	11,702	18,210
Ash (other than SPI)	-	-	-	533,201	409,376	138,616	77,082	65,117
Sludge	-	-	-	-	-	-	460	460
Asbestos	1,282	1,311	1,302	1,581	1,624	1,420	1,374	1,614
PCS	13,222	9,888	4,890	20,399	224,064	32,836	20,656	11,398
Soils (uncont.)	-	-	-	-	13,706	29,006	-	-
Tires	41	59	81	713	690	423	65	35
Other	24,698	14,402	19,737	13,708	23,022	25,390	21,210	21,038
Total Tons	**645,592**	**605,284**	**586,670**	**1,075,102**	**1,387,934**	**760,088**	**600,928**	**623,063**

The woodwaste landfill category no longer exists under *Chapter 173-350 WAC, Solid Waste Handling Standards*. For woodwaste landfill data from 1992 – 2003, see http://ecy.wa.gov/programs/swfa/solidwastedata/.)

Movement of Solid Waste for Disposal

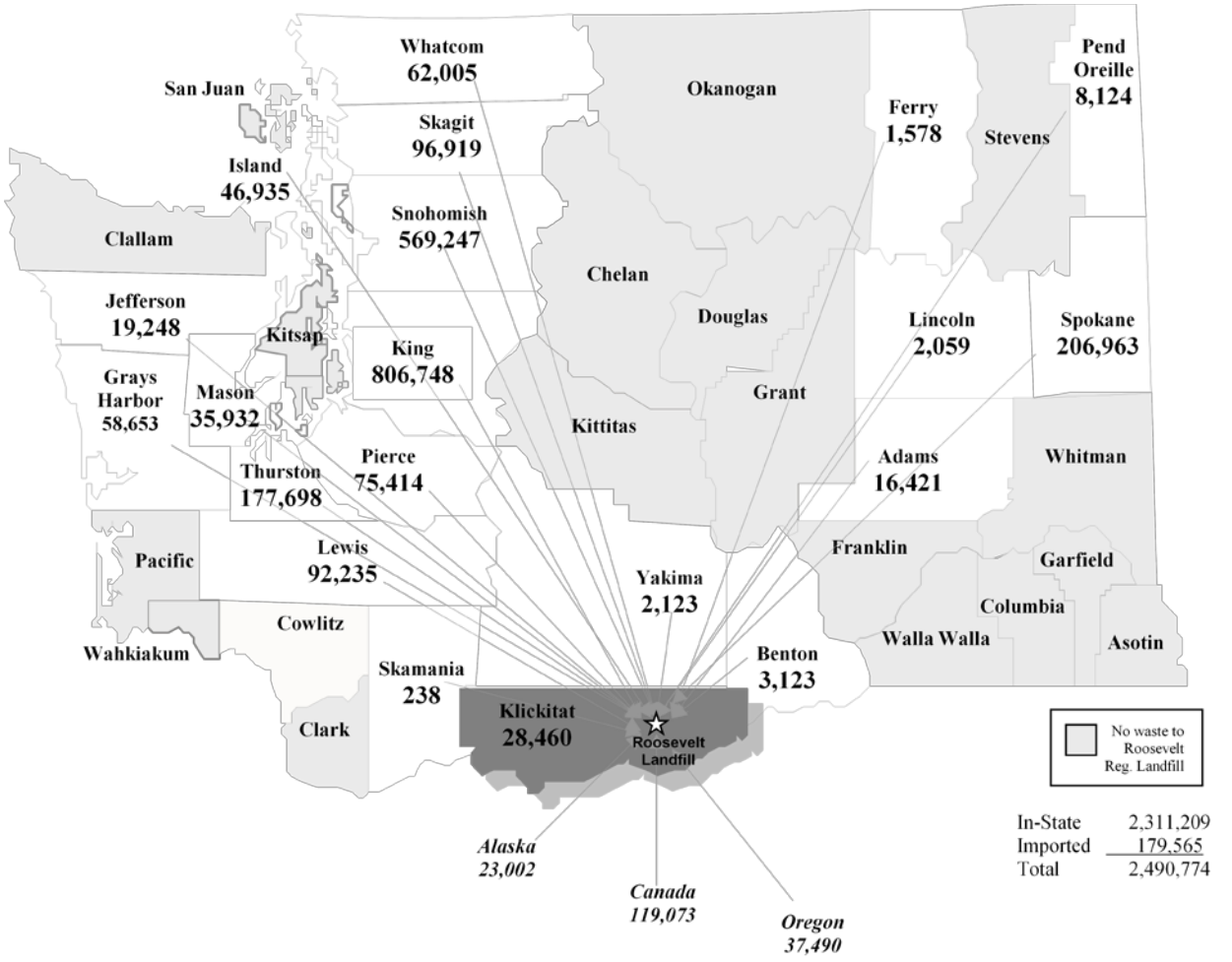
Movement of Waste Between Counties

All landfills and incinerators report the source, types and amounts of waste they receive from out of county. Eight of the 15 active MSW landfills reported receiving solid waste from other counties in 2008.

Some MSW movement was because of closer proximity to a neighboring county's landfill. This was especially true for smaller landfills that received MSW from other counties without their own landfills. Some of the waste from other counties was non-municipal waste such as PCS, demolition debris and asbestos.

With closure of many local landfills, Roosevelt Regional Landfill in Klickitat County and Oregon's regional landfills have become the chosen disposal options. The Roosevelt Regional Landfill received some type of solid waste from 20 of the 39 Washington counties and also from out-of-state and out-of-country (see Map 4.C).

Map 4.C: 2008 Solid Waste to Roosevelt Regional Landfill (in Tons)



For many counties that still have operating MSW landfills, Roosevelt Regional Landfill has become an option to dispose of some of their non-municipal waste, thus saving local landfill capacity for future need. Eleven of the 20 counties rely on Roosevelt for the majority of their MSW disposal.

Ten counties and the city of Seattle send the majority of their MSW to Oregon facilities. Four other counties send a significant amount of waste to Oregon. Much of the waste that goes to the Columbia Ridge Landfill in Oregon is waste other than MSW.

You can find spreadsheets that identify the disposal location, type and amount of waste for each county for 2008 (and previous years) at http://www.ecy.wa.gov/programs/swfa/solidwastedata/.

Waste Imported from Outside the State

Landfills and incinerators also report the source, types and amounts of waste received from out-of-state or out-of-country. In 2008, a total of 231,988 tons of solid waste, about 3% of the waste disposed and incinerated in Washington, were imported from outside the state's boundaries for disposal at MSW landfills and energy recovery facilities. The amount of waste imported for disposal decreased from a high of 6% in 1996. The termination of a contract between Roosevelt Regional Landfill and a California entity accounted for much of the drop in imported waste.

Table 4.13 shows types of waste received from out-of-state for disposal. The majority of this waste (180,650 tons) went to Roosevelt Regional Landfill. Of that, 119,073 tons came from British Columbia, with the remainder from Alaska (23,002 tons) and Oregon (37,490 tons).

Table 4.13
Out-of-State Waste Disposed in Washington

Type of Waste	2002	2003	2004	2005	2006	2007	2008
Municipal Solid Waste	112,097	77,803	144,396	147,746	166,634	195,056	183,488
Demolition	6,104	3,824	3,477	2,962	3,212	4,964	3,848
Industrial	42,953	30,584	41,171	55,085	44,725	41,600	28,601
Inert	1,097	-	59	269	65	8	59
Woodwaste	35	28	1	-	-	30	5,413
Sludge	-	621	-	19	10,883	-	-
Asbestos	350	1,245	304	831	283	354	262
Petroleum Contaminated Soils	1,769	3,114	7,957	4,801	3,650	4,954	3,804
Tires	1,162	5,157	4,694	1,813	3,054	3,773	5,458
Medical	-	-	-	-	-	-	-
Other	359	508	728	1,332	1,585	1,982	1,055
Total	**165,935**	**122,884**	**202,787**	**214,858**	**234,091**	**252,720**	**231,988**

Nez Perce County, Idaho disposed of 28,000 tons of MSW in Washington's Asotin County Landfill. Asotin County and Nez Perce County prepared a joint local comprehensive solid waste management plan to meet the requirements of Washington State statute. They have an agreement for joint use of the landfill.

Graham Road Recycling and Disposal in Spokane County received 7,435 tons and the Weyerhaeuser limited purpose landfill in Cowlitz County received 7,345 tons (see http://www.ecy.wa.gov/programs/swfa.solidwastedata/ for imported totals for 1991 – 2008.

Waste Exported from the State

Another aspect of solid waste movement is the amount exported from Washington to another state for disposal. In 2008, a total of 2,030,008 tons of waste created in Washington were disposed of in Oregon landfills, an increase from 705,608 tons in 1992. An additional 26,590 tons of tires were exported to other states for disposal. Table 4.14 compares the waste amounts and types exported and imported (see http://www.ecy.wa.gov/programs/swfa.solidwastedata/ for exported totals for 1993 - 2008.)

