TG-080372

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

February 21, 2008

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STATE OF WASH.
UTIL. AND TRANSP.
COMMISSION

Ms. Penny Ingram, Regulatory Analyst
WA Utilities and Transportation Commission
1300 South Evergreen Park Drive SW
PO Box 47250
Olympia, WA 98504-7250

RE: *Preliminary Review of 2008 Supplement to Year 2000 Tacoma-Pierce County Solid Waste Mgmt Plan*

Dear Ms. Ingram:

Ecology is forwarding the formal submission of the **draft** Tacoma-Pierce County Solid Waste Management Plan for preliminary review under RCW 70.95.090 and 70.95.094. Enclosed are two copies of the plan which include the cost assessment questionnaire.

Ecology received this plan on February 15, 2008. Under the Interagency Agreement, comments from WUTC plan reviewers should be sent within 45 days from the date the plan is received by the WUTC.

Please forward any copies of your correspondence with Pierce County, and notify me of the date this item will be presented at the WUTC public meeting.

Should you have questions about the information contained in the cost assessment questionnaire, please contact Sally Sharrard (253) 798-4665 or email at ssharra@co.pierce.wa.us. Any other questions can be directed to me. Thank you for your continued cooperation and assistance in plan review.

Sincerely,

Mike Drumright

Mike Drumright
Regional Planner
Solid Waste & Financial Assistance Program
Mdru461@ecy.wa.gov
(360) 407-6397

Enclosures

cc: Carole Washburn, WUTC

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

February 21, 2008

Mr. Steve Wamback
Pierce County Public Works and Utilities
9850 64th St. West
University Place, WA 98467-1078

RE: *Preliminary Review of 2008 Supplement to 2000 Tacoma-Pierce County Solid Waste Management Plan*

Dear Mr. Wamback:

On February 15, 2008, Ecology received a cover letter and five copies of the 2008 Supplement to Year 2000 Tacoma-Pierce County Solid Waste Management Plan.

Please be advised that Ecology is accepting your submittal as Pierce County's formal request for a preliminary draft review pursuant to RCW 70.95.094.

Two copies of this draft plan will be forwarded, as required, to the Washington Utilities and Transportation Commission (UTC) for their review. They have a 45 day review period within Ecology's 120 day review period. UTC will schedule a hearing for their review and provide comments accordingly.

Ecology has a maximum of 120 days from February 15, 2008 to review and comment on the draft plan, making Ecology comments due on or about June 15, 2008.

Thank you to everyone involved for their efforts preparing this document. In the meantime, if you have any questions about the progress of my review, please contact me at (360) 407-6397 or by email at mdru461@ecy.wa.gov.

Sincerely,

Mike Drumright
Regional Planner
Solid Waste and Financial Assistance Program

cc: Penny Hanson, WUTC
Carole Washburn, WUTC
Sally Sharrard, Pierce County Public Works and Utilities

REGULAR MEETING AGENDA
PIERCE COUNTY PLANNING COMMISSION
Tuesday, February 26, 2008, 8:30 A.M.
Public Meeting Room, 2401 So. 35th St., Tacoma

I. CALL TO ORDER

II. DIRECTOR'S REPORT

III. MINUTES

IV. PUBLIC HEARINGS

Current Use Assessment

Case No: OS6-07
Applicant: Gordon W. Kinsman
Location: 6011 352nd St E, Eatonville vicinity in the SE 1/4 of the SW 1/4 of Section 19, Township 17N, Range 4E, W.M.

Case No: OST7-07
Applicant: Mark & Darcy Paul
Location: 3828 River Ridge Dr E., Nisqually Highlands vicinity in the SW 1/4 of the NW 1/4 of Section 25, Township 16N, Range 3E, W.M.

Case No: OS8-07
Applicant: William H. & Helen Mashburn
Location: 9502 Burnham Dr NW, Gig Harbor vicinity in the NW 1/4 of the NW 1/4 of Section 6, Township 21N, Range 2E, W.M.

Case No: OS9-07
Applicant: Robert A. & Linda Moore
Location: 29909 56th Ave S, Roy vicinity in the NW 1/4 of the SW 1/4 of Section 1, Township 17N, Range 2E, W.M.

Case No: OST10-07
Applicant: Tim & Tina Kersh
Location: 32816 146th Ave E, Kapowsin vicinity in the NW 1/4 of the SE 1/4 of Section 13, Township 17N, Range 4E, W.M.

Case No: OS12-07
Applicant: Scott M. & Kelly J. Wood
Location: 5619 Lackey Rd KN, Vaughn vicinity, in the SW 1/4 of the NE 1/4 of Section 14, Township 21N, Range 1W, W.M.

Contact: Chad Williams, Associate Planner, PALS, 253-798-3683

Amendments to the Tacoma-Pierce County Solid Waste Management Plan
The Pierce County Planning Commission will review and consider amendments to the Tacoma-Pierce County Solid Waste Management Plan. The 2008 Supplement amends the plan by updating waste reduction, recycling and solid waste management policies; advancing a 20-year Vision for cost-effective and environmentally-sound delivery of solid waste services; and establishing priority actions to take for the next 5 years.

Contact: Sally Sharrard, Senior Planner, Public Works Solid Waste Division, 253-798-4665

Amendments to Pierce County Development Regulations

The Pierce County Planning Commission review and consider amendments to the Pierce County Development Regulations intended to implement the recently adopted Alderton-McMillin Community Plan. The proposal includes amendments to Title 18A-Zoning, Title 18B-Signs, and Title 18J-Design Standards.

Contacts: Kimberly Freeman, Senior Planner, PALS, 253-798-2784 or Dan Cardwell, Senior Planner, PALS, 253-798-7039

V. ADJOURNMENT

NOTE: The Planning Commission is principally an advisory board to the Pierce County Council. Actions taken by the Planning Commission on almost all agenda items will be forwarded to the County Council as a recommendation for its consideration and final action.

Questions should be directed to the Planning staff at the Pierce County Public Services Building, 2401 So. 35th Street, Tacoma, WA 98409, or by calling 253-798-2785.

How to get information on what is being proposed. A brief staff presentation on the issue precedes most public hearings. Additionally, staff reports and proposed ordinances or resolutions are available in advance of the hearing. If you have questions, use part of your speaking time to ask the question and the Chair will ask staff to respond. Staff members are available before and after the hearing to answer questions or you may call them.

Written comment. Please send or submit your written comments to the Pierce County Planning Commission, 2401 So. 35th Street, Tacoma, WA 98409, or email comments to tfairba@co.pierce.wa.us. If you wish your comments to be distributed to the Commission in advance of a hearing, comments must be received by the Clerk of the Commission in the Planning Office a week before the hearing. If you want to deliver your written comments at the public hearing, please provide ten (10) copies to the Clerk of the Commission.

Sign in. Clearly PRINT your full name, address (ZIP included), and indicate if you wish to speak. People who sign in are called upon first. Please indicate if you are speaking as a representative of a group.

County Council information. For details about testifying before the County Council, please contact that office at 253-798-7777.

Feb-08

DISPOSAL PROJECTIONS TO 2032

To achieve goals of 2008 Plan Supplement to the Tacoma-Pierce County Solid Waste Management Plan

	Year	Population	# / day disposed	# / day recycled	# / day generated	Disposal Projected	Recycle Projected	% recycle	Generation Projected	Yr-to-yr change	Cumul Change
	2007	790,500	4.50	3.33	7.83	649,198	480,407	42.53%	1,129,605		
1	**2008**	**805,520**	**4.50**	**3.33**	**7.83**	**661,533**	**489,535**	**42.53%**	1,151,068	**1.90%**	1.90%
2	2009	820,826	4.39	3.36	7.75	657,386	503,825	43.39%	1,161,210	0.88%	2.80%
3	**2010**	**836,688**	**4.28**	**3.40**	**7.67**	**653,117**	**518,697**	**44.26%**	1,171,814	**0.91%**	3.74%
4	2011	849,082	4.17	3.43	7.60	645,636	531,644	45.16%	1,177,280	0.47%	4.22%
5	2012	862,209	4.06	3.47	7.52	638,265	545,262	46.07%	1,183,526	0.53%	4.77%
6	**2013**	**874,889**	**3.95**	**3.50**	**7.45**	**630,109**	**558,814**	**47.00%**	1,188,923	**0.46%**	5.25%
7	2014	887,277	3.82	3.55	7.37	618,473	575,227	48.19%	1,193,700	0.40%	5.67%
8	2015	899,190	3.69	3.61	7.30	605,935	591,694	49.41%	1,197,629	0.33%	6.02%
9	2016	908,249	3.57	3.66	7.23	590,978	606,620	50.65%	1,197,598	0.00%	6.02%
10	2017	918,396	3.44	3.71	7.15	576,269	622,599	51.93%	1,198,868	0.11%	6.13%
11	2018	928,403	3.31	3.77	7.08	560,988	638,823	53.24%	1,199,812	0.08%	6.22%
12	2019	938,254	3.15	3.83	6.98	539,069	655,286	54.87%	1,194,354	-0.45%	5.73%
13	2020	947,923	2.99	3.88	6.87	516,594	671,969	56.54%	1,188,563	-0.48%	5.22%
14	2021	958,909	2.82	3.94	6.77	494,349	689,953	58.26%	1,184,303	-0.36%	4.84%
15	2022	969,156	2.66	4.00	6.67	471,218	707,786	60.03%	1,179,004	-0.45%	4.37%
16	2023	979,364	2.50	4.06	6.57	447,581	725,970	61.86%	1,173,551	-0.46%	3.89%
17	2024	989,531	2.34	4.12	6.47	423,439	744,509	63.75%	1,167,948	-0.48%	3.39%
18	2025	999,657	2.19	4.18	6.37	398,792	763,409	65.69%	1,162,201	-0.49%	2.89%
19	2026	1,010,268	2.03	4.25	6.27	373,834	783,085	67.69%	1,156,919	-0.45%	2.42%
20	2027	1,020,417	1.87	4.31	6.18	348,197	802,816	69.75%	1,151,013	-0.51%	1.90%
21	2028	1,030,874	1.71	4.38	6.09	322,157	823,209	71.87%	1,145,366	-0.49%	1.40%
22	2029	1,041,254	1.56	4.44	6.00	295,575	843,971	74.06%	1,139,546	-0.51%	0.88%
23	2030	1,051,634	1.40	4.51	5.91	268,472	865,170	76.32%	1,133,642	-0.52%	0.36%
24	2031	1,062,014	1.24	4.58	5.82	240,844	886,815	78.64%	1,127,659	-0.53%	-0.17%
25	**2032**	**1,072,394**	**1.09**	**4.64**	**5.73**	**212,686**	**908,915**	**81.04%**	1,121,600	**-0.54%**	-0.71%

Includes City of Tacoma

SOLID WASTE INTERLOCAL AGREEMENT

THIS AGREEMENT is entered into between Pierce County, a political subdivision of the State of Washington ("County"), and the City of Bonney Lake, a municipal corporation of the State of Washington ("City"). This Agreement has been authorized by the legislative body of each of the Parties as designated below:

Pierce County Ordinance No. 2000-47S.
Pierce County Resolution No. R2001-4
City of Bonney Lake Resolution No. 872

WHEREAS, pursuant to Pierce County Ordinance No. 92-130 and City of Bonney Lake Resolution No. 671, the County and the City entered into an Interlocal Agreement for the purpose of implementing the 1992 Tacoma-Pierce County Solid Waste Management Plan, (the 1992 Plan); and

WHEREAS, the Pierce County Council has now revised the 1992 Tacoma-Pierce County Solid Waste Management Plan and has adopted the Year 2000 Tacoma-Pierce County Solid Waste Management Plan, (the Plan); and

WHEREAS, the County has asked each city and town to adopt the Plan in recognition of the mutual benefits of working cooperatively to plan and implement a solid waste management system that serves all of the residents of Pierce County; and

WHEREAS, Chapter 39.34 RCW allows jurisdictions to work cooperatively and enter into Interlocal Agreements;

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL BENEFITS AND COVENANTS DESCRIBED HEREIN, THE PARTIES ENTER INTO AN INTERLOCAL AGREEMENT FOR THE PURPOSE OF IMPLEMENTING THE YEAR 2000 TACOMA-PIERCE COUNTY SOLID WASTE MANAGEMENT PLAN.