Table 4.14
Comparison of Imported to Exported
Waste for all Solid Waste Facilities

Type of Waste	Imported		Exported	
	1991	2008	1993	2008
Municipal Solid Waste	24,475	183,488	710,515	1,259,339
Demolition	1,412	3,848	2,245	239,218
Industrial	-	28,601	864	106,771
Inert	208	59	-	-
Woodwaste	36	5,413	-	-
Ash (other than SIA)	-	-	-	2,045
Sludge	-	-	-	131
Asbestos	-	262	1,623	6,015
Petroleum Contaminated Soils	-	3,804	22,308	352,977
Other Contaminated Soils	-	-	-	5,729
Tires	-	5,458	-	26,590
Medical Waste	-	-	-	69
Other	-	1,055	18,512	57,714
Total	**26,131**	**231,988**	**756,067**	**2,056,598**

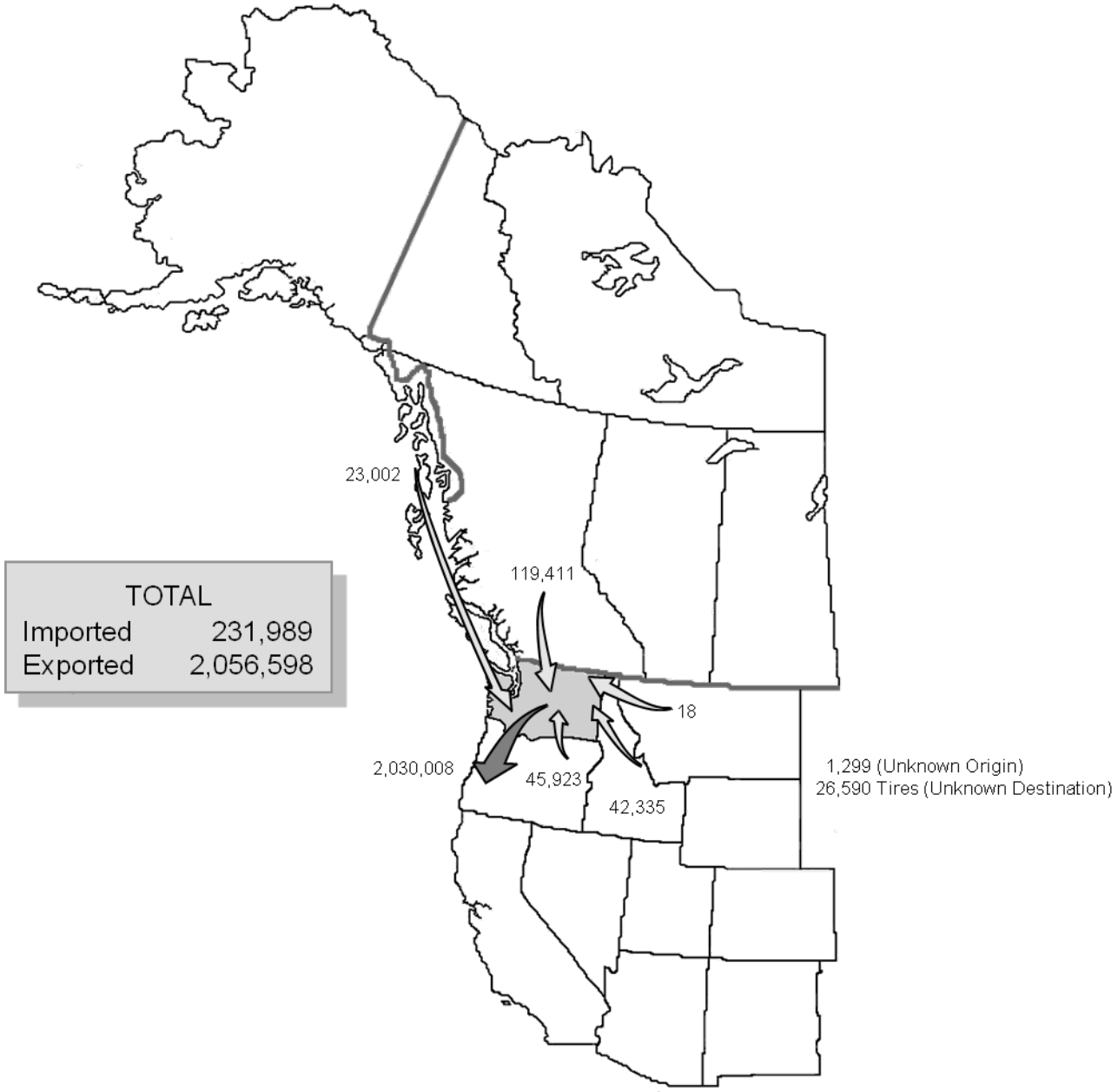
Major exporters of MSW in Washington included the city of Seattle; Clallam, Columbia, Clark, Franklin, Kitsap, Pacific, San Juan , Skamania and Whitman counties; along with portions of Benton and Whatcom counties. Reasons to export out-of-state have to do with closure of local landfills and negotiation of favorable long-haul contracts.

Trends in Interstate Waste Movement for Washington

The first significant movement of waste across Washington State boundaries started in 1991. In mid-1991, the city of Seattle started long-hauling waste to the Columbia Ridge Landfill in Arlington, Oregon. In late 1991, the Roosevelt Regional Landfill began operating in Klickitat County, Washington, accepting waste from British Columbia, Idaho and California.

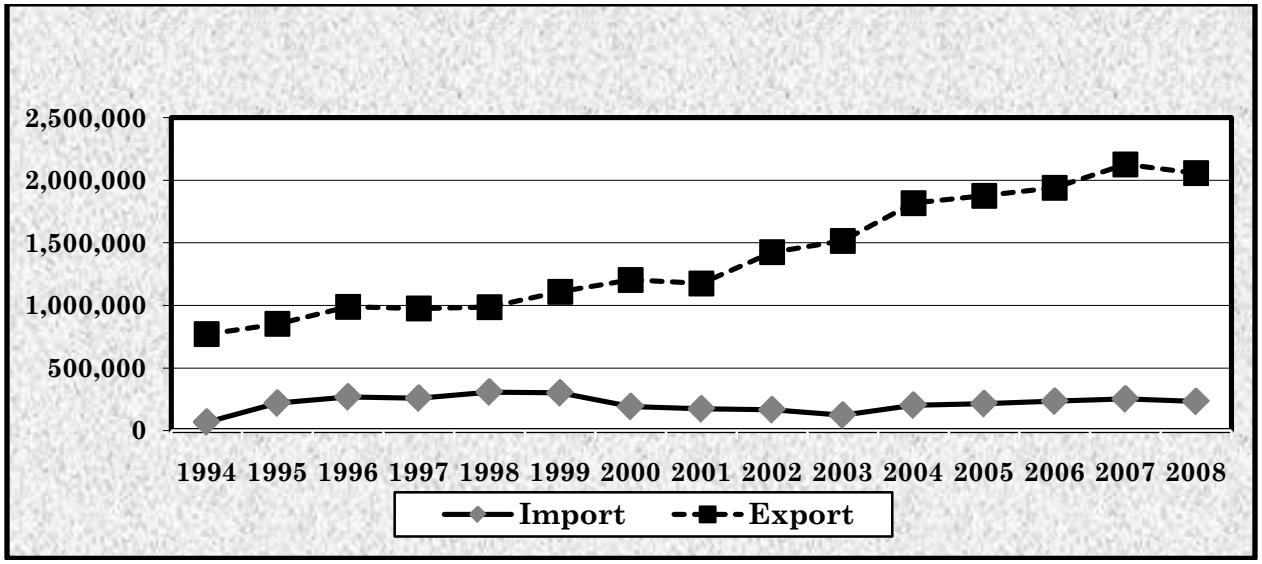
Map 4.D identifies the sources and amounts of waste that were imported and exported in 2008.

Map 4.D: Imported and Exported Waste (2008)

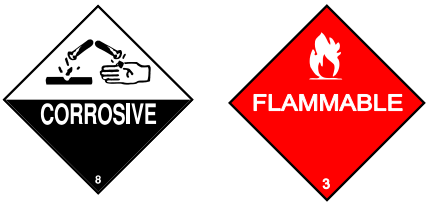


As shown in Figure 4.9, Washington exports have been much higher than imports since 1991. Exported waste amounts have increased with over eight times as much waste exported to Oregon's landfills (Columbia Ridge, Wasco and Finley Buttes) as is imported to Washington for incineration or disposal.

Figure 4.9
Trend of Imported/Exported Solid Waste



Chapter 5: Moderate Risk Waste Management



The term "moderate risk waste" (MRW) was created by revisions to Washington State's 1986 Hazardous Waste Management Act (RCW 70.105). MRW is a combination of household hazardous waste (HHW) and conditionally exempt small quantity generator (CESQG) waste. HHW is waste created in the home, while CESQG is small quantities of business or non-household waste. Both HHW and CESQG waste are exempt from state hazardous waste regulations.

- Total MRW collected in 2008 was just more than over 31.1 million pounds.
- The average amount of HHW disposed of per participant was 63.7 pounds, and per capita was 2.15 pounds.
- More than 3.3 percent of Washington residents used a fixed facility or collection event to remove hazardous waste from their households, about 8.7 percent of all households.
- Counties that publicly collected the most CESQG waste per capita were Yakima, San Juan, Cowlitz, Island and Kitsap.
- Counties that collected the most used oil per capita were Garfield, Stevens, Skamania, Lincoln and Pacific.
- The ten categories of collected waste that increased the most from 2007 were Non-Regulated Liquids, Oil Filters (crushed), Batteries (small lead-acid), Flammable Liquid Poison (aerosols), Flammable Gas Poison (aerosols), Latex Paint (contaminated), CFCs, CRTs, Oil Filters and Electronics.
- Approximately 86 percent of all MRW was recycled, reused or used for energy recovery.

MRW collections started in the early 1980s primarily as HHW-only events, also known as "roundups" or collection events. These events usually happened once or twice a year.

In the late 1980s, permanent collection facilities, now known as fixed facilities, began to replace collection events to fulfill the need for year-round collection. In addition, collection facilities have further developed with mobile units and satellite facilities. These efforts resulted in a larger number of customers served, decreased costs and increased reuse and recycling of MRW.

Please note the data in this chapter is only a portion of the MRW waste stream. The MRW data presented here is reported through local governments, with a few private companies also reporting because they have a solid waste permit issued by the appropriate local authority. Chapter 4 includes additional statewide data.

Funding

At the time of publication of this document, Ecology provides funding to local governments to develop and implement local hazardous waste management plans through the CPG Program.

RCW 70.105.235 authorizes financial assistance for implementation of MRW programs. Due to Washington State's budget deficit in the 2007-09 Biennium and the projected budget deficit in the 2009-11 Biennium, the Legislature moved capital programs previously funded from the Local Toxics Control Account to the State Building Construction Account (SBCA). SBCA is supported through the sale of bonds and is now the new funding source for the CPG Program.

Development of local MRW plans is also eligible for financial assistance. All local governments in the state of Washington submitted MRW plans. Every local MRW plan must address:

- HHW collection.
- Household and public education.
- Small business technical assistance.
- Small business collection assistance.
- Enforcement.
- Used oil collection and education

Accuracy of Data Collection

Ecology created and circulates a standard reporting form to all MRW programs. Nonetheless, the reported data can vary depending on a program's collection process, and how data is reported and interpreted. All programs must provide individual MRW reports.

2008 Data

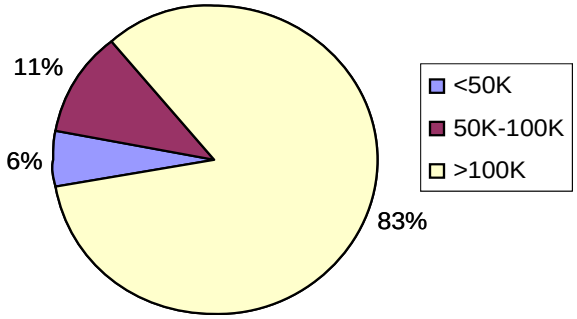
Ecology requires local programs to submit MRW report forms annually. Annual reports are required to be submitted by April 1 for the previous calendar year collections. Information received from local programs through MRW annual reports provides Ecology with data on MRW infrastructure, collection trends, costs and waste types received at collection events and fixed facilities. Ecology translates this data into the information contained in this chapter and designs it to be specifically useful to those who operate or work in MRW programs in Washington State.

This year's report focuses on 2008 data with some comparisons to data published in previous years' reports. In an effort to provide useful information for individual programs, it was decided to present data in categories by county size.

In 2008, Columbia County did not report any HHW collections, only used oil collections. Also, Franklin County failed to provide any annual reports for 2008 for their public collection. Private collectors provided the numbers for that county.

Figure 5.1 indicates a distinction between counties with a population of less than 50,000, 50,000 to 100,000, and more than 100,000.

Figure 5.1
Percent of State Population by County Size



Permanent fixed facilities now service most of the state. In 2008, Chelan, Douglas, Ferry, Garfield, San Juan, Skamania and Wahkiakum counties did not have fixed facilities. Garfield residents use the facility in Asotin County and Cowlitz County conducts a mobile unit in Wahkiakum County. Chelan, Douglas, Ferry, San Juan and Skamania counties conduct collection events. In past reports Ferry County was shown to have a fixed facility, but the facility is more properly categorized as a limited MRW Facility. Cowlitz County opened a new MRW facility at the Waste Control Transfer Station in 2008. The previous MRW facility was located at the Cowlitz County Landfill and closed in 2009 because the landfill will reach capacity soon.

New MRW Facility in Cowlitz County

Also, new facilities may be coming to Chelan, Pierce and Clark Counties in the future.

Collection services for CESQGs have leveled off statewide. For 2008, 18 fixed facilities serviced CESQGs and 4 different counties provided collection events for CESQGs.

Table 5.1 shows the size of individual counties. In Washington State there are 42 programs that manage MRW. These programs include all 39 counties.

Table 5.1
Individual County Population by Size (2008)

<50K	
Adams	17,800
Asotin	21,400
Columbia	4,100
Douglas	37,000
Ferry	7,700
Garfield	2,300
Jefferson	28,800
Kittitas	39,400
Klickitat	20,100
Lincoln	10,400
Okanogan	40,100
Pacific	21,800
Pend Oreille	12,800
San Juan	16,100
Skamania	10,700
Stevens	43,700
Wahkiakum	4,100
Whitman	43,000
<50K Total	**381,300**

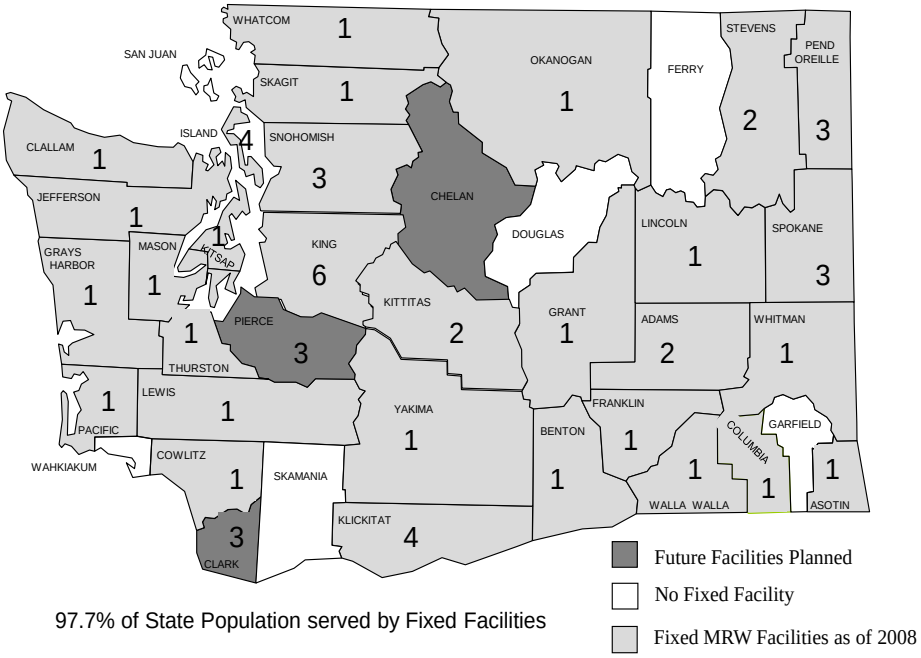
50K-100K	
Chelan	72,100
Clallam	69,200
Cowlitz	99,000
Franklin	70,200
Grant	84,600
Grays Harbor	70,900
Island	79,300
Lewis	74,700
Mason	56,300
Walla Walla	58,600
50K-100K Total	**734,900**

>100K	
Benton	165,500
Clark	424,200
King	1,884,200
Kitsap	246,800
Pierce	805,400
Skagit	117,500
Snohomish	696,600
Spokane	459,000
Thurston	245,300
Whatcom	191,000
Yakima	235,900
>100K Total	**5,471,400**

State Total: 6,587,600

Map 5.A shows which counties have permanent facilities, the number of facilities in each county and which counties are likely to develop a permanent facility in the future.

Map 5.A
56 MRW Facilities as of 2008



97.7% of State Population served by Fixed Facilities

MRW Collected

As shown in Table 5.2, Washington collected nearly14.2 million pounds of HHW, 8.6 million pounds of used oil (UO) from collection sites and 8.3 million pounds of CESQG waste, for a total of 31.1 million pounds of MRW during 2008. The most significant trends seen since 2004 are the increase of CESQG waste collected, and decrease in HHW and used oil collected.

The increases seen in CESQG collection totals are attributed to statewide collections by Phillip Services (Kent Facility) in King County and the Emerald Services facility in Pierce County. The most significant increase has come from antifreeze collections by Emerald Services.

Table 5.2
Total Pounds per Waste Category
Years 1999 – 2008

Collection Year	HHW lbs (no UO)	Used Oil lbs	CESQG lbs	Total MRW lbs
1999	9.9M	9.3M	637K	20.4M
2000	10.5M	8.3M	1.1M	19.8M
2001	15.6M	11.3M	1.0M	27.9M
2002	13.5M	9.2M	1.4M	24.1M
2003	16.0M	11.7M	1.3M	29.0M
2004	15.3M	12.4M	2.4M	30.1M
2005	14.7M	11.3M	6.3M	32.3M
2006	15.2M	10.0M	7.1M	32.3M
2007	14.9M	9.7M	7.6M	32.2M
2008	14,163,842	8,606,794	8,336,030	31,106,666

Collection by Waste Category and Type

There a couple of factors that affected collection totals for 2008. First, King County discontinued collection of latex paint in 2008. Therefore, the 2.2 million pounds of latex paint collected by King County in 2007 were not collected in 2008. This is a trend that seems to be continuing into 2009. Latex paint is not hazardous and very expensive for programs to manage. Two additional large counties have already either stopped or will soon stop collecting latex paint.

Second, in previous reports the mercury containing devices (CFLs, tubes, thermostats, thermometers, etc.) were converted to pounds of mercury collected. Due to the problems encountered by trying to convert products containing varying amounts of mercury, this year's report simply report the total weight of all mercury containing devices collected. This change has added close to 420,000 pounds to the total of MRW collected.

As shown in Table 5.3, the most dominant waste types of MRW collected in 2008 were noncontaminated used oil, antifreeze, latex and oil-based paint, flammable liquids and lead-acid batteries. These totals include used oil and antifreeze collected at all collection sites. These six specific waste types accounted for 78.5 percent of the estimated 31.1 million pounds of MRW collected in 2008.

Table 5.3
Six Most Dominant MRW Waste Types Collected in 2008

Waste Type	Total Lbs.
Non-Contaminated Used Oil	8,606,794
Antifreeze	6,156,045
Latex Paint	3,246,022
Oil-based Paint	3,037,253
Flammable Liquids	1,796,834
Lead-Acid Batteries	1,574,670
Total	**24,417,618**

Table 5.4 provides summary information on total pounds of MRW collected from HHW and CESQG (publicly and privately collected) categories by waste types. Some waste type categories were changed and a few new ones added to the annual report form beginning in 2007.