Section 1. PURPOSE

This Agreement shall:

1.1 Reestablish the respective responsibilities of the Parties to cooperatively carry out the policy recommendations contained within the Tacoma-Pierce County Solid Waste Management Plan, plan for future needs, and effect orderly revisions or amendments to the Plan;

1.2 Rededicate the Parties' efforts to develop and implement environmentally-sound and cost-effective solid waste management programs including waste reduction and recycling programs (described in detail in the Plan) that divert the maximum amount possible from the disposed waste stream;

1.1 Recommit the Parties to adopt, maintain, and enforce minimum levels of service for residential source separation and collection of recyclables, including residential curbside recycling programs, multi-family residential recycling programs, and residential yardwaste collection programs; and

1.2 Recommit the Parties to a coordinated system for the management and disposal of solid waste in Pierce County.

Section 2. STATUTORY AUTHORITY

2.1 RCW 70.95.080, requires each county within the state, in cooperation with the various cities located within each county, to prepare a coordinated, comprehensive solid waste management plan. RCW 70.95.080 further allows each city to choose whether it will prepare its own plan, prepare a joint-plan with the county, or authorize the county to prepare a plan for the city.

2.2 Chapter 39.34 RCW permits local governments to make the most efficient use of their powers by enabling them to cooperate with other localities on a basis of mutual advantage.

2.2.1 Pursuant to the Interlocal Agreement entered into between the Parties in 1993, the City designated Pierce County as the lead agency for preparing future revisions or amendments to plans developed in accordance with Chapter 70.95 RCW.

2.3 RCW Chapters 36.58 and 70.95 direct the counties to establish solid waste handling systems and permit the counties to designate solid waste disposal sites to collect revenues to fund compliance with comprehensive solid waste management plans.

Section 3. THE TACOMA-PIERCE COUNTY SOLID WASTE MANAGEMENT PLANS

3.1 Pursuant to County Ordinance No. 87-196 and resolutions passed by each city and town, the Tacoma-Pierce County Solid Waste Management Plan was adopted in 1989 as the comprehensive solid waste management plan for all of Pierce County. The Washington Department of Ecology approved this Plan in 1990 with the provision that amendments be made to the waste reduction and recycling elements pursuant to state legislation.

3.2 Pursuant to County Ordinance No. 92-130 and resolutions passed by each city and town, the Tacoma-Pierce County Solid Waste Management Plan was amended and re-adopted in 1992 as the comprehensive solid waste management plan for all of Pierce County. The Washington Department of Ecology gave final approval to this Plan in 1993.

3.3 Pursuant to County Ordinance No. 2000-47S, the Pierce County Council amended the 1992 Plan and adopted the 2000 Tacoma-Pierce County Solid Waste Management Plan. The 2000 Plan contains descriptions and policy recommendations relating to comprehensive solid waste management within Pierce County. The County provides

solid waste management services for unincorporated Pierce County and for nineteen (19) of the cities and towns. The City of Tacoma, Town of Ruston, and Fort Lewis/McChord Air Force Base maintain their own separate management, collection, and disposal systems and their own separate waste reduction and recycling programs as described in the Plan.

3.4 All three editions of the Tacoma-Pierce County Solid Waste Management Plan (1989, 1992, and 2000) adhere to the same basic philosophy, that waste should be managed in accordance with the priorities established in RCW 70.95.010:

- Waste reduction;
- Recycling;
- Energy recovery, incineration, or landfilling of separated wastes; and
- Energy recovery, incineration or landfilling of mixed wastes.

These priorities should be followed so that Pierce County can maintain at least a 50 percent recycling rate.

Section 4. DEFINITIONS

Terms used throughout this Agreement have the same definitions as in Appendix B and C of the Tacoma-Pierce County Solid Waste Management Plan.

Section 5. OBLIGATIONS OF PARTIES – INTERLOCAL MATTERS

5.1 The respective powers and duties of the Parties shall be exercised individually by each Party. No joint County-City agency is formed pursuant to this Agreement.

5.2 At least annually, Pierce County shall prepare a report on solid waste issues for the City. This report may be delivered in writing or as a presentation at a meeting of the City Council.

5.3 Upon adoption of this Agreement, Pierce County shall contact the City to identify whether City officials responsible for waste management are interested in participating in a group of Pierce County solid waste professionals who would meet periodically to discuss issues of mutual concern and work towards the Parties' mutual goals.

5.4 Pursuant to Chapter 2.92 of the Pierce County Code, one position on the Pierce County Solid Waste Advisory Committee is designated as the representative of the city and town governments (other than Tacoma). The Parties shall work cooperatively to propose to the County Executive candidates to fill this position.

Section 6. OBLIGATIONS OF PARTIES – SOLID WASTE PLANNING

6.1 This Agreement shall serve as the designation of the County as lead solid waste planning agency pursuant to RCW 70.95.080(3). Pierce County accepts this designation and shall serve as the solid waste planning agency for the Parties to this Agreement, but shall not

be responsible for planning for hazardous or dangerous waste, or any other planning responsibility that is specifically designated by State or Federal statute.

6.2 Pierce County will prepare, and maintain in a current condition, the Solid Waste Management Plan required by Chapter 70.95 RCW.

6.3 Each Party shall notify the other if it has any knowledge which it believes may impact the current condition of the Plan.

6.4 Either Party may propose revisions or amendments to the Plan so as to keep the Plan in a current condition. Following the procedures outlined in this section, the County shall be responsible for conducting the amendment and revision process. Further, the County shall review and revise the Plan, as necessary, at least once every five (5) years as required by RCW 70.95.110.

6.4.1 Minor Amendments. A Minor Amendment is a change to the Plan that: a) does not result from a significant change in solid waste stream quantities or characteristics; b) does not occur as the result of a new legal requirement; c) does not occur as a result of, or is not contemplated to result in, any change in the roles and responsibilities of the Parties as established in this Agreement or in the Plan; or d) does not occur as a result of, or is not contemplated to result in, any redefinition of the vision for local solid waste management. A Minor Amendment shall be conducted as follows:

(a) The amendment is introduced at a County Council meeting.

(b) The County Council schedules a public hearing date and sends the proposed amendment for review and comment to all cities and towns, Pierce County Solid Waste Advisory Committee (SWAC), Pierce County Planning Commission, the Tacoma-Pierce County Health Department, the Washington Department of Ecology and other interested agencies.

(c) The County Council holds a public hearing receiving comment from the public as well as from the aforementioned agencies.

(d) After the amendment is adopted by the County Council, it is sent to the cities and towns for approval either by adopting the amendment or through a letter of concurrence. The County shall conclude that any city or town which does not adopt the amendment or send a letter of concurrence within 90 days of the Council's adoption is no longer a participant in the Plan. In this case, the city or town shall adopt its own solid waste management plan as required by RCW 70.95.080 and 70.95.110 and provide for its own disposal system.

(e) After completion of the 90 day approval period, the amendment will be sent to the Washington Department of Ecology.

6.4.2 Major Revisions. A Major Revision is a change to the Plan that: a) is required by a significant change in solid waste stream quantities or characteristics; b) occurs as the result of a new legal requirement; c) occurs as a result of, or is contemplated to result in, any change in the roles and responsibilities of the Parties as established in this Agreement or in the Plan; or d) occurs as a result of, or is contemplated to result in, any redefinition of the vision for local solid waste management. At a minimum, these steps will include:

(a) A "scoping" period during which the tasks are identified and jurisdictional involvement is solicited.

(1) Any decision to change the procedures for preparing revisions to the Plan may be made by the County Council as a result of public input received during the "scoping" process.

(2) Within 90 days of the start of the "scoping" period, each city and town shall, in writing, signify its willingness to participate in the revision. The County shall conclude that any city or town which does not signify its willingness to participate as making the choice to no longer participate in the Plan upon the conclusion of the Revision process. In this case, the city or town shall adopt its own solid waste management plan as required by RCW 70.95.080 and 70.95.110 and provide for its own disposal system.

(b) Development of a Preliminary Draft Plan and SEPA documents with the help of the Pierce County Solid Waste Advisory Committee.

(c) A public review of the Preliminary Draft Plan with a minimum 30-day comment period, and at least one public hearing by the County Council.

(d) Revisions to the Preliminary Draft Plan and submittal to the Washington Department of Ecology for a Preliminary Review.

(e) Revisions, where appropriate, to the draft Plan to address the comments received from the Washington Department of Ecology's Preliminary Review.

(f) Adoption of the revised Draft Plan by the County Council followed by adoption of the Plan by the cities and towns. Cities and towns have 90 days to approve the revision by passing a resolution to adopt. The County shall conclude that any city or town which does not adopt the revision within 90 days of the Council's adoption is no longer a participant in the Plan. In this case, the city or town shall adopt its own solid waste management plan as required by RCW 70.95.080 and 70.95.110 and provide for its own disposal system.

(g) Submittal of the adopted revised Plan to the Washington Department of Ecology for a Final Plan Review and Approval, at which time the Plan shall be considered adopted.

6.5 The County will coordinate planning activities with the City of Tacoma, Town of Ruston, and Fort Lewis/McChord Air Force Base and shall include materials submitted by these jurisdictions into the Plan prepared by the County.

6.6 The cost of preparing and maintaining the Solid Waste Management Plan will be borne by the County, financed out of the annual budget approved for the Solid Waste Division by the Pierce County Council.

Section 7. OBLIGATIONS OF THE COUNTY

In furtherance of a county-wide solid waste management system, Pierce County assumes the following obligations:

7.1 Management. Pierce County agrees to provide solid waste management services for waste generated and collected within all jurisdictions which enter into Agreements with the County. The County is responsible for implementing an integrated solid waste management system, which includes programs for waste reduction and recycling, as well as planning for the twenty (20) year disposal of solid waste.

7.2 Solid Waste Disposal. The County agrees to designate disposal sites for all solid waste generated and/or collected within the corporate limits of the City which will then be delivered to the Pierce County disposal system in accordance with all applicable federal, state, and local environmental health laws, rules, or regulations.

7.3 Operations. Pierce County shall be, or shall designate or authorize, the operating authority for transfer, processing or disposal facilities owned by the County. All real property acquired by Pierce County for solid waste management system purposes shall be the property of Pierce County.

7.4 Financial Assurance for Closed Facilities. Pierce County shall oversee post-closure responsibilities for the closed Anderson Island, Key Center and Purdy Landfills, and shall serve as post-closure trustee for the Hidden Valley Landfill, all of which entered closure prior to January 1, 1999.