Table 5.4
Total Pounds of MRW Collected by Waste Category in 2008

Waste Type	HHW	CESQG	Total
Acids	111,596	27,829	139,425
Acids (Aerosol Cans)	0	23	23
Aerosols (Consumer Commodities)	173,249	21,918	195,167
Antifreeze	661,431	5,494,614	6,156,045
Bases	152,739	24,634	177,373
Bases, Aerosols	993	31	1,024
Batteries (Lead Acid)	1,559,965	14,705	1,574,670
Batteries (Small Lead Acid)	13,906	9,095	23,001
Batteries (Dry Cell)	175,351	13,190	188,541
Batteries (Nicad/NIMH/Lithium)	23,108	6,798	29,906
CFCs	2,009	0	2,009
Chlorinated Solvents	2,961	2,371	5,332
CRT's	1,022,263	64,006	1,086,269
Electronics	905,937	4,500	910,437
Flammable Solids	11,131	25,658	36,789
Flammable Liquids	1,036,195	760,639	1,796,834
Flammable Liquids Poison	164,442	13,005	177,447
Flammable Liquid Poison, Aerosols	25,604	0	25,604

Waste Type	HHW	CESQG	Total
Flammable Gas (Butane/Propane)	66,393	1,614	68,007
Flammable Gas Poison	4,838	109	4,947
Flammable Gas Poison, Aerosols	27,380	1,678	29,058
Latex Paint	3,106,604	139,418	3,246,022
Latex Paint, Contaminated	824,347	28,112	852,459
Mercury Compounds (Dental Amalgam)	28	7,982	8,010
Mercury Devices (Monometers, Barometers, etc.)	98	10	108
Mercury (Fluorescent Lamps & CFLs)	281,891	127,035	408,926
Mercury (Pure Elemental)	483	170	653
Mercury (Switches & Relays)	2	7	9
Mercury (Thermostats/Thermometers)	3,705	298	4,003
Nitrate Fertilizer	2,036	0	2,036
Non-Regulated Liquids	57,322	537,546	594,868
Oil-Based Paint	2,665,479	371,774	3,037,253
Oil-Based Paint, Contaminated	4,526	6,400	10,926
Oil Contaminated	46,520	28,680	75,200
Oil Filters	233,432	3,596	237,028
Oil Filters Crushed	30,457	0	30,457
Oil Non-Contaminated	8,549,312	57,482	8,606,794
Oil with Chlorides	922	0	922
Oil with PCBs	15,714	6,630	22,344
Other Dangerous Waste	53,681	740,032	793,713
Organic Peroxides	1,147	296	1,443
Oxidizers	33,963	3,742	37,705
Pesticide/Poison Liquid	271,009	9,064	280,073
Pesticide/Poison Solid	193,512	14,316	207,828
Photo/Silver Fixer	1,266	13,768	15,034
Reactives	3,076	1,778	4,854
MRW TOTAL	**22,522,113***	**8,584,553***	**31,106,666**

* These totals do not match the HHW and CESQG totals in Table 5.2 because these contain used oil, which was separated out in Table 5.2. Also, in past reports most of the used oil was included with the CESQG totals. It is impossible to know if used oil collected at facilities such as Jiffy Lube is HHW or CESQG. However, it seems more reasonable in that most of it is HHW rather than CESQG. Therefore, it is now included with the HHW total in Table 6.4 instead of the CESQG total as in the past.
Note: In 2008 MRW facilities recycled 8,421,667 pounds of materials such as propane tanks, cardboard, cans, etc. This number is not included in any of the data in the above table or elsewhere in this Chapter. It is noted here because it is a waste stream that MRW facilities must deal with. The majority of MRW facilities manage these recyclables appropriately.

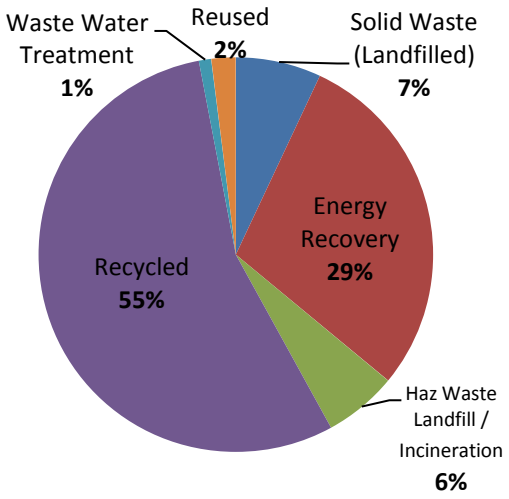
The annual report form was changed for the 2007 reporting year to get better accuracy for mercury collections and reduce the amount reported in the "Other Dangerous Waste" category. The newly added waste categories include:

- Aerosols (consumer commodities)
- CFCs
- Mercury devices (monometers, barometers, etc.)
- Mercury compounds (dental amalgam)
- Nitrate fertilizer
- Nonregulated liquids
- Photo/silver fixer
- Materials recycled (propane tanks, cardboard, cans, etc.)

Disposition of MRW Waste

The disposition of MRW is generally well managed. Most MRW is recycled or used for energy recovery. Very little of the MRW collected is safe for solid waste disposal. Six percent of all MRW is disposed at a hazardous waste landfill or incinerator. See Figure 5.2 for final disposition of MRW between recycled, reused, energy recovery, hazardous waste landfill or incineration, solid waste landfill and disposal through a wastewater treatment plant.

Figure 5.2
MRW Final Disposition



MRW Data

Table 5.5 shows various data by county. This data includes privately collected CESGQ wastes by Emerald Services and Phillip Services Corporation. The included private collection data has only been shown in past reports for Pierce and King counties. This information can be used to

evaluate efficiencies within each county by comparing percentage of participants per housing units and costs, and HHW pounds per participant. Housing units are the number of households in each county. This data is used instead of per capita because participants typically represent a household.

Table 5.5
Various HHW Data by County

County	Housing Units	HHW Participants	% Participant / Housing Units	HHW Cost / Participant	HHW lbs / Participant	HHW Total lbs	HHW, SQG, & Used Oil Total lbs
Adams	6,367	225	3.5%	$53.07	25.06	5,639	35,992
Asotin	9,850	585	5.9%	$103.37	72.67	42,513	64,374
Benton	65,892	4,854	7.4%	$50.55	40.00	179,425	322,468
Chelan	34,236	759	2.2%	$81.04	155.79	118,247	241,406
Clallam	34,995	523	1.5%	$148.25	124.10	64,905	277,539
Clark	166,196	16,336	9.8%	$35.01	134.55	2,198,077	3,733,569
Columbia	2,170	0	0%	$0	0	No HHW Collections in 2008	15,492*
Cowlitz	42,826	1,841	4.3%	$61.99	121.41	223,523	556,740
Douglas	15,191	321	2.1%	$98.47	150.78	48,401	118,387
Ferry	4,121	30	.7%	$25.74	15.53	466	1,793
Franklin	22,902	299	1.3%	$14.48	4.79	1,433	256,581
Garfield	1,318	Inc. w/ Asotin	Inc. w/ Asotin	Inc. w/ Asotin	Inc. w/ Asotin	Inc. w/ Asotin	21,000
Grant	33,968	594	1.7%	$90.77	103.53	61,499	129,102
Grays Harbor	35,472	1,606	4.5%	$98.94	66.56	106,894	395,144
Island	38,446	1,646	4.3%	$120.68	129.02	212,377	357,218
Jefferson	16,506	1,193	7.2%	$67.41	39.18	46,745	128,356
King	821,935	71,274	8.7%	$42.22	53.38	3,804,577	8,239,473
Kitsap	104,467	6,608	6.3%	$111.59	92.85	613,585	1,297,193
Kittitas	19,687	515	2.6%	$170.07	286.10	147,339	242,660
Klickitat	9,985	8,700	87.1%	$5.15	10.43	90,758	132,125
Lewis	33,865	1,516	4.5%	$117.77	237.49	360,046	611,974
Lincoln	5,827	374	6.4%	$24.64	20.03	7,494	46,227
Mason	30,306	4,391	14.5%	$13.26	31.03	136,292	220,873
Okanogan	20,797	312	1.5%	$217.68	171.39	53,473	85,568
Pacific	15,101	197	1.3%	$593.90	69.49	13,690	87,754
Pend Oreille	7,516	2,489	33.1%	$37.91	26.82	66,771	95,693
Pierce	323,884	9,516	2.9%	$66.20	49.35	469,648	2,070,128
San Juan	11,514	296	2.6%	$142.92	160.55	47,522	107,625

County	Housing Units	HHW Participants	% Participant / Housing Units	HHW Cost / Participant	HHW lbs / Participant	HHW Total lbs	HHW, SQG, & Used Oil Total lbs
Skagit	49,454	3,784	7.7%	$33.05	44.19	167,241	409,427
Skamania	5,409	238	4.4%	$87.98	91.63	21,808	66,086
Snohomish	277,565	18,289	6.6%	$56.81	124.07	2,269,102	4,545,781
Spokane	196,219	35,900	18.3%	$15.98	24.38	875,298	2,177,593
Stevens	19,876	412	2.1%	$65.54	186.14	76,691	294,914
Thurston	104,237	14,574	14.0%	$44.97	48.76	710,652	1,485,545
Wahkiakum	2,081	36	Inc w/ Cowlitz	Inc w/ Cowlitz	Inc w/ Cowlitz	Inc w/ Cowlitz	Inc w/ Cowlitz
Walla Walla	23,256	1,893	8.1%	$91.45	77.56	146,836	195,992
Whatcom	88,211	6,957	7.9%	$50.54	38.72	269,404	731,912
Whitman	18,909	1,060	5.6%	$32.38	30.08	31,885	54,754
Yakima	85,192	2,265	2.7%	$111.75	208.07	471,286	1,252,434
STATEWIDE	**2,805,749**	**222,408**	**7.9%**	**$45.04**	**63.7**	**14,163,842**	**31,106,666**

* Columbia County total represents used oil and privately collected CESQG wastes.