7.5 Waste Reduction and Recycling. Pierce County will provide support and technical assistance to the City to establish a waste reduction and recycling program compatible with the County's programs. Pierce County will continue county-wide public information, outreach, and educational programs about waste reduction and recycling activities. The County will be responsible for designing model waste reduction and recycling programs, and for providing information about such programs. The County

will provide technical assistance to private companies which seek to establish waste reduction and recycling programs.

7.6 Collection. Pursuant to Chapters 36.58 RCW and 81.77 RCW, Pierce County assumes no responsibility for the regulation of solid waste collection operations either in unincorporated Pierce County nor in the City. The County shall, upon request, provide technical assistance to the City on collection matters.

7.7 Data Collection/Monitoring/Forecasting. The County will maintain a Data Collection system to monitor recycling and disposal activity to determine the effects of recycling and waste reduction programs and to forecast trends. Annually, the County will calculate and publicize a county-wide recycling rate. Additional reports can be prepared and provided upon request.

7.8 Educational Materials. The County shall develop educational materials related to waste reduction and recycling and strategies for maximizing the usefulness of the materials and make these available to the City. Pierce County intends to continue to move forward aggressively to continue and expand waste reduction and recycling programs and to assist the City with its programs in an advising and consulting capacity. The County will be responsible for designing model educational and public outreach programs, and for providing information about such programs.

7.9 Enforcement. With respect to the obligations in this Section, and to the extent allowed by law, it shall be the responsibility of the County to ensure the compliance of contractors and the residents of, and companies doing business within unincorporated Pierce County. Nothing in this Agreement, however, shall affect the enforcement responsibilities and obligations of the Tacoma-Pierce County Health Department or the Washington Utilities and Transportation Commission.

7.10 Tipping Fees. When entering into contracts for solid waste disposal service, the County shall propose contract terms and rates necessary to recover all costs of operation including: the costs of handling, processing, and disposal; enforcement and fulfillment of the obligations set out in this Agreement, the Plan, and any ordinances adopted to implement the Plan; defense and payment of claims; capital or operational improvements; and landfill closure and post-closure maintenance. The County shall continue to advise the City of the portion of the tipping fees applied to each of the foregoing obligations, including any portion dedicated to pay long term obligations.

7.11 Budget. The Pierce County Solid Waste Division shall propose a budget which funds the obligations set out in this Agreement.

7.12 Grants. Pierce County shall research grant opportunities and shall submit coordinated grant applications on behalf of the Parties. The proceeds from grants shall be used in the furtherance of the obligations set out in this Agreement and the Plan.

Section 8. OBLIGATIONS OF THE CITY

In furtherance of a county-wide solid waste management system, The City of Bonney Lake assumes the following obligations:

8.1 Disposal. Through this Agreement, the City adopts the County disposal system for the disposal of all solid waste collected within the corporate limits of the City and shall authorize the County to designate disposal sites for the disposal of all solid waste collected within the corporate limits of the City. No solid waste collected within the City may be diverted from the designated disposal sites, or from other elements of the County solid waste system, without prior written County approval.

8.2 Collection. The City, an entity designated by the City as authorized by state law, or a collection company operating under the authority and regulation of the Washington Utilities and Transportation Commission, shall serve as operating authority for solid waste collection services provided within the City. The City shall take all necessary steps to ensure that non-recycled waste collected within its corporate limits is delivered to the County disposal system. The City will not enter into solid waste collection contracts that would allow waste to be diverted from the County disposal system without prior written County approval.

8.3 Waste Reduction And Recycling. The City shall implement and continue to operate programs for waste reduction and recycling in accordance with the Tacoma-Pierce County Solid Waste Management Plan, including, at a minimum, (1) single family recycling collection programs, (2) multi-family recycling collection programs, and (3) yard waste collection programs. The City shall coordinate activities with the County in furtherance of county-wide public outreach and educational programs and messages.

8.4 Data Collection and Monitoring. The City shall work with the County to monitor and to report to the County's Data Collection System about recycling tonnages removed from the waste stream which are not otherwise reported through the County's established information gathering system.

8.5 Planning. Pursuant to RCW 70.95.080 (3), the City designates the County as lead solid waste planning agency and shall participate in the solid waste planning process described in Section 6 of this Agreement.

8.6 Enforcement. With respect to the obligations in this Section, and to the extent allowed by law, it shall be the responsibility of the City to ensure the compliance of contractors and residents of, and companies doing business within the corporate limits of the City. Nothing in this Agreement, however, shall affect the enforcement responsibilities and obligations of the Tacoma-Pierce County Health Department or the Washington Utilities and Transportation Commission.

8.7 Financing. The City shall propose a budget which funds its obligations under this Agreement, but may request assistance from the County for those programs that are of mutual benefit.

Section 9. DISPUTES

9.1 Should there be any dispute between the Parties concerning compliance with this Agreement, the Parties shall continue performance of their respective obligations under this Agreement and shall attempt to resolve such dispute in a cooperative manner. To this effect, they shall consult and negotiate with each other in good faith and, recognizing their mutual interests, attempt to reach a just and equitable solution satisfactory to both parties. If they do not reach such solution within a period of 60 days, then upon notice by either party to the other, the dispute shall be finally settled by arbitration administered by the American Arbitration Association in accordance with the provisions of its Commercial Arbitration Rules, or other agreed upon local alternative dispute resolution organization.

9.2 Within fifteen (15) days after agreement to arbitration has been reached, each party shall submit the name of its own arbitrator and the two arbitrators shall select a third arbitrator from such panel within fifteen (15) days thereafter, or in case of a disagreement concerning the appointment of the third arbitrator, the third arbitrator shall be appointed from such panel by the presiding judge of the Pierce County Superior Court. During such time that the arbitrators are being selected or appointed, the parties shall continue to negotiate in good faith to resolve their dispute in a cooperative manner.

9.3 The arbitrators shall apply applicable provisions of Washington law in reaching their determination. The determination by the arbitrators shall be final and binding on the Parties, and any judgment upon the award rendered pursuant to such arbitration may be entered in any court having jurisdiction thereof.

9.4 The Parties shall use their best efforts to conclude all arbitration proceedings within thirty (30) days following the commencement of such arbitration proceedings.

9.5 The costs of arbitration shall be shared equally by the Parties, except that the arbitrators may, in their discretion, award to the prevailing party its reasonable attorneys' fees and expert and non-expert costs incurred in connection with the proceedings.

9.6 If arbitration is requested, the arbitration panel shall make its decision retroactive to the date of request for arbitration, if applicable.

Section 10. DURATION

10.1 Effective Date. This Agreement shall become effective immediately upon Pierce County receiving notice from the Washington Department of Ecology that the Department has issued Final Approval of the Plan.

10.2 Term. Except as noted in Section 11, this Agreement shall remain in effect for a period of twenty (20) years as set forth in the Plan. The County shall use the 20 year time frame to cost-effectively plan for, design, and/or site disposal facilities. Disposal capacity shall be based upon the Plan's projected needs to meet the twenty (20) year population base of the County and all parties to this Agreement.

10.3 Revisions. This Agreement shall be revised concurrent with any Major Revision to the Solid Waste Management Plan. At that time, either Party may propose revisions.

Section 11. TERMINATION

11.1 The County may terminate this Agreement should it be unable to negotiate a solid waste disposal agreement that fairly allocates rates, services, and risks among the respective public and private entities providing solid waste services in Pierce County. In this event, the County shall at once begin the Major Revision process and develop a revised Solid Waste Management Plan which recognizes a changed role for the County. The Parties would then enter into new Interlocal Agreements which reflect the changed role.

11.2 The City may terminate this Agreement:

11.2.1 by providing written notice to the County within 90 days of the County Council's adoption of the latest amendment or revision to the Solid Waste Management Plan. In this case, termination is effective upon the County receiving Final Approval of the Plan from the Washington Department of Ecology.

11.2.2 by failing to pass the legislative instrument or failing to issue a letter of concurrence necessary to adopt an amendment or revision to the Plan. In this case, termination is effective upon the County receiving Final Approval of the Plan from the Washington Department of Ecology.

11.2.3 by providing written notice to the County during the Major Revision scoping process that the City no longer wishes to participate in the Plan. In this case, termination is effective upon the earlier of the County or the City receiving Final Approval of its Plan from the Washington Department of Ecology.

11.2.4 by providing written notice at any other time that the City no longer wishes to participate in the Plan and that it has begun a process to develop its own Solid Waste Management Plan pursuant to Chapter 70.95 RCW. In this case, termination is effective when the City receives Final Approval of its Plan from the Washington Department of Ecology

Section 12. APPROVAL

This Agreement shall be submitted to the Washington State Department of Ecology for its approval as to all matters within its jurisdiction, and shall be filed with the City Clerk, and with the Clerk of the Pierce County Council and with the Secretary of State of the State of Washington.

Section 13. LIABILITY

13.1 The Parties commit to a coordinated solid waste management system, and recognize that the City has chosen to commit its waste to the County for handling and disposal in the understanding that this commitment provides certain revenues to the County through which it shall fulfill its obligations as detailed in Section 7 of this Agreement. Except as provided herein, if the County, through acts of negligence or misfeasance, fails to carry out any of its assigned responsibilities, and such results in a claim against the City, the County shall indemnify and hold harmless the City and shall have the right and duty to defend the City through the County's attorneys. Costs incurred by the County thereby are system costs which must be satisfied from disposal fees received by the County. In providing such defense of the City, the County shall exercise good faith in such defense or settlement so as to protect the City's interest.

13.2 If the County is not negligent, the City shall hold harmless, indemnify and defend the County for any property damages or personal injury solely caused by the City's negligent failure to comply with the provisions of Section 13.5.

13.3 In the event the County acts to defend the City against a claim, the City shall cooperate with the County. In the event the City acts to defend the County, the County shall cooperate with the City.

13.4 For purposes of this section, references to City or County shall be deemed to include the officers, employees and agents of either party, acting within the scope of their authority.

13.5 All waste generated or collected from within the corporate limits of the City which is delivered to the system for disposal shall be in compliance with the Resource Conservation and Recovery Act, as amended (42 U.S.C. § 9601 et seq.), Chapter 70.95 RCW, and all other applicable federal, state, and local environmental health statutes, ordinances, resolutions, rules, or regulations. The City shall be deemed to have complied with the requirements of this section if it has adopted an ordinance requiring solid waste delivered to the system for disposal to meet such laws, rules, or regulations, and by written agreement has authorized Pierce County to enforce the same for waste originating within the corporate limits of the City.

13.6 The County shall provide the City with written notice of any violation of this provision. Upon such notice, the City shall take immediate steps to remedy the violation and prevent similar future violations to the reasonable satisfaction of Pierce County which may include but not be limited to removing the waste and disposing of it to an approved facility. If, in good faith, the City disagrees with the county regarding the violation, such dispute shall be resolved in accordance with the dispute resolution procedures found in Section 9 of this Agreement. Each party shall be responsible for its own attorney's fees and costs. Failure of the City to take the steps requested by the County pending resolution shall not be deemed a violation of this Agreement; provided, however, that this shall not release the City from damages or loss to the County arising out of the failure to take such steps if the Arbiter finds that the City violated the requirements to comply with applicable laws set forth in this section.

13.7 The City is not held harmless or indemnified with regard to any liability arising under 42 U.S.C. § 9601-9675 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) (42 U.S.C. § 9601 et. seq.) or as hereafter amended or pursuant to any state legislation imposing liability for cleanup of contaminated property, pollutants or hazardous or dangerous substances.