Household Hazardous Waste (HHW)

Participants per Housing Unit

Counties that exhibit ten percent or higher of participants per housing unit perform excellent public education to encourage use of facilities or events, have very convenient locations for their collection facilities, or both. The participation number and rate for Klickitat County seem high and were not verified before this report was completed.

Cost per Participant

This statistic is hard to compare because of the many variables in program costs. Some programs record every cost, whether direct or indirect; others record only the disposal and basic operation costs.

Larger counties have the advantage of efficiency in scale, both in quantities received and in disposition options. Also, there are differences in service levels of the basic program, accounting differences, and errors. However, this data does provide an idea of what is possible and an incentive to contact those counties that seem to operate efficiently. Statewide and according to annual reports submitted to Ecology, HHW (does not include CESQG costs) programs spent just over $10 million in 2008.

HHW Pounds per Participant

The average pounds collected statewide per participant for HHW was 63.7. Table 5.6 shows the top five counties with the highest collections of HHW in pounds per capita (not participant) for 2006-08. Statewide, HHW pounds per participant collected was 2.15 pounds.

Table 5.6
High Collections of HHW (No Used Oil Sites)
Pounds per Capita by County in 2006-08

HHW 2006		
County	**Size**	**Lbs**
Klickitat	<50K	**5.35**
Pend Oreille	<50K	**5.18**
Clark	>100K	**4.89**
Island	50-100K	**4.87**
Kittitas	<50K	**4.36**

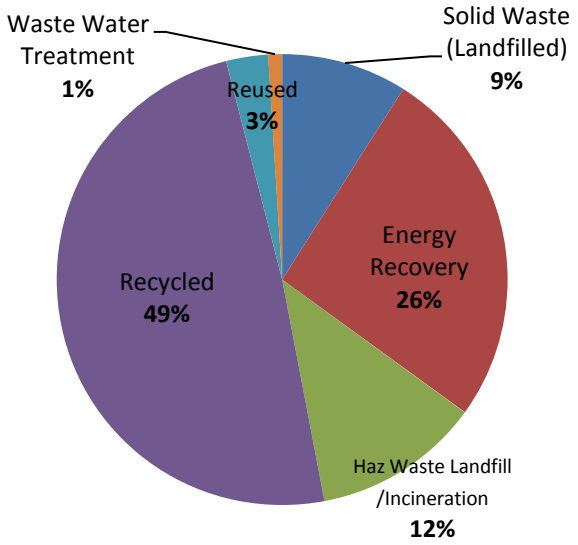
HHW 2007		
County	**Size**	**Lbs**
Pend Oreille	<50K	**6.85**
Klickitat	<50K	**6.26**
Skagit	>100K	**4.42**
Skamania	<50K	**4.21**
Clark	>100K	**4.16**

HHW 2008		
County	**Size**	**Lbs**
Pend Oreille	<50K	**5.22**
Clark	>100K	**5.18**
Lewis	50-100K	**4.82**
Klickitat	<50K	**4.52**
Kittitas	<50K	**3.74**

HHW Disposition

Figure 5.3 shows the final disposition of all HHW collected throughout Washington State.

Figure 5.3
HHW Final Disposition



Conditionally Exempt Small Quantity Generator (CESQG)

Twenty-one local MRW programs collect CESQG waste from the public. King County began a pilot program to collect CESQG wastes in 2008. Counties that sponsor CESQG waste collections are:

Asotin	Grays Harbor	Lewis	Thurston
Benton	Island	Okanogan	Whatcom
Chelan	Jefferson	Pacific	Yakima
Cowlitz	King	San Juan	
Douglas	Kitsap	Skagit	
Grant	Kittitas	Snohomish	

Yakima County was responsible for close to 24 percent of the total statewide volume of publicly collected CESQG waste. This is largely due to Yakima County's policy of not charging businesses to dispose or recycle their waste. This does not take into account the numbers of CESQG waste collected privately in the county.

The top five counties that publicly collected the most CESQG waste per capita in 2008 were:

- Yakima
- San Juan
- Cowlitz
- Island
- Kitsap

Table 5.7 shows the total amount of CESQG waste collected publicly and privately by each county. When we take into account both public and private collection numbers, the top five counties for CESQG collections per capita in 2008 were:

- Franklin
- Clark
- Spokane
- Whatcom
- Grays Harbor

Table 5.7
2008 Washington State Public and Private CESQG Collections in Pounds by County

County	Publicly Collected CESGQ Waste	Public CESQG Waste Collected/Capita	Privately Collected CESGQ Waste	Total CESQG Waste Collected	Total CESQG Waste Collected/Capita
Adams	0	0	1,974	1,974	.11
Asotin	462	.02	2,814	3,276	.15
Benton	17,573	.11	7,736	25,309	.15
Chelan	9,971	.14	16,272	26,243	.36
Clallam	0	0	53,919	53,919	.78
Clark	0	0	1,468,387	1,468,387	3.46
Columbia	0	0	396	396	.10
Cowlitz	44,981	.45	10,810	55,791	.56
Douglas	2,405	.07	2,490	4,895	.13
Ferry	0	0	1,327	1,327	.17
Franklin	0	0	255,148	255,148	3.63
Garfield	0	0	182	182	.08
Grant	352	.004	12,675	13,027	.15
Grays Harbor	25,108	.35	73,885	98,993	1.40
Island	35,105	.44	20,684	55,789	.70
Jefferson	6,221	.22	20,516	26,737	.93
King	60,684	.03	2,469,467	2,530,151	1.34
Kitsap	104,263	.42	218,451	322,714	1.31
Kittitas	3,230	.08	3,661	6,891	.17
Klickitat	0	0	182	182	.01
Lewis	29,635	.40	50,076	79,711	1.07
Lincoln	0	0	2,895	2,895	.28
Mason	0	0	37,856	37,856	.67
Okanogan	1,318	.03	6,860	8,178	.20
Pacific	587	.03	32	619	.03
Pend Oreille	0	0	1,012	1,012	.08
Pierce*	2,686	.003	866,670	869,356	1.08
San Juan	8,325	.52	0	8,325	.52
Skagit	9,935	.08	23,881	33,816	.29
Skamania	0	0	1,136	1,136	.11
Snohomish	162,394	.23	629,401	791,795	1.14
Spokane	0	0	697,826	697,826	1.52
Stevens	0	0	6,583	6,583	.15
Thurston	64,372	026	233,429	297,801	1.21
Wahkiakum	0	0	0	0	0
Walla Walla	0	0	1,196	1,196	.02
Whatcom	77,843	.40	212,170	290,013	1.52
Whitman	0	0	8,328	8,328	.19
Yakima	203,683	.86	44,570	248,253	1.05
Statewide Totals	**871,133**	**.13**	**7,464,897**	**8,336,030**	**1.27**

* City of Tacoma's CESQG program only collects fluorescent lighting.

Table 5.8 shows the total amount of CESQG waste collected publicly and privately by waste type. Excluding the "Other DW" category, the top five CESQG waste types collected in 2008 were:

- Antifreeze
- Flammable Liquids
- Non-Regulated Liquids
- Oil-Base Paint
- Latex Paint

Table 5.8
Washington State Public and Private CESQG Collections for 2008 by Waste Type

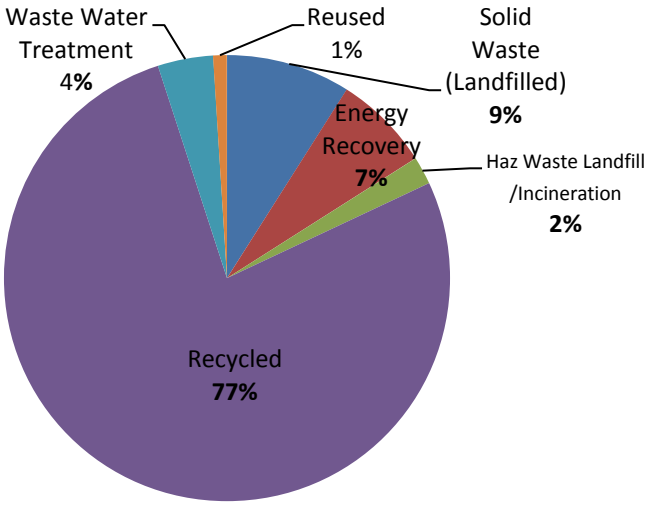
Waste Type	Public Collections	Private Collections	Totals
Antifreeze	14,127	5,480,487	5,494,614
Flammable Liquids	99,985	660,654	760,639
Other DW	35,168	516,009	551,177
Non-Regulated Liquids	23,578	513,968	537,546
Paint - Oil Base	277,388	94,386	371,774
Paint - Latex	127,330	12,088	139,418
Mercury Collections	117,278	18,224	135,502
CRT's	24,325	39,681	64,006
Paint - Latex Contaminated	25,143	2,969	28,112
Acids	15,133	12,696	27,829
Flammable Solids	4,018	21,640	25,658
Used Oil - Non-Contaminated	456	24,636	25,092
Bases	14,835	9,799	24,634
Aerosols - Consumer Commodities	11,631	10,297	21,928
Batteries - Auto Lead Acid	11,268	3,437	14,705
Pesticides - Poison/Solids	6,986	7,330	14,316
Photo/Silver Fixer	12,663	1,105	13,768
Batteries - Alkaline/Carbon	8,439	4,751	13,190
Flammable Liquid Poison	10,901	2,104	13,005
Batteries - Small Lead Acid	1,261	7,834	9,095
Pesticides - Poison/Liquid	5,688	3,376	9,064
Batteries-Nicad/Lithium	4,777	2,021	6,798
Oil w/ PCB's	5,870	760	6,630
Paint - Oil Base -Contaminated	400	6,000	6,400
Electronics	0	4,500	4,500
Oxidizers	2,285	1,457	3,742
Oil Filters	3,596	0	3,596
Chlorinated Solvents	1,516	855	2,371
Reactives	1,269	509	1,778
Flammable Gas Poison - Aerosols	661	1,017	1,678
Flammable Butane/Propane	1,546	68	1,614
Flammable Liquid Poison - Aerosols	892	50	942
Used Oil - Contaminated	450	0	450
Organic Peroxides	112	184	296
Flammable Gas Poison	109	0	109
Bases - Aerosols	31	0	31
Acids - Aerosols	18	5	23
Totals	**871,133**	**7,464,897**	**8,336,030**

* Note: Approximately 66 percent of all CESQG wastes collected comes from collection of antifreeze.