Section 14. FORCE MAJEURE

The Parties are not liable when failure to perform pursuant to the terms of this Agreement is caused by "force majeure". As used herein, the term "force majeure" means: acts of God including landslides, lightning, forest fires, storms, floods, freezing or earthquakes; civil disturbances, strikes, lockouts or other industrial disturbances; acts of the public enemy, wars, blockades, or public riots; breakage, explosions, accident to machinery, equipment or materials, or unavailability of required materials or disposal site; government restrictions or restraint imposed by law or by rule, regulation or order of superior government authority; and other cause which is beyond the reasonable control of the party affected in which, by the exercise of reasonable diligence, such party is unable to prevent. The Party claiming Force Majeure shall promptly notify the other when it learns of the existence of a Force Majeure condition and shall promptly notify the other when the Force Majeure condition has terminated.

Section 15. MERGER

This Agreement merges and supersedes all prior negotiations, representations and/or agreements between the parties relating to the subject matter of this Agreement – specifically the 1993 Interlocal Agreement between Pierce County and the City – and constitutes the entire contract between the Parties.

Section 16. WAIVER

No waiver by either Party of any term or condition of this Agreement shall be deemed or construed to constitute a waiver of any other term or condition or of any subsequent breach, whether of the same or a different provision of this Agreement.

Section 17. THIRD PARTY BENEFICIARY

This Agreement is not entered into with the intent that it shall benefit any other entity or person except those expressly described herein, and no other such person or entity shall be entitled to be treated as a third party beneficiary of this Agreement.

Section 18. SEVERABILITY

If any of the provisions contained in this Agreement are held illegal, invalid or unenforceable, the remaining provisions shall remain in full force and effect.

Section 19. NOTICE

All notices pertaining to this Agreement shall be in writing, and delivered in person or mailed to the parties or officers at the following address:

For the City: Bonney Lake
Mayor

Attn: City Clerk

P.O. Box 7380

Bonney Lake, WA 98390

For the County:
Solid Waste Administrator

Pierce County Department
of Public Works and Utilities

9116 Gravelly Lake Drive SW

Lakewood, WA 98499-3190

IN WITNESS WHEREOF this Agreement has been executed by each party on the date set forth below:

CITY OF Bonney Lake

Mayor

Date: 5-29-01

PIERCE COUNTY

Pierce County Executive

Date: 6/13/01

Pursuant to Resolution
No. 872

Pursuant to Ordinance No. 2000-47S
and Resolution R2001-4

ATTEST: Gayle Butcher

ATTEST:

APPROVED AS TO FORM:

City Attorney

Date: 5/29/01

APPROVED AS TO FORM:

M. Peter Shelby
Pierce County Deputy
Prosecuting Attorney

Date: 06/05/01

RESOLUTION NO. 872

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BONNEY LAKE, WASHINGTON ADOPTING THE YEAR 2000 TACOMA-PIERCE COUNTY SOLID WASTE MANAGEMENT PLAN, AND AUTHORIZATING THE EXECUTION OF A SOLID WASTE INTERLOCAL AGREEMENT.

WHEREAS, Chapter 70.95 RCW requires Counties, in coordination with their Cities and Towns, to adopt comprehensive solid waste plans for the management, handling, and disposal of solid waste for twenty years, and to review and amend or revise the plans every five years, as necessary; and

WHEREAS, pursuant to Chapter 70.95 RCW, the County Executive, in 1993, entered into Interlocal Agreements with the Cities and Towns within Pierce County wherein the County agreed to serve as the lead planning agency to maintain the Plan and draft revisions as necessary and to provide a draft of these revisions to the Cities and Towns prior to scheduled County Council public hearing dates; and

WHEREAS, the County in coordination with the Pierce County Solid Waste Advisory Committee developed a Preliminary Draft Plan and Draft Goals and Recommendations and provided the Preliminary Draft Plan and the Draft Goals and Recommendations to the Cities and Towns, conducted an extensive public review process, and incorporated the comments from Cities and Towns and citizens into the Year 2000 Plan; and

WHEREAS, the Pierce County Council adopted the Year 2000 Tacoma-Pierce County Solid Waste Management Plan by Ordinance 2000 - 47S on December 12, 2000; and

WHEREAS, the Pierce County Council authorized the County Executive to execute Solid Waste Interlocal Agreements with each City and Town by Resolution R2001-4 on February 6, 2001; and

WHEREAS, the City desires to adopt the Year 2000 Tacoma-Pierce County Solid Waste Management Plan as its comprehensive solid waste management plan; and

WHEREAS, the City also desires to enter into a new Interlocal Agreement with Pierce County committing itself to a partnership with the County to coordinate on the implementation of the goals, policies, recommendations, and disposal methods set forth in the Year 2000 Tacoma-Pierce County Solid Waste Management Plan;

NOW THEREFORE, BE IT RESOLVED by the Council of the City of Bonney Lake:

Section 1. The Year 2000 Tacoma-Pierce County Solid Waste Management Plan, attached hereto as Exhibit A and incorporated herein by this reference, is hereby adopted in its entirety as the comprehensive solid waste management plan for the City of Bonney Lake.

Section 2. The Mayor is hereby authorized to execute the Solid Waste Interlocal Agreement between the City of Bonney Lake and Pierce County, attached hereto as Exhibit B and incorporated herein by this reference, to commit the City to a partnership with the County to implement the goals, policies, recommendations, and disposal methods set forth in the Year 2000 Tacoma-Pierce County Solid Waste Management Plan.

PASSED this 22nd day of May, 2001.

Mayor

ATTEST

City Clerk

APPROVED AS TO FORM:

City Attorney

Sponsored by: Councilmember Terry Lee
Requested by: Pierce County Executive/Public Works & Utilities

File No. 259

RESOLUTION NO. R2008-6

A Resolution of the Pierce County Council Referring the Draft 2008 Supplement to the Year 2000 Tacoma-Pierce County Solid Waste Management Plan to the Pierce County Planning Commission for its Review and Recommendations by a Date Certain; and Requesting that the Pierce County Executive Submit the Draft 2008 Supplement to the Washington Department of Ecology, the Washington Utilities and Transportation Commission, and the Cities and Towns of Pierce County for Review and Comment.

Whereas, Chapter 70.95 Revised Code of Washington (RCW) requires Counties, in coordination with their Cities and Towns, to adopt comprehensive solid waste plans for the management, handling, and disposal of solid waste, and to keep those plans in a "current" status through periodic review and update; and

Whereas, the Pierce County Council adopted the Tacoma-Pierce County Solid Waste Management Plan (Solid Waste Plan) by Ordinance No. 2000-47s on December 12, 2000; and

Whereas, in Resolution No. R2006-133 the Pierce County Council requested the Solid Waste Division of the Pierce County Department of Public Works and Utilities (Solid Waste Division) take the lead in coordination with the Pierce County Solid Waste Advisory Committee (SWAC) to create a Supplement to the Solid Waste Plan which would recognize changes in state law, discuss and evaluate waste management options, and advance a vision for cost-effective and environmentally-sound delivery of solid waste services to Pierce County's customers; and

Whereas, the SWAC, in 14 regular and nine public comment meetings, helped to prepare and gather public comment on the Draft 2008 Supplement to the Solid Waste Plan by articulating a 20-year vision, adding new goals, and developing and prioritizing 37 new strategic policy initiatives which build upon the solid waste management system established by the Solid Waste Plan; and

Whereas, the draft 2008 Supplement retains the core program approach of the 2000 Solid Waste Plan, provides direction on how to expand waste reduction programs and maximize recycling and diversion of waste resources, promotes energy conservation, and establishes a priority list of actions to implement for the next five years to carry out the 20-year vision; and

Pierce County Council
930 Tacoma Ave S, Rm 1046
Tacoma, WA 98402

Whereas, the Year 2000 Tacoma-Pierce County Solid Waste Management Plan affects general planning documents that are part of the County's Comprehensive Plan. Thus the 2008 Supplement to the Solid Waste Plan must be reviewed by the Pierce County Planning Commission for conformance with the Comprehensive Plan, pursuant to RCW 36.70 and 36.70A; and

Whereas, the Year 2000 Tacoma-Pierce County Solid Waste Management Plan affects general planning documents that are related to the Comprehensive Plan but it does not amend the text of the Comprehensive Plan itself; therefore, the time constraints for Comprehensive Plan amendments do not apply; and

Whereas, Chapter RCW 70.95 directs local governments to submit amendments to solid waste management plans to the Washington Department of Ecology and the Washington Utilities and Transportation Commission; and

Whereas, Interlocal Agreements with the cities and towns of Pierce County participating in the Year 2000 Tacoma-Pierce County Solid Waste Management Plan require that amendments to the Solid Waste Management Plan be sent to cities and towns for comment and adoption or letters of concurrence; **NOW, THEREFORE,**

BE IT RESOLVED by the Council of Pierce County:

Section 1. The Pierce County Council has accepted for review the draft 2008 Supplement to the Year 2000 Tacoma-Pierce County Solid Waste Management Plan, as set forth in attached Exhibit A which would amend and update the Tacoma-Pierce County Solid Waste Management Plan.

Section 2. The Draft 2008 Supplement is hereby referred to the Pierce County Planning Commission for review, report, and recommendation, which shall be forwarded to the County Council prior to March 21, 2008.

Section 3. The Pierce County Executive shall refer the draft 2008 Supplement to the Washington Department of Ecology, the Washington Utilities and Transportation Commission, and the Cities and Towns of Pierce County for review and comment. Comments received by the Executive shall be forwarded to the Planning Commission, if such comments are received before the Commission concludes its respective review, and all comments shall be forwarded to the Pierce County Council.

Pierce County Council
930 Tacoma Ave S, Rm 1046
Tacoma, WA 98402

Section 4. The Pierce County Department of Planning and Land Services shall complete an environmental review of the draft 2008 Supplement as required by applicable laws and regulations.

ADOPTED this 5th **day of** February, **2008**.

ATTEST:

Patricia L. Facciotti

Denise D. Johnson
Clerk of the Council

PIERCE COUNTY COUNCIL
Pierce County, Washington

Terry Lee
Council Chair

Pierce County Council
930 Tacoma Ave S, Rm 1046
Tacoma, WA 98402

PIERCE COUNTY COUNCIL

Terry Lee, Chair	District 7
Calvin Goings, Vice Chair	District 2
Shawn Bunney, Executive Pro Tempore	District 1
Roger Bush	District 3
Timothy Farrell	District 4
Barbara Gelman	District 5
Dick Muri	District 6

PIERCE COUNTY EXECUTIVE

John Ladenburg, County Executive — Lyle Quasim, Chief of Staff

---

PIERCE COUNTY DEPARTMENT OF PUBLIC WORKS AND UTILITIES

Brian Ziegler, Director — Toby Rickman, Deputy Director

Steve Wamback, Solid Waste Administrator
Sally Sharrard, Senior Planner
Cheryl Mizener, Office Assistant

Robert Dieckmann, Environmental Educator
Travis Dutton, Environmental Educator
Rick Johnston, Project Coordinator
Stephanie Leisle, Environmental Educator
Ryan Misley, Environmental Educator
Nancy Morrison, Project Coordinator

Yvonne Reed, Pierce County Responds

Tracie Esher, Office Assistant
Jim Howe, Code Enforcement Officer
Kristina LeFae, Office Assistant
Dan Simon, Code Enforcement Officer
Craig Swanson, Project Coordinator

PIERCE COUNTY SOLID WASTE ADVISORY COMMITTEE

Paul Henderson, Chair — Roxy Giddings, Vice Chair

Voting Members on 12-15-07
Terry Gillis
John Hildebrand
Neil Holden
Keith Kovalenko
Leon Leonard
Joseph Lewis
Ron Lucas
Bob O'Neal
Bud Rehberg
Mark San Souci
Kenneth Tross
Brenda Waters
Al Weymiller

Non-Voting Members
Carolyn Pendle, Pierce County Council
Toby Rickman, Public Works & Utilities
John Sherman, Health Department
Jody Snyder, LRI

Former Members
Catherine Crook (2006-07)
Kenneth Dolan (2002-07)
Terry Maves (2006-07)
Al Tebaldi (2002-07)

How to use this document

This Supplement augments the *Tacoma-Pierce County Solid Waste Management Plan* which was adopted in 2000 and approved by the Washington Department of Ecology in 2001. The two documents should be used together; the Supplement amends, but does not replace, the Plan.