CESQG Disposition

Eight-four percent of all CESQG waste was either recycled or used for energy recovery. See Figure 5.4 for the complete disposition of CESQG wastes. The biggest difference between final disposition of HHW and CESQG wastes lies in the amount of waste recycled. Seventy-seven percent of CESQG waste was recycled, while 49 percent of HHW was disposed of via the same method. Also significant is the 7 percent of CESQG waste used for energy recovery while 26 percent of HHW waste was disposed in the same manner.

Figure 5.4
CESQG Final Disposition



Collection/Mobile Events

Table 5.9 represents the number of mobile and collection events held statewide in 2006-08. The number of events conducted has increased every year. However, the total pounds collected in 2008 dropped from 2007 by a little more than 1 million pounds. This drop is partly attributed to King County no longer accepting latex paint.

In 2007, King County collected more than 800,000 pounds of latex paint that was not collected in 2008. The amount of waste collected through these types of events was approximately 2.6 million pounds, which is a little more than 8 percent of all MRW collected in 2008, down from 11 percent in 2007. Waste Mobile in King County conducted 32 mobile events that collected a little more than 645,000 pounds of MRW.

Table 5.9
2006-08 Collection/Mobile Event Collection Amounts

Type of Event	Number of Events			Pounds Collected		
	2006	2007	2008	2006	2007	2008
Mobile	67	63	90	2,956,141.06	2,963,460.05	1,909,138.00
Collection	20	51	45	437,384.80	686,737.72	694,049.00
Totals:	**87**	**114**	**135**	**3,393,525.86**	**3,650,197.77**	**2,603,187.00**

Used Oil Sites

In 2008, facilities and collection sites reported collecting a total of 8,606,794 pounds of used oil (1 percent contaminated, 99 percent non-contaminated). Used oil collection peaked statewide (12.4 million pounds) in 2004 and has steadily declined since. The drop seen in used oil collections needs to be continually monitored. There are more cars on the road than ever, so one would expect this category to keep increasing. The recent trend to changing oil every 5,000 miles compared to 3,000 miles and less do-it-yourself oil changers may be impacting this category. See Table 5.10 for the six counties with the highest collections in pounds per capita by county size for 2006-08.

Table 5.10
Used Oil High Collection Counties - Pounds per Capita by County Size
Collected at Facilities and Used Oil Collection Sites 2006-08

Used Oil Sites - 2006		
County	**Size**	**Lbs**
Mason	50-100K	**10.9**
Stevens	<50K	**5.5**
San Juan	<50K	**3.8**
Yakima	>100K	**3.6**
Asotin	<50K	**3.3**
Cowlitz	50-100K	**3.3**

Used Oil Sites - 2007		
County	**Size**	**Lbs**
Mason	50-100K	**8.1**
Stevens	<50K	**5.1**
Wahkiakum	<50K	**4.1**
Skamania	<50K	**4.0**
San Juan	<50K	**3.8**
Yakima	>100K	**3.6**

Used Oil Sites - 2008		
County	**Size**	**Lbs**
Garfield	<50K	**9.13**
Stevens	<50K	**4.84**
Skamania	<50K	**4.03**
Lincoln	<50K	**3.45**
Pacific	<50K	**3.37**
San Juan	<50K	**3.22**

Statewide Level of Service

The Washington State Office of Financial Management reported that as of 2008 Washington State had an estimated 2,805,749 housing units[1]. MRW Annual Reports revealed there were 222,408 participants. The actual number of households served is larger because most used oil

[1]This information was downloaded from Web site http://ww.ofm.wa.gov/

sites do not record or report numbers of participants. The actual number of households served is also larger because some participants counted at events or by facilities bring HHW from multiple households.

One way to estimate the approximate number of households served is to add ten percent to the participant values. This method gives an estimate of 244,648 participants served in 2008. This number represents 8.7 percent of all households in Washington State. Table 5.11 shows the percent of participants served statewide since 2001.

Table 5.11
Percent of Participants Served Statewide

Year	Percent Participants Served	Year	Percent Participants Served
2001	6.1	**2005**	9.0
2002	6.8	**2006**	8.6
2003	8.9	**2007**	9.1
2004	8.9	**2008**	8.7

Trends in Collection

The majority of counties in Washington State have at least one fixed facility. The number of collection events held in 2008 increased from 114 in 2007 to 135 in 2008. As the population grows, collection events can be a useful strategy to reach residents inconveniently located from fixed facilities.

Overall, MRW collections leveled off between 2005 and 2007. 2008 has seen a significant reduction in collection numbers, most likely due to King County's policy of no longer collecting latex paint. This trend will most likely continue into the future as more facilities choose to discontinue collecting nonhazardous latex paint in these tough economic times.

Also, as product stewardship programs become more prevalent in the future, collection numbers will most likely go down accordingly. The Electronics Recycling Program started in 2009, which will most likely lower MRW collection totals in 2009 for electronics and CRTs. For more information about the E-Cycle Washington Program, see Chapter 2. MRW programs collected close to two million pounds of electronics and CRTs in 2008.

As of October 2009 the electronics recycling program collected more than 33 million pounds of electronics. This shows that by providing convenient options for electronics recycling, the product stewardship model can facilitate increased collections of waste products while further enhancing protection of human health and the environment.

Programs for paint and fluorescent lighting are also in the works, which may further reduce collection totals for MRW programs. This is a positive shift in MRW management as manufacturers are now accepting responsibility for end-of-life management costs of their products versus placing those costs on public agencies.

It remains to be seen what role MRW facilities will play in the future as product stewardship becomes more widespread. Will MRW facilities continue to collect products, but be reimbursed by industry for management of their products, or will MRW facilities choose to let industry find alternative locations and personnel to manage their programs?

Product Stewardship

Some other methods of managing MRW are beginning to gain wider acceptance in Washington State and across the country.

Product stewardship efforts have resulted in the statewide electronics recycling program. Other work is currently underway for paint and compact fluorescent lights. Product stewardship principles have also guided establishment of the Take-it-Back Network in King County, Snohomish County, Pierce County, Yakima County and the city of Tacoma.

The Take-it-Back Network was set up by local governments and consists of "*a group of retailers, repair shops, nonprofit organizations, waste haulers and recyclers that offer convenient options for recycling certain products that should not be disposed in the trash.*" The Take-it-Back Network is a voluntary program for businesses. Due to this arrangement it can be difficult to get data on the total amount of materials brought back to businesses.

Emerging Waste Streams

Pharmaceuticals and personal care products continue to be an area of concern for local governments and the public.

Groups like the Northwest Product Stewardship Council are working with state and local governments, NGOs, retailers and manufacturers to develop strategies to manage these emerging wastes based on product stewardship principles.

Pharmaceuticals

Pharmaceutical wastes have drawn more and more attention from state and local governments. A USGS Reconnaissance Study from 1999 - 2000 tested 139 streams for the presence of 95 chemicals, including pharmaceuticals. Steroids, nonprescription drugs and insect repellent were the chemical groups most frequently detected. Detergent metabolites, steroids and plasticizers generally were measured at the highest concentrations. Forty-six of the chemicals were pharmaceutically active. In 2006, another study by Eastern Washington University and the USGS analyzed nine biosolids products from seven states. The concentration of pharmaceuticals in biosolids was higher than in water and treated wastewater.

In 2005, 53 million prescriptions were filled in Washington State. A 2006 King County Survey found that only 33 percent of people will use all of their medication. This leaves a substantial amount of pharmaceutical waste to manage. This becomes significant from a public health standpoint. In 2004 the American Association of Poison Control Centers (62 participating members serving 294 million people) reported a total of 2.4 million exposures. Fifty-eight percent of those exposures were from pharmaceuticals.

Two tadpoles after 57 days of development in the lab. The one on the right, which has yet to sprout limbs, was exposed to fluoxetine, also known as Prozac, at 50 parts per billion.

In 2006, a new two-year pilot program started to collect pharmaceuticals at local pharmacies. Group Health sites participated initially, with Bartell Drugs participating later. Between October 2006 and September 2007, 2,972 pounds of medication were collected.

The environmental side effects of pharmaceuticals show that aquatic and terrestrial organisms may be affected through endocrine disruption and anti-microbial resistance.

Personal Care Products

Personal care products are also becoming a concern for state and local governments. Personal care products include cosmetics, deodorants, nail polish, lotions, hair spray, styling gel, perfumes and colognes. According to industry estimates as reported by the Toxic-Free Legacy Coalition:

- Consumers may use as much as 25 cosmetic products containing more than 200 different chemical compounds on any given day.

- Eighty-nine percent of the approximately 10,500 ingredients used in personal care products have <u>not</u> been screened for safety by the FDA or anyone else.

- One chemical of concern found in personal care products are phthalates. Phthalates are a reproductive toxin/endocrine disrupter. Some studies have shown impacts on male reproductive system development.

    - Moms with higher phthalate exposures were more likely to have boys with altered genital development including smaller penises and undescended testes (Swan et al., 2005; Marsee et al., 2006).

    - Baby boys exposed to higher levels of phthalates in breast milk had slightly, but significantly decreased testosterone levels (Main et al., 2005).

Appendix A: Municipal Solid Waste (MSW) Generation, Recycling & Disposal

The discussion of the solid waste generation, disposal, recycling and diversion totals in Chapter 4 includes **all** types of waste disposed, composted materials, source-separated materials burned for energy and nonmunicipal solid waste diverted from disposal. The following discussion is of the narrower, more "traditional" recycling, disposal and generation measures that include **only the municipal solid waste (MSW) stream**.

In 1989, the Legislature amended the *Solid Waste Management Act* (Chapter 70.95 RCW). The law set a state recycling goal to achieve 50% by 1995. The 50% rate set by the Legislature refers to the MSW recycling rate. To determine this rate and ensure it is consistent and comparable with past years, Ecology has measured a very specific part of the solid waste stream since 1986. It is roughly the part of the waste stream defined as municipal solid waste (MSW) by the Environmental Protection Agency.[1]

The law also states that recycling should be at least as affordable and convenient to citizens as garbage disposal. In response, local governments put in place various forms of recycling. These efforts ranged from drop boxes to curbside collection of a variety of recyclable materials.

Despite all the efforts, citizens, government and industry made, the state did not reach the 50% goal by 1995. In 2002, the Legislature amended the law and gave the state until 2007 to reach the goal. The state did not attain the 2007 goal, either. Legislators also set a state goal to establish programs to eliminate yard waste in landfills by 2012.

In 1999, Ecology began to expand what it measures to include materials outside of the state's definition of municipal recycling with the "solid waste diversion" measure. See Chapter 4 for a complete discussion on solid waste diversion. Ecology continues to measure progress on the narrower MSW recycling, since this is an important area for municipal governments and industry assessing progress on programs targeted toward changing the disposal practices of residents and businesses.

Although the goals established by the Legislature were not achieved, Washington's recycling rate is increasing as infrastructure and markets develop. In 2008, there were 185 cities and county unincorporated areas offering curbside collection of recyclable materials such as paper, plastic and metals. This was an increase from 175 in 2007. At the same time, 146 cities and county unincorporated areas offered curbside collection of yard waste, which was an increase

[1] The recyclable portion of the waste stream is municipal solid waste as defined by the Environmental Protection Agency in the *Characterization of Municipal Solid Waste in The United States: 1996 Update*. This includes durable goods, nondurable goods, containers and packaging, food wastes and yard trimmings. It does not include industrial waste, inert debris, asbestos, biosolids, petroleum contaminated soils, or construction, demolition, and land clearing debris disposed at municipal solid waste landfills and incinerators.

from 137 in 2007. These numbers increased despite the economic recession causing severe cutbacks on the local government level, which shows commitment by citizens and governments not only to continue, but *increase* recycling.

Ecology measures MSW recycling by quantifying the MSW materials recycled and dividing that by the total MSW generation (recycling plus disposal). State regulation requires landfills and incinerators to report municipal solid waste separate from other wastes by county of origin, which provides a reliable data source for the denominator.

Table A-1
MSW Recycling Rates in Washington

1986	15%
1988	28%
1989	27%
1990	34%
1991	33%
1992	35%
1993	38%
1994	38%
1995	39%
1996	38%
1997	33%
1998	35%
1999	33%
2000	35%
2001	37%
2002	35%
2003	38%
2004	42%
2005	44%
2006	43%
2007	43%
2008	45%

Recycling Rates for MSW

Each year since 1986, Ecology has conducted a survey to measure the statewide recycling rate for municipal solid waste (MSW). Information comes from local governments, haulers, recyclers, brokers and other handlers of materials from the recyclable portion[2] of the waste stream.

From 1986 to 1995, the measured statewide recycling rate increased from 15% to 39%. This increase was steady, with minor variations. In 1996, the rate dropped to 38%. The 1997 recycling rate dropped again to 33% because of the poor paper fiber market in Asia and a continued glut in the metals market. Table A-1 shows MSW recycling rates for 1986-2008.

The poor paper and metal market trend continued in 1998, but improved enough to raise Washington's recycling rate to 35%. Although markets improved in 1999, the tonnage disposed of increased enough to drop the recycling rate to 33%.

Markets continued to improve in 2000, raising the recycling rate again to 35%. Although markets for most materials fell in 2001, the increased activity and better reporting for key materials brought the rate to 37%. Drops in market conditions for paper, glass and yard debris, combined with low reporting for food waste and a difference in how wood waste categories are calculated brought the rate down to 35% for 2002.

In 2003, the reporting requirements for recycling facilities changed with Chapter 173-350 WAC, Solid Waste Handling Standards. These changes have resulted in better reporting of recyclables. In addition, the market demand for ferrous and nonferrous metals was high during 2003, which aided in bringing the recycling rate up to

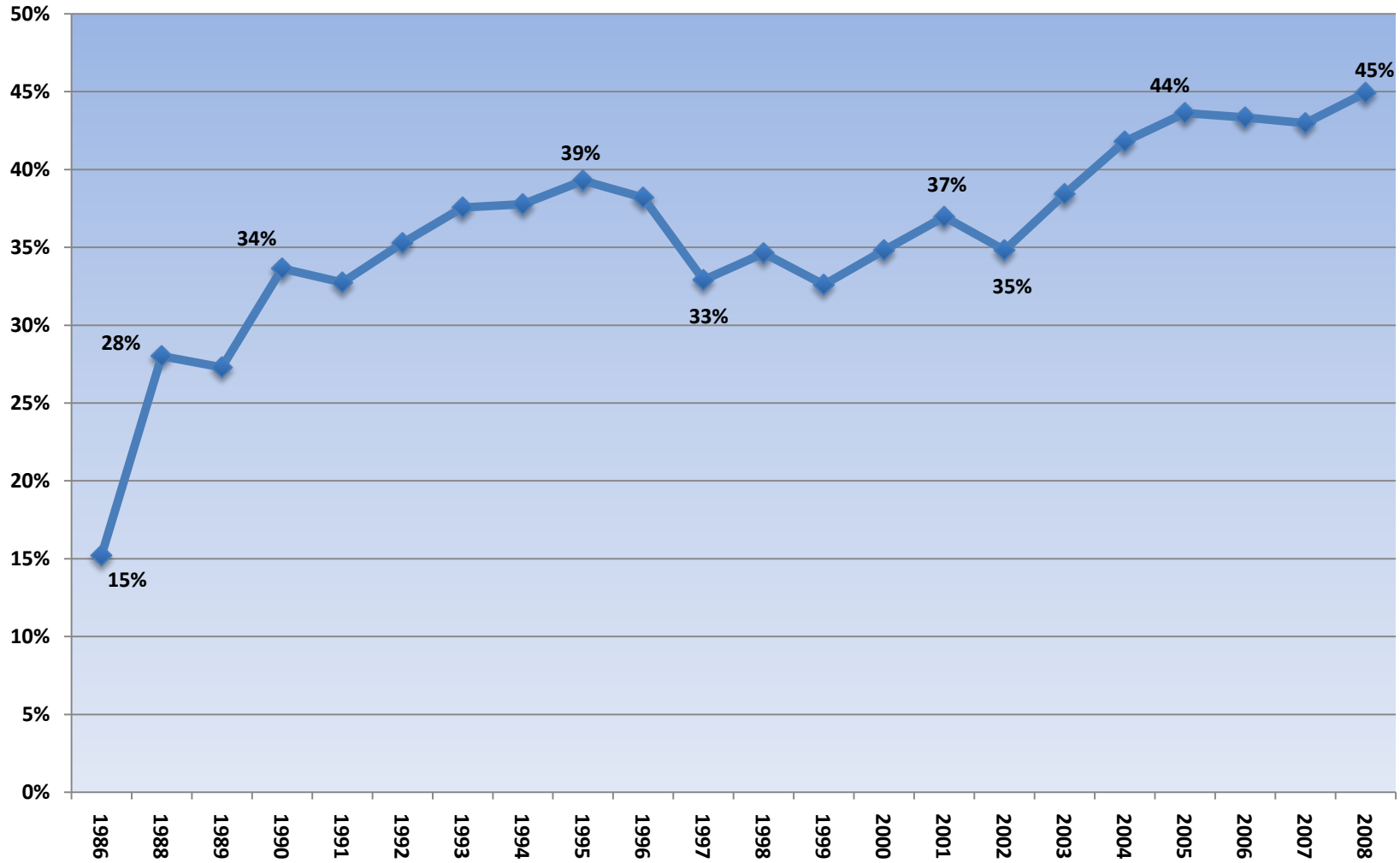
[2] The recyclable portion of the waste stream is municipal solid waste as defined by the Environmental Protection Agency in the *Characterization of Municipal Solid Waste in The United States: 1996 Update*. This includes durable goods, nondurable goods, containers and packaging, food wastes and yard trimmings. It does not include industrial waste, inert debris, asbestos, biosolids, petroleum contaminated soils or construction, demolition, and land clearing debris disposed at municipal solid waste landfills and incinerators.

38%. With the continued strong reporting of recyclables collected along with market increases for metals, paper and yard debris, the MSW recycling rate hit 42% in 2004, and continued to climb to 44% in 2005.

In 2006, the recycling rate dropped slightly to 43%, and continued steady at 43% in 2007. The economic recession that began in 2008 brought a reduced disposal rate, and boosted the recycling rate to an all-time high of 45% in 2008 (see Figure A-1). Detailed data on materials recovery since 1986 is available at http://www.ecy.wa.gov/programs/swfa/solidwastedata/.

The *Beyond Waste Progress Report* also provides quantitative information on specific wastes such as organics and electronics, and the economic and environmental impacts of recycling. See http://www.ecy.wa.gov/beyondwaste/09_bwprog_front.html. Also see Chapter 2 - Partnering for the Environment through Beyond Waste Performance Indicators.