Terminology
To make the Supplement easier to read and to reduce the number of words, the following references are used. For additional acronyms, please refer to the Glossary in the Appendices.

Three management systems: There are three separate collection and disposal systems in Pierce County. The Plan and this Supplement are adopted by the County, Tacoma, and all cities and towns. The County and Tacoma coordinate activities with the military system which has a separate plan. *(For more information, please see Chapter 1 of the Plan.)*

> **City of Tacoma:** The City's Solid Waste Utility provides solid waste management services under the direction of the Tacoma City Council for all residents and businesses within city limits. The Town of Ruston has its own collection system but has an interlocal agreement with Tacoma for disposal through the Tacoma management system. In this document it is referred to as the "Tacoma" system.
>
> **Pierce County:** The Pierce County Department of Public Works and Utilities, Solid Waste Division, is the Pierce County government agency charged with solid waste and recycling planning for the Pierce County management system. This system serves the unincorporated areas of the county and all other cities and towns which have interlocal agreements to participate in the County's disposal system. This is referred to as the "County" system.
>
> **Military:** Fort Lewis and McChord Air Force Base use the Fort Lewis disposal system. Fort Lewis has its own solid waste management plan. This is referred to as the "Fort Lewis" system.

Tacoma-Pierce County Health Department (TPCHD): This agency, which is separate from County government, administers the solid waste permit process to ensure all solid waste handling activities comply with state and local codes and ordinances. It is referred to as the "Health Department."

Pierce County Solid Waste Advisory Committee (SWAC): This is the citizen committee charged with advising the Pierce County Executive and Pierce County Council on waste and recycling policies and programs. It is referred to as the "SWAC."

Washington Department of Ecology: This state agency is responsible for final approval of the Plan and this Supplement, state waste regulations, and the *Beyond Waste Plan.* It is sometimes referred to as "Ecology." The *Beyond Waste Plan* is Washington's solid waste management plan with long-term strategies to systematically reduce waste and use of toxic substances.

Pierce County Recycling, Composting and Disposal, LLC, dba LRI: All three waste management agencies contract for disposal and other services with this company. It is referred to as "LRI."

Solid waste collection companies: These are the hauling companies which provide waste and recycling collection services to the unincorporated areas or to cities and towns. They are referred to as "collection" companies. *(For more information, see Chapter 5 of the Plan.)*

Washington Utilities and Transportation Commission (WUTC): This state agency regulates collection companies which have franchises serving the unincorporated areas and a few cities and towns. It is referred to as "WUTC."

How this Supplement differs from previous solid waste plans

The focus is on moving forward with new strategic initiatives to build upon the existing waste and recycling management systems in all of Pierce County. This document incorporates and recommends actions to coordinate with strategies of Washington's *Beyond Waste Plan.*

The format centers around seven integrated courses of action which establish a direction to achieve plan goals to meet a 20-year vision. Each of the seven courses of action is written to address future needs and actions. Unlike previous planning documents, these sections do not contain lengthy descriptions of past achievements, or the status of all programs, projects, or facilities. It is intended to be easy to read with the short descriptions designed to give enough information to inform the reader, but to keep the focus on the future actions. Short discussions of past activities or ongoing programs are chosen as summary examples which best illustrate the issues. Readers who desire more information about past activities or updated program data should refer to the **background briefing papers** in the Appendices to this Supplement.

Content

The **Introduction** section highlights new ideas and concerns and invites residents of Pierce County to work together to take the lead in showing how to use effective waste management practices to build a sustainable community.

Following the Introduction is a new **20-Year Vision** statement and **Goals**. This section incorporates new goals and revised versions of the Plan's existing goals.

The third section, **Creating a Pathway**, groups information into seven integrated courses of action. Each begins with descriptive information and ends with new policy statements to achieve the Plan's goals. These policy statements replace or build upon the policy action recommendations found in the back of each chapter of the 2000 Solid Waste Plan.

A new five-year **implementation strategy** and a six-year capital facility plan are included in the fourth section, **Priority Actions**. The strategy is based on the advice of the Pierce County Solid Waste Advisory Committee (SWAC) about which actions should be highest priorities.

So that readers will not have to keep referring back to the Plan, the fifth section **retains** all the policy recommendations and guidelines from the Plan that are not impacted by the new implementation approach. These will be used to support the design of new programs. Many of them are "if/then" guidelines that would only apply if something occurred and a certain action or decision was needed.

The **Appendices** to this Supplement contain a short glossary, the briefing papers, and the required WUTC Cost Assessment.

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VI APPENDICES

STEPPING UP TO THE CHALLENGES

I. INTRODUCTION

Pierce County citizens, businesses, agencies, and governments can step up to the challenges of our times by making solid waste management a core component in creating a more sustainable community. This document is about capturing resources that would otherwise be disposed through innovative reduction, recycling, resource and energy recovery, and conservation programs. It is based on recognizing that truly effective solid waste management practices may prevent pollution of our land and Puget Sound; may be able to mitigate environmental harm caused by other activities; and can provide a lasting legacy by enhancing our physical landscape and our economy.

We have the resources to lead in managing waste in a sustainable way: One of our assets is a strong, coordinated partnership between all municipalities, private industry, and citizens with a demonstrated history of successful program development and implementation. We have efficient collection systems; expanding private recycling processing capacity; and a growing number of businesses recovering wood debris to make new products or fuels. We are enlarging our facility capacity to collect household hazardous waste which will help prevent pollution and reduce the toxicity of disposed waste. We have secured 20 years or more of disposal capacity.

We are innovators: Pierce County and Tacoma, as lead waste management agencies, have developed nationally acclaimed recycling, composting, environmental education, and nuisance abatement programs. Pierce County introduced Washington's first county-wide residential curbside recycling collection program in 1990. Since then, residents and businesses have recycled about 7 million tons of materials. In 2005, nearly one-fifth of all the yardwaste reported as recycled in the state came from Pierce County and its cities. Solid waste educators reach 28,000 people annually through classroom education and workshops. In 2006 the Pierce County Responds Program removed 644,695 pounds of roadside litter and assisted in the removal 1,407 nuisance vehicles. Since the Responds Program began, 28 large illegal dump sites have been cleaned up.

The military community contributed leadership by adopting the Fort Lewis Sustainability Plan and by implementing award-winning procurement programs for Fort Lewis and McChord Air Force Base. For its deconstruction/reuse efforts Fort Lewis was named a Recycler of the Year in 2007 by the Washington State Recycling Association.

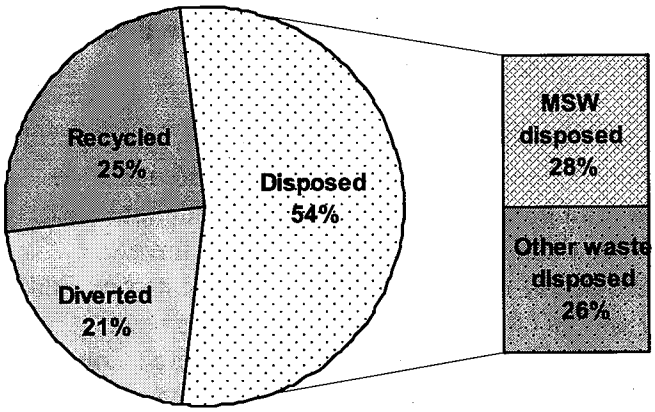
Citizens are motivated: Even though it meant a significant change in habits, residents willingly embraced the new Single-Cart Recycling Program resulting in a soaring 70% increase in recyclables collected at the curb and a 94% participation rate. What this program demonstrates is that when residents understand how wastes are handled and the potential for re-use and

recycling, they will step up to the challenge by recycling more and keeping contamination rates low.

Equally significant is the enthusiastic response by residents to the Pierce County Responds Program which tackles restoring the physical landscape through litter cleanup, vehicle nuisance abatement, and the cleanup of illegal dump sites.

But our efforts are not nearly enough. Despite everyone's efforts, the amount of municipal waste disposed has steadily crept upward and within twenty years could grow by 30% to 800,000 tons per year, if population continues to grow as projected.[1] This is even if the County and its cities continue to recycle nearly 50% of the municipal waste generated. In addition, the amount of other waste which is generally handled and disposed outside the municipal waste stream system has also crept upward, even though 46% is diverted to other uses or converted to energy or fuels. The following chart illustrates the problem by comparing the total amount disposed of MSW and other wastes with the amount recycled from the municipal waste stream and the amount of other waste diverted from disposal to other uses. In the waste industry this is referred to as the "diversion rate."

2006 Pierce County Diversion Rate



The simple reason for this growth is a population explosion and along with it economic growth. More people and a strong economy mean more waste generated. New homes means more landclearing debris and construction waste; more garbage.

The more complex reason is our wasteful culture. We are generating greater quantities of waste. We live in a time when industry builds obsolescence into the products we use; witness the ever-growing need to replace electronics such as computers, televisions, and cell phones.

Residents and businesses have not reduced the amount of waste they dispose. The average pounds disposed per day remains about 4.35 pounds per capita. On average, we are generating 8.29 pounds of materials per person per day; only 3.94 pounds (47.5%) is recycled.

These waste practices impact our world. Americans contribute about a quarter of the world's greenhouse gas emissions. On average, Americans produce 1,000 pounds of CO_2 equivalent per year by disposing 4.5 pounds of trash per person per day. The U.S. Environmental Protection Agency (EPA) estimates that by cutting the amount of waste generated in the U.S. back to 1990 levels, the country could reduce greenhouse gas emissions by 18 million metric tons of carbon

[1] Projected disposal tonnage includes waste from the City of Tacoma/Ruston system; the military system serving Fort Lewis and McChord Air Force Base; and the Pierce County system serving the unincorporated areas and all other cities and towns. Please see *Waste Trends and Disposal Projections* in the Appendices.

equivalent (MMTCE), the basic unit of measure for greenhouse gas. Increasing the recycling rate to 60% would save 315 million barrels of oil each year.[2]

The organic waste going into landfills produces methane which is over 20 times more effective in trapping heat in the atmosphere than carbon dioxide (CO_2). EPA calculates that "municipal solid waste landfills are the largest source of human-related methane emissions in the United States, accounting for about 25%....." and that capturing landfill gas is one of the most cost effective options to help resolve climate problems. In 2004, more than 375 landfill gas energy projects in the U.S. created electricity and fuels and provided environmental benefits equivalent to removing the CO_2 emissions of 14 million cars.[3]

Organic wastes may be more than 30% of what we dispose in Pierce County. It has been estimated that if the U.S. just composted 21.5 million tons of food annually, the resulting reduction in greenhouse gas emissions would be the equivalent to taking more than two million cars off the road. Composting assists in reducing emissions because it removes organic waste from decomposition in landfills and stores carbon in the compost in much the same way as the world's natural processes have always stored carbon in the soil. Incorporating compost into soil helps to replace the carbon released to the atmosphere by other activities.

There is potential to do more. The immediate practical solutions are to continue what we have been doing but to do it more aggressively. Pierce County and its cities have been systematically revising and expanding waste reduction and recycling programs to improve the recycling rate and to educate citizens about waste prevention practices. Waste reduction and recycling have long been considered the most cost-effective management options because they reduce the amount of waste going into landfills and reduce the need to extract raw materials for new products; saving disposal costs and energy. Transforming recycled materials into products uses less energy than the processes used to extract and manufacture raw materials. For example: recycling one ton of newspaper is the equivalent to saving 16.9 million BTUs of energy. All of these actions are important to reducing greenhouse gas emissions and reducing other impacts on the environment.

Programs can be significantly expanded to provide more assistance to residents and businesses. There are new tools to help, such as product stewardship and green building practices and products. Incorporating compost and other organics into soils which are undergoing development or using it as mulch on established lawns and gardens will help benefit plant health and reduce the need for fertilizers and pesticides. The use of compost along our road rights-of-way helps to prevent erosion and to cleanse petroleum contaminants from stormwater run-off. This will lead to improved Puget Sound water quality.

Diverting organic materials from disposal through collection of foodwaste and paper products that can't be conventionally recycled has the potential to maximize recovery of materials from the municipal waste stream. Other actions could ensure that more woodwaste and construction debris is recycled, composted, or diverted to produce clean energy or bio-fuels or bio-products.

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[2] U.S. EPA website on Climate Change: www.epa.gov./climatechange/

[3] Landfill Methane Outreach Program, U.S. Environmental Protection Agency website: www.epa.gov./lmop/

New types of collection programs could make it easier for residents to recycle household hazardous waste or large, bulky items, such as appliances or furniture.

Dynamic new conversion technologies can help in this process. These processing technologies can convert paper that can't be recycled, organic materials, and landfill methane to electricity or to alternative fuels, such as bio-diesel, ethanol, or liquefied natural gas. They could be used in conjunction with expanded composting capacity to remove all yardwaste and organic materials from the disposed waste stream.

Pierce County can take advantage of the momentum to address climate change. We are at a pivotal moment in time when residents and political leaders in Washington State are serious about addressing climate change and improving the water quality of Puget Sound. In 2007, our elected leaders adopted emission reduction goals and set deadlines to achieve them. They also adopted financial incentives to help Washington build a clean energy economy based on using in-state resources for alternative fuels. There are also some federal credits and programs which might help build facilities which convert organic waste materials from the municipal waste stream and the agricultural and forest industries to alternative fuels or electricity. The Legislature created a state agency, the Puget Sound Partnership, to lead and coordinate efforts to protect and restore Puget Sound by 2020. Among its goals are those to research and find solutions to reduce the high levels of nutrients and pathogens from human and animal waste and fertilizers and pesticides.

This Plan Supplement is about creating a pathway. It focuses on implementing more effective waste management practices which do two things: reduce emissions and help supply some of the in-state alternative fuels or electric energy. It offers a more aggressive approach on how to reduce waste; how to expand the programs we've begun; how to embrace new ideas and invite change; and how to forge new partnerships to meet the challenges of our times. It does not change the direction of solid waste management in Pierce County. Instead, it builds upon the strong base that municipalities, businesses, and citizens have already crafted.

In this document you will find a 20-year vision, seven integrated courses of action, many possible activities, and new policies to support them all. View it as an invitation to the citizens of Pierce County to take the lead in creating the path to a sustainable community.

II. 20-YEAR VISION AND GOALS

VISION: Pierce County is home to the best solid waste management systems and the most livable communities in the United States. We recognize that decisions made in the present will impact our environment and economy for generations to come. We manage our solid waste systems aggressively, capturing resources that would otherwise be disposed through innovative, reduction, recycling, resource and energy recovery and conservation programs. Collectively working together – residents, businesses, and municipalities – we annually reduce our per capita waste disposal requirements. We operate public and private facilities in the most environmentally responsible, energy and resource efficient, and economically sound manner.

OVERALL GOALS:

- Pierce County and Tacoma become recognized as national leaders for melding solid waste management into the climate change challenge.
- We dispose of waste as a last resort.
- Our systems are designed to be aggressive and effective in reducing and offsetting greenhouse gas emissions.
- Our systems positively contribute to efforts to protect, enhance, and clean-up Puget Sound and other water bodies.
- We implement source-separation programs which reduce the waste stream, promote recycling, or recover resources to produce alternative fuels or for use as a clean energy source.
- Our solid waste management systems promote and maintain the highest practical level of public health and safety and protect the natural and human environment.
- Our systems promote input, ensure the representation of the public in the planning process, and address the concerns of citizens from across Pierce County.
- All of our programs and activities promote the conservation of energy.
- Pierce County's system is economically responsible, recognizing the costs and benefits of environmental protection and services.
- We achieve our vision and goals through regional and public-private partnerships.
- Our waste management systems are coordinated and consistent with applicable resource management plans.

PROGRAMMATIC GOALS

Waste Reduction and Recycling

- We annually reduce per capita waste generation.
- Our systems use strong, coordinated educational and public outreach programs to promote relevant local, state, and national waste reduction measures.
- All municipalities fully implement waste reduction, recycling collection, green building, and purchasing procurement programs.
- Pierce County recycles, or diverts, 75% of the waste materials generated.

- Our systems provide appropriate levels of collection and recycling opportunities so that the greatest number of citizens can participate and the fullest practical recycling potential for each material can be realized.
- Pierce County government designs cost-efficient model programs for communities to adopt or modify to suit their needs and supports the communities in this effort.
- Our systems monitor the efforts to increase the amount of materials recycled and the amount of waste reduced each year by creating and maintaining measurement and analysis programs.
- Our systems foster a sense of personal responsibility among residents for solid waste management, particularly in accomplishing waste reduction and recycling goals.

Solid Waste Collection

- Our management systems ensure that all residents of Pierce County have access to refuse and recycling collection services.
- We design collection service levels to be compatible with the other elements of the solid waste system established by the Plan.

Solid Waste Processing Technologies

- We use reliable processing systems that protect human health and the environment, reduce dependency on landfills, and are compatible with other elements of the waste management system.

Transfer Facilities and Systems

- We utilize transfer facilities and systems which provide cost and operational efficiency to the waste disposal system.
- Our systems provide convenient waste transfer locations and recycling opportunities for public and commercial needs.

Landfilling

- Our management systems provide a strategy that will ensure adequate disposal capacity through the planning period. The strategy promotes efficient use of landfill capacity and minimizes disposal costs consistent with the protection of human health and the environment.
- Our disposal system provides for maximum protection of human health and the environment by supporting cleanup activities for facilities and properties with existing environmental problems.

Special Waste Streams

- We develop, maintain, and update guidelines and strategies for the recycling and disposal of all special waste types.
- Our systems ensure that special wastes are managed in a manner that complies with all local, state, and federal regulations or best management practices; promote and maintain a high level of public health and safety; and protect the environment.

Enforcement and Administration

- Our systems ensure that permitting, monitoring, and enforcement programs for solid waste activities and facilities are adequately funded, staffed, and managed in a cost-effective manner.
- Our systems ensure that there is a coordinated approach by all enforcement agencies to resolve illegal dumping problems and to remove regulatory barriers that prevent clean-up in a timely manner.
- Our systems ensure that disposal service levels are maintained consistent with the Plan and that rates charged are equitable and reflect cost effective management and operation practices.
- Our systems promote inter-jurisdictional cooperation and orderly, cost effective, and environmentally sound management.
- Our systems ensure thorough public discussion on proposed waste management projects.

III. CREATING A PATHWAY

Seven Integrated Courses of Action

▶ 1. Assist community efforts to reduce waste and prevent pollution

Consume less; throw away less:

Waste reduction is the single most cost-effective way to manage wastes. If you don't make waste you pay nothing to dispose or recycle it. If we all work together to reduce the amount of waste we generate, we can reduce our needs for disposal facilities, collection programs, and special programs to divert toxic materials.

Despite all our efforts in Pierce County to increase recycling and divert materials, the amount of municipal waste disposed has steadily crept upward and within twenty years could grow by 30% if population continues to grow as projected. We've reached a 47.5% recycling rate and we divert 46% of the materials that don't normally enter the municipal solid waste system. But we are generating more. While we recycle more (an average of 3.94 pounds per day per person) our generation rate has increased to an average of 8.29 pounds per day per person.

Consumption is the core cause of waste generation. We are a wealthy society and our economy is partially based on producing and consuming goods. But consumption of products is not the whole reason for this increasing generation of waste. Regional studies in Washington and Oregon indicate that our houses are getting larger and using more materials; construction and remodeling has increased; products are not as durable as they used to be and because of their design and the increasing use of electronics, it has become more costly to repair items than it is to throw them away. There is also more wasteful packaging and people are not reusing items or are not passing them on to others as they could.

Consumer education:

Providing more direct outreach to businesses and schools, expanding education programs to promote more awareness about how individual choices can reduce impacts to the environment, and joining with other agencies and local organizations to promote producer responsibility are all ways for municipal agencies to assist residents and businesses to minimize their wastes.

We can also increase our efforts to help the community develop and promote a stronger ethic against littering and illegal dumping which may help minimize the need for cleanup and nuisance abatement programs.

Since 1988, Pierce County and Tacoma have created award-wining outreach and education programs to promote waste reduction, to support new recycling collection programs, and to show how to design cooperative programs to restore our landscape and make a more livable community. We can increase our efforts by focusing more intently on waste reduction.

Impact to our world:

Most people don't realize just how much waste reduction can help to address global climate change. The U.S. Environmental Protection Agency (EPA) considers waste reduction to be essential to address greenhouse gas emissions. On average, Americans produce 1,000 pounds of CO_2 equivalent per year per person by disposing 4.5 pounds of trash per day. EPA estimates that by cutting the amount of waste generated in the U.S. back to 1990 levels, the country could reduce greenhouse gas emissions by 18 million tons of carbon equivalent (MMTCE), the basic unit of measure for greenhouse gas emissions.

Tacoma Solid Waste Management staff has taken leadership roles in Tacoma's effort to address global warming. They are responsible for performing the emissions inventories requested by the City Council and for evaluating the potential response measures. Two commissions will be tasked to develop strategies for Tacoma by the end of 2008. Pierce County staff is participating on the Governor's Climate Change committee to develop State recommendations about actions to reduce emissions and to support development of an in-state bio-fuel economy.

Basic messages:

Waste reduction education is all about changing habits. The basics are pretty simple and those are the messages agencies have used for years: purchase durable, long-lasting goods; seek products with minimal packaging and as free of toxics as possible; reuse and repair items; give waste-free gifts of service or eco-friendly products; compost; recycle; use mulching mowers; or swap items no longer needed.

The County and City use extensive, ongoing outreach programs that incorporate a variety of media to communicate with residents: *Earth Matters* and *EnviroTalk* newsletters; brochures and posters; counter cards and displays; newspaper ads; billboards, table-top displays; government access TV; press releases; websites; staffed booths at fairs and other events, phone calls, and in-person visits.

Exhibits:

For ten years, the County sponsored the *GreenHouse* environmental education modular exhibit at the Puyallup Fair and other events. It was built of recycled materials and showcased recycled and non-toxic products, energy efficiency ideas, and reuse alternatives. Tacoma has now converted the house to a permanent exhibit – the *EnviroHouse* located at Tacoma's Transfer Station and landfill. The house showcases green building and landscape ideas, materials and "techniques that create a healthy home and planet." It is open most days and admission is free.

Recent actions:

The County and Tacoma have expanded general messages by providing more assistance tools to help residents find quick and easy ways to move usable, but unwanted, items, or to reuse materials and consume less. The websites *2good2toss.com*, *wastefreegifts.com*, and the Recycling and Disposal Resource Guide at *www.piercecountywa.org/Recycle* are examples.

Tacoma has entered into a partnership with Tacoma Goodwill Industries to locate an attended donation station at the City's Recycling Center. In conjunction with other City divisions, Tacoma Solid Waste has sponsored environmental training for volunteers to become Resource Conservation Stewards. In exchange for conservation training, the volunteers will train other citizens on the topics they learned and help staff education booths at various fairs and special events.

Identified needs: The 2000 Solid Waste Plan identifies a need to expand waste reduction outreach to target self-haulers with new messages and to develop new outreach programs for the business community. Of particular interest is the development of programs which can assist small "mom and pop" type businesses to reduce their disposal costs by implementing waste reduction practices and participating in recycling collection programs. They may be unaware of all the recycling collection opportunities that are available to them and usually do not have the time to learn how to evaluate programs, practices, and purchasing guidelines suitable for their businesses.

School education programs: Since 1988, the County's Solid Waste Division has promoted responsible waste management through school-based interactive presentations and adult composting workshops. The school program is available to any public, private, or home school students outside the Tacoma School District, as well as to local youth-oriented groups (cub scouts, girl scouts, after-school programs and summer camps). The City of Tacoma has similar educational programs for schools within Tacoma.

The Division's educational staff market presentations as a "series," in which the individual programs are designed to flow from one to the other. This approach allows the education program to develop curricula that integrates and incorporates the various education and outreach environmental issues of the entire Pierce County Public Works and Utilities Department, including solid waste, wastewater treatment, and water resources. A new presentation has been added to the mix called *Beyond Recycling* which is centered on the idea of an "Ecological Footprint: the amount of land needed to sustain the resources used for a particular way of life."

Worm composting workshops are particularly popular for adults. The two-hour workshop includes instruction on worm bin set-up, maintenance, and compost usage. Participants who pay the tuition also receive all the materials, including worms, needed to begin composting. Demand for the workshops has continued to rise each year to the point there is often a waiting list for reservations for the next workshop.

Regional messages: The educational staff helped pioneer additional environmental education formats in coordination with many local and state agencies and non-profit organizations such as the Children's Water Festival, NatureFest, and Livable Communities Fair.

These events focus on providing one-on-one environmental education in interesting ways to visitors, particularly students.

Division staff is increasing the focus on how classroom presentations and adult education can have lasting impacts in Pierce County by initiating behavioral changes that support environmental education and a more sustainable community. Current efforts spotlight initiating, supporting and promoting institutional recycling, such as school wide recycling programs, and working to improve ties between schools, local government, waste and recycling collection companies, and not-for-profit organizations.

Educational center: The Pierce County Department of Public Works and Utilities is using a unique opportunity to expand delivery of environmental messages by developing an Environmental Education Center on the Chambers Creek properties. The project is part of the Master Site Plan for the site which is located on Puget Sound. It includes the Chambers Creek Canyon with all its natural trails, the wastewater treatment plant, and a reclaimed gravel mine turned into a 'links style' golf course. The Department plans to use the center to provide workshops and more hands-on activities and displays about re-use, mining reclamation, and estuarine and other environmental systems related to wastewater treatment, water resources, waste and resource management, and transportation services. Visitors to the site will experience the impact that people have on the environment –good or bad – and learn from the experience. The Solid Waste Division is funding the planning efforts and a portion of the cost.

Product stewardship: Many of the major initiatives in Washington's *Beyond Waste Plan* center on working with businesses to reduce the amount of waste they produce, the toxicity of the waste, and developing product stewardship collection programs. Some of the current stewardship programs are for things like carpet, mercury-containing building materials, and paint. There is an opportunity for the County and its cities to coordinate with the state and other agencies and municipalities to develop, and maybe advocate, product stewardship initiatives. An example is the recent state legislation which requires producers to pay for programs to recycle electronics.

Product stewardship is all about producer responsibility for the waste created by their products. In the U.S., unlike in Europe, industries are not required to consider disposal costs for their products. In the U.S. the disposal cost is hidden from the consumer and displaced onto municipal waste agencies. As these costs have increased, municipalities have become concerned about the need to create more collection programs to divert hazardous materials or products from disposal. Many products are energy inefficient or made to be thrown away. In addition, there is a growing concern about how toxic materials are creeping into our surface and ground water systems. Studies are underway to evaluate the impacts of chemicals and waste on the fisheries and eco-systems of Puget Sound by the newly created state agency, the Puget Sound Partnership. The agency will

coordinate efforts to protect and restore Puget Sound by 2020. Among their goals are to find solutions to reduce the high levels of nutrients and pathogens from human and animal waste and fertilizers and pesticides.

The idea behind product stewardship initiatives is not just to get industries to pay for collection programs but also to get them to rethink how they design products. If they have to pay for the disposal costs they may begin to incorporate improved design practices which eliminate the need for special collection programs. They may make products from recycled, less-toxic materials that can be easily disassembled, reused, or recycled again. With the recent media attention on climate change, these ideas seem to be catching on. Industries are beginning to advertise themselves as "green" businesses with environmentally friendly products attractive to consumers.

Educating about product stewardship actions is also a way to get consumers to think about the choices they make when they purchase items. There is a need to help them improve their understanding of life-cycle costs and their role in product stewardship. They need to know what businesses or industry are doing, or not doing, to make their products more durable, energy efficient, and less toxic.

Tacoma Solid Waste Management is a member of the steering committee for the Northwest Product Stewardship Council. Tacoma has focused on electronic and beverage waste issues, and has assisted with funding efforts to address the issue of paint waste disposal.

Household hazardous waste:

Waste reduction is also about reducing the toxicity of the waste that is being disposed. The Tacoma-Pierce County Health Department coordinates with Pierce County and Tacoma to implement actions in the *Tacoma-Pierce County Local Hazardous Waste Management Plan.* The three agencies work in partnership to provide: drop-off sites for residential household hazardous waste; collection sites for used oil or antifreeze at private business locations; satellite collection events; technical assistance; brochures; and a Hazardous Waste Hotline.

Drop-off sites are free-of-charge to residents. The County, Tacoma, and the Health Department work together to pursue funding from the State's Coordinated Prevention Grant (CPG) program. A portion of the County's administrative fee from the tipping fee charged at the transfer stations is used to help fund the collection, disposal, and outreach programs. In 2006, Pierce County spent $438,000 to dispose of household hazardous waste generated by residents with the Department of Ecology reimbursing approximately $133,000.

The Health Department is updating the *Hazardous Waste Plan* to incorporate actions and ideas suggested in the *Beyond Waste Plan.* One aspect recommended for all waste reduction messages is to focus on how residents and businesses can use more environmentally-friendly products or practices which reduce the need for household products which contain toxic materials. The Washington

Department of Ecology has a five year strategic plan to target certain chemicals and reduce their use by industries. The strategy also includes support for collection programs to keep certain toxic materials out of landfills, such as fluorescent light fixtures, mercury switches and thermometers, and flame retardants.

Pierce County Responds:

Pierce County leads the way among all governments in showing how to restore landscapes through cleanup and nuisance abatement programs using coordinated enforcement action by many agencies. The Pierce County Responds Program is an aggressive and comprehensive response to the problem of illegal dumping of waste and nuisance vehicles. The Solid Waste Division oversees the program which acts as a central clearinghouse for receiving and investigating citizens' complaints about illegal dumping, abandoned or inoperable vehicles, and illegal wrecking or disposal operations. It is designed to serve the public in unincorporated Pierce County, but some small towns have asked that it be extended to cover their communities.

A number of assistance programs are available to help citizens either to reach compliance or to take care of issues before a complaint is filed against their property. The Cooperative Abatement program will pay half the cost to remove vehicles of an approved applicant who has twenty or less public nuisance vehicles. Staff can provide Junk Vehicle Affidavits to applicants which can be used in place of a title to have a junk vehicle removed. Litter credits are authorized up to a specified amount for one-time disposal of solid waste at an authorized transfer station. Dumpsters are provided to community groups that want to cleanup public lands.

In 2006, the Pierce County Responds program removed 644,695 pounds of roadside litter and assisted in the removal of 1,407 nuisance vehicles. Since the Responds Program began, 28 large illegal dump sites have been cleaned up.

The County has received national and local recognition for the Responds Program. Among the many awards are the Public Education Excellence Gold Award from the Solid Waste Association of North American (SWANA), the National Association of Counties Achievement Award, and the Preserve Planet Earth Award from Rotary Tacoma #8.

In 2007, the American Public Works Association accorded Pierce County Responds with "model program" status, a best management practice recommended for implementation in public works departments nationwide.

Policy 1.1 Develop assistance programs for the business sector.

✓ 1.1.1 Survey the extent of commercial recycling collection services for businesses in the County and develop a comprehensive information package for businesses about the availability of services, drop-off, or other management alternatives.
✓ 1.1.2 Develop specialized education and training programs or workshops to assist businesses to develop recycling programs and waste reduction practices.
✓ 1.1.3 Work with solid waste collection companies to provide single-cart recycling services for small and medium-sized businesses.
✓ 1.1.4 Provide direct one-on-one assistance to small to medium sized businesses to help them implement recycling and waste reduction programs.
✓ 1.1.5. Distribute outreach materials about recycling collection alternatives for the business sector at County and city development counters and information kiosks.
✓ 1.1.6 Create an on-going, comprehensive public outreach program to promote recycling and waste reduction to the business sector.
✓ 1.1.7 Develop an awards program for those businesses which do an exceptional job in reducing the amount of waste they dispose and to publicize their activities to encourage other businesses to do the same.
✓ 1.1.8 Work with institutions, hospitals, and other governments and agencies to implement recycling and waste reduction programs.
✓ 1.1.9 Create measurement programs to annually evaluate efforts of the business sector to increase the amount of materials recycled and to reduce the amount of waste disposed.
✓ 1.1.10 Work with cities and towns to create innovative collection systems for businesses within their communities.

Policy 1.2 Work with school districts to implement comprehensive recycling programs in all schools.

✓ 1.2.1 Assist school districts to evaluate and document their district-wide waste practices and identify the potential amount and types of materials that could be recycled.
✓ 1.2.2 Develop model collection programs with schools and in coordination with the hauling companies which could be implemented county-wide.
✓ 1.2.3 Work with school districts to set objectives for each year and to measure and evaluate the impacts of recycling programs on the amount of waste they dispose.
✓ 1.2.4 Support district efforts with new outreach and educational materials to be used to achieve their goals. Utilize state education standards and offer lessons that combine learning objectives with district efforts for waste diversion.
✓ 1.2.5 Work with school districts to obtain grants to help fund recycling programs and to apply for State awards and other recognition programs.
✓ 1.2.6 Investigate ways to implement foodwaste and compostable organics diversion programs in schools. Consider composting on-site or explore opportunities for diversion to other local facilities.
✓ 1.2.7 Assist schools to evaluate ways to conserve energy by improving waste management practices.

Policy 1.3 **Coordinate with state agencies and other municipalities to identify and support those product stewardship initiatives that would help the County and its cities and towns achieve waste management goals and best management practices.**

Policy 1.4 **Continue to expand, fund, and support environmental education programs.**

✓ 1.4.1 Incorporate messages about how personal purchasing decisions impact eventual waste management needs.
✓ 1.4.2 Incorporate messages about how waste management practices can be used to address climate change through reduction of emissions, sequestering of carbon, and the production of clean energy or bio-fuels.
✓ 1.4.3 Expand programs to include more information about green building practices and products and how to manage home-remodeling debris.
✓ 1.4.4 Promote the practice of composting and the use of compost to reduce the need for fertilizers and pesticides. Incorporate information about how compost helps to sequester carbon, cleanse stormwaters, and prevent pollution of Puget Sound.
✓ 1.4.5 Explain the benefits of product stewardship actions and how individuals can make choices to support businesses that produce products that are more durable, conserve energy, use less packaging, and are easier to disassemble, reuse, or recycle.
✓ 1.4.6 Develop an educational program about managing foodwaste at home and responsible food purchasing habits.

Policy 1.5 **Expand outreach efforts to increase awareness of alternatives for handling and managing household hazardous waste.**

✓ 1.5.1 Evaluate residents' perceptions of accessibility to existing household hazardous waste drop-off sites.
✓ 1.5.2 Consider providing more drop-off opportunities for rural areas.
✓ 1.5.3 Study the possibility of adding call-to-haul opportunities for residents to dispose of household hazardous waste.
✓1.5.4 Incorporate more specific information about how toxic materials can impact the local environment along with information about alternatives to pesticides, herbicides, and cleaning products.
✓ 1.5.5 Work with local retailers to provide more shelf labeling about toxicity of products they sell and product alternatives, and about local disposal or recycling alternatives.

Policy 1.6 Create an outreach program to raise awareness about the impact of litter on the environment and coordinate the program with Pierce County Responds activities.

✓ 1.6.1 Work directly with students, particularly high school students, to reduce litter around schools and to increase their understanding about the impact of litter to the local environment and the costs to their community.
✓ 1.6.2 Explore how other communities have reduced litter and consider incorporating a stronger, anti-litter emphasis into all Pierce County Responds outreach activities.
✓ 1.6.3 Study the potential for using container buy-backs, deposits, or refunds to reduce litter.
✓ 1.6.4 Explore how call-to-haul or other collection options, along with an aggressive outreach program, could reduce the illegal dumping of bulky waste, such as appliances, furniture, or electronics.

Policy 1.7 Continue to expand and support the efforts of the Pierce County Responds Program.

✓ 1.7.1 Explore alternatives to create a quicker path to achieve cleanup of properties, such as an abatement process for improperly stored wastes similar to the vehicle nuisance process.
✓ 1.7.2 Remove regulatory barriers that prevent clean-up activities and ensure that all agencies implement a coordinated approach on resolving illegal dumping problems.
✓ 1.7.3 Explore options to pursue enforcement actions against illegal dumpers.
✓ 1.7.4 Explore inter-agency agreements with smaller cities and towns to provide the services of issuing Junk Vehicle Affidavits on private property.
✓ 1.7.5 Consider ways to expand outreach programs to serve other sectors of the community, such as multi-family complexes.
✓ 1.7.6 Continue to review existing ordinances and recommend changes to improve enforcement actions.
✓ 1.7.7 Work with Fort Lewis to explore new avenues to reduce illegal dumping on military property.
✓ 1.7.8 Evaluate long-term options to financially support programs that prevent or reduce illegal dumping and that clean up dumping sites.

▶ 2. Expand customer services for collection and diversion of recyclables.

CURBSIDE PROGRAMS

Leading the way:

The success of the new Single-Cart Recycling Program illustrates how Pierce County and its cities and towns can continue to lead the way to reduce the need for landfills by using recycling collection programs to recover resources before they enter into the waste stream for disposal. Pierce County has been a leader for many years in program design and implementation. It was the first county in Washington to implement countywide residential curbside service, even to remote areas in the foothills of Mount Rainier.[4]

Strategies the County used to design the new single-cart curbside system demonstrate how a program can be revised to increase the amount of materials recycled. The essential first strategy was early coordination with all parties – cities, collection companies, state regulators, the Solid Waste Advisory Committee (SWAC), and citizens – to gather information about their wants, needs, and issues.

A second strategy the County relied upon was working with the cities and the solid waste collection companies to implement services countywide, thereby taking advantage of efficiencies of scale which keeps costs down. A third strategy was supporting the collection programs with strong, comprehensive public outreach. In 2006, Pierce County won an Achievement Award for this program from the National Association of Counties recognizing efforts to promote responsible, responsive, and effective government.

Motivated citizens:

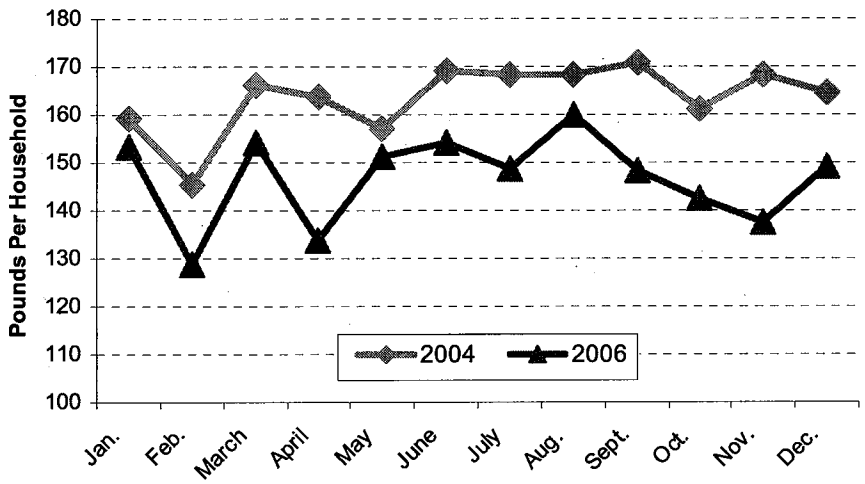
The real key to success of the County's new curbside program is that residents are motivated to recycle. Setting out recycling carts at the curb and dropping off glass or other materials at transfer stations, drop-off sites, buy-back centers, and household hazardous waste facilities has become almost second nature to them. Their efforts have significantly contributed to the countywide 47.5% recycling rate, well above the national average. Since curbside programs began seventeen years ago, residents and businesses have recycled more than **7 million tons** of material that would have otherwise been landfilled.

[4] Curbside service is available to all collection companies' customers if access is available on public roads. Hauling companies will work with those people who live on long driveways or private roads to pick up recyclables set out on public road rights-of-way. Recycling containers are provided at all transfer stations for those who self-haul and there are numerous buy-back recycling centers and other businesses which will take recyclable materials. For a current listing of alternatives, view the County Recycling Directory at www.piercecountywa.org/Recycle.

Changing habits:

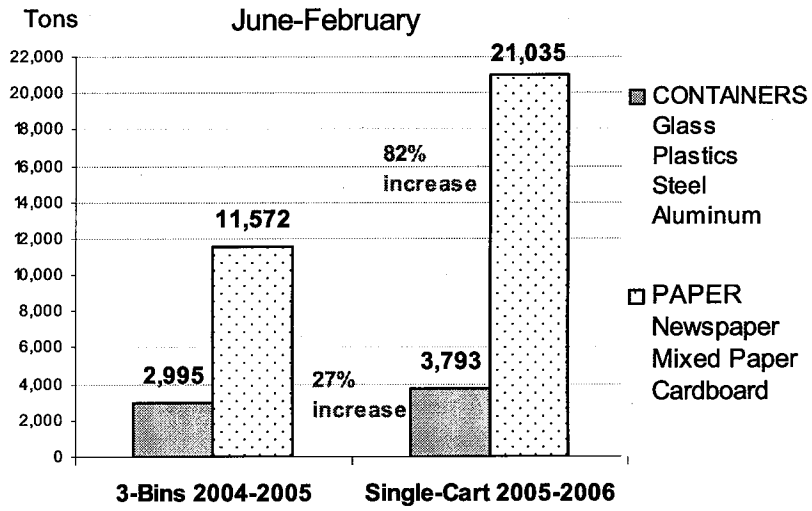
What the Single-Cart Program demonstrates is that when residents understand how wastes are handled and the potential for reuse and recycling, they will step up to the challenge by recycling more. Even though the new program meant a significant change in their habits, they embraced it enthusiastically. Over 94% of the haulers' single-family household customers in the County and its cities participate – more than 140,000 households. In its first full service year in 2006, residents increased the amount they recycled at the curb by 70%. By the end of the year residents were disposing approximately 16 pounds less per month than they did in 2004 before the program began. Chart 1 illustrates this drop in the average pounds disposed per household per month. Chart 2 shows the 82% increase in paper and a 27% increase in containers during the first nine months of implementation from June 2005 through February 2006.

CHART 1. SINGLE-FAMILY RESIDENTIAL
Average Pounds Disposed Per Household Per Month



The average disposal rate, however, is not consistent throughout the county. Residents in urban areas recycle much more and dispose fewer materials than those in rural areas. The SWAC has identified a need to work with rural residents to expand their awareness of and participation in existing programs and other alternatives for recycling.

Chart 2. 70% INCREASE
Single-Cart VS 3-Bins



Tacoma's single-family residential program has had similar success. Since the City's commingled system began about eight years ago, yearly recycling tonnages have increased to approximately 18,000 tons per year.

Recycling conserves energy and reduces emissions: Increasing the amounts recycled each year is a major component of Washington's *Beyond Waste Plan*. It recommends that local governments expand existing programs, divert more organic waste and construction debris, and reduce the toxicity of waste. On a national level, the U.S. Environmental Protection Agency (EPA) has set goals to increase the national recycling rate because recycling materials uses less energy than it takes to extract and make products from raw natural resources, and recycling reduces landfill gas emissions because it prevents materials from going into landfills to decompose.

Recycling is seen as an important tool to address climate change and to reduce dependency upon oil. The EPA estimates that if an average family of four were to recycle all of its mixed plastic waste, nearly 340 pounds of carbon equivalent emissions[5] could be reduced each year. Recycling a ton of newspaper saves the energy equivalent of 16.9 million BTUs.

How much more? It is unknown how much more recyclables could be diverted from the disposed waste stream in Pierce County. There is a need to conduct an audit of the waste being landfilled to determine potential amounts that could be recovered; the type of materials that are recyclable and which might be added to the existing programs; and to evaluate how much and what type of organic waste might be collected through new collection programs or added to yardwaste collection systems for composting.

Multi-family recycling: While curbside service is available to single-family households, service to multi-family residents is not as consistently available. In the unincorporated areas, residents in complexes have access to collection only if the owner contracts for service. Some cities, which have the authority to regulate collection through their contracts, require