Figure A-1
Washington State MSW Recycling Rate - 1986 to 2008



As of 2008, about 86% of the state's population has access to curbside recycling services, which are intended to be as convenient as disposal. Most of the people who do not have curbside services do have access to drop box recycling. The state's population is growing, with more than 1.1 million new people since 1995. Ecology believes newcomers as well as longtime residents need ongoing education and advertising to learn to recycle or continue to do so.

Many curbside programs in the state are changing to commingled or single-stream systems in an effort to reduce costs and increase collection of recyclables. This trend became more evident in 2003, as new sorting facilities and procedures went into operation, and has continued through 2008. Some evidence suggests the convenience of not having to sort recyclables leads to more residents taking part. In most cases, programs that changed to commingled collection also increased the range of materials collected; however, the act of commingling the recyclables can create a higher residual rate once the usable materials are sorted out.

Compared to source-separated collection programs, the single-stream programs are collecting about 10% more material. The results are also mixed where end markets are concerned. Reports from mills are showing the contamination from these programs can be great enough to reduce the usable amount of material by up to 15%.

Ecology is making an effort to quantify these residuals and determine the impact on the recycling and diversion data through annual reports from material recovery facilities and the recycling survey. Further study including sampling may be needed at recycling facilities to more accurately determine the level of contaminants in the incoming materials stream and residuals in the outgoing materials stream at recycling facilities.

Measurement Methodology

See Chapter 4 for a complete discussion of measurement methodology as it pertains to recycling and diversion.

Results – 2008 MSW Recycling

So we can consistently compare results from year to year, Ecology includes the same materials it has used since 1986 to calculate the MSW recycling rate. These materials originate from the MSW stream as Ecology defined when designing the recycling survey in the mid-1980s. Table A-2 provides tonnage figures for each material that contributed to the MSW recycling rate from 2005-08.

Table A-2
MSW Recycled Tonnage Reported
MSW Recycling Rates[3] 2005-08

Recycled Materials Reported (MSW)	2005	2006	2007	2008
Aluminum Cans	15,441	14,951	14,005	**12,842**
Container Glass	82,773	90,992	96,934	**94,077**
Corrugated Paper	565,698	570,802	555,757	**569,688**
Electronics	8,534	11,386	12,325	**17,265**
Fats and Oils	-	97,786	116,964	**124,289**
Ferrous Metals	974,535	1,048,885	1,009,826	**1,013,552**
Fluorescent Light Bulbs	729	1,063	979	**1,600**
Food Scraps (post-consumer)	125,390	73,958	50,304	**48,664**
Gypsum	56,618	62,482	52,767	**86,603**
HDPE Plastics	9,319	8,000	11,348	**7,742**
High-Grade Paper	58,661	71,774	82,806	**57,929**
Large Appliances	47,302	49,796	44,667	**43,401**
LDPE Plastics	16,209	14,928	13,695	**14,040**
Milk Cartons/Drink Boxes-Tetra	4,529	5,755	5,787	**5,475**
Mixed Paper	322,732	316,874	361,043	**367,834**
Newspaper	259,157	294,887	289,250	**282,981**
Nonferrous Metals	122,490	135,976	115,718	**94,340**
Other Recyclable Plastics	7,247	7,776	12,350	**11,245**
Other Rubber Materials	-	39	50	**6**
PET Plastic Bottles	8,534	7,558	14,024	**9,827**
Photographic Films	487	458	429	**442**
Steel/Tin Cans	12,133	13,936	22,315	**10,526**
Textiles (Rags, Clothing, etc.)	28,750	28,724	65,286	**19,946**
Tires	53,777	23,528	27,869	**40,124**
Used Oil	111,692	87,304	86,174	**78,443**
Vehicle Batteries	28,903	25,414	25,734	**25,219**
Wood Waste	351,855	289,612	228,146	**381,866**
Yard Debris	643,376	665,902	684,181	**641,130**
Total MSW Recycled	**3,916,872**	**4,020,548**	**4,000,733**	**4,061,094**
Total MSW Disposed[4]	**5,060,502**	**5,258,076**	**5,309,296**	**4,978,496**
Total MSW Generated	**8,977,374**	**9,278,624**	**9,310,029**	**9,039,590**
MSW Recycling Rate	**43.63%**	**43.33%**	**42.97%**	**44.93%**

[3] Detail may not add due to rounding.

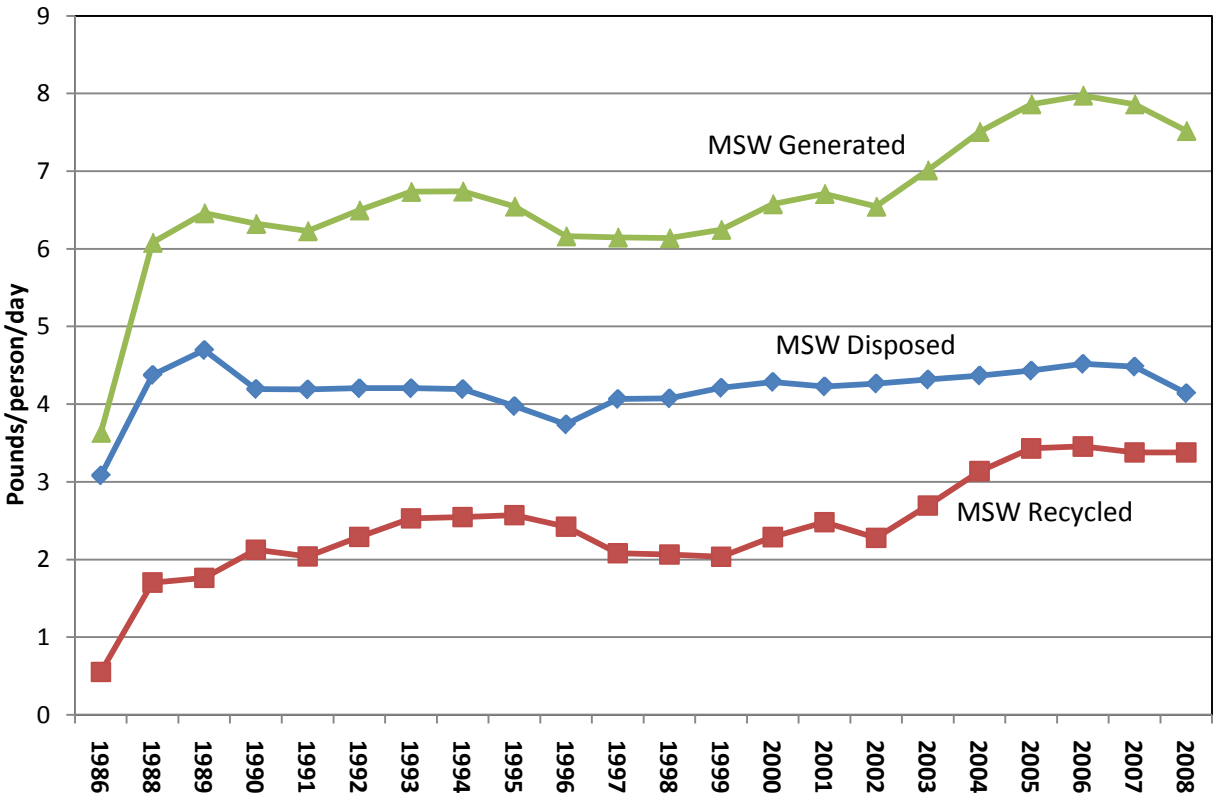
[4] The amount of MSW disposed represents only the quantity defined "recyclable portion" of the waste stream from municipal and commercial sources. It excludes the following waste types reported from landfills and incinerators: demolition, industrial, inert, wood, ash, sludge, asbestos, contaminated soils, tires, medical and other.

Individual Waste Generation (MSW)

Each person contributes to the MSW stream by recycling and disposing of wastes from his or her household, school, church, workplace and anywhere else solid waste is produced. The figures below present only an average of the total contributions of all residents. Some people may actually contribute much more waste than others. However, the picture tends to be more tangible when described in individual or "per person" terms. Figure A-2 shows an average of how each person in the state contributes to the **MSW stream**. See Chapter 4 for a discussion of overall waste generation.

In 2008, each resident of the state generated 7.52 pounds of municipal solid waste per day; disposing 4.14 pounds per person and recovering 3.38 pounds per person for recycling. These numbers have decreased since 2006, when we reached an all-time high of per capita waste generation of 7.97 pounds per person per day (see Table A-3).

Figure A-2
Pounds of MSW Disposed, Recycled
& Generated Per Person/Day
1986 - 2008



Washington residents create, recycle and dispose of about two pounds of MSW per person above the national averages. This larger disposal number is attributed to Washington's larger amount of yard and wood waste than the national average, as well as a different method of measuring ferrous metals.

Comparing per capita numbers to other states' averages provides a check for Washington's recycling numbers. Additionally, at various points in the data gathering process, Ecology asks county recycling coordinators to check their county recycling and disposal numbers for accuracy. Ecology also checks the end-use information for recovered materials provided on the recycling surveys and annual reports to verify the classification as recycling, diversion or disposal, and capture and measure any new recycling and diversion that occurs.

Table A-3
Pounds MSW Disposed, Recycled and Generated Per Person/Day[5]
1997-2008

MSW Per Capita	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Disposed	4.04	4.08	4.21	4.29	4.23	4.27	4.32	4.37	4.43	4.52	4.48	**4.14**
Recycled	2.08	2.06	2.04	2.29	2.48	2.28	2.69	3.14	3.43	3.46	3.38	**3.38**
Generated	6.15	6.14	6.25	6.58	6.71	6.55	7.01	7.51	7.86	7.97	7.86	**7.52**

[5] See Chapter 4 for per capita numbers that include diversion and all waste types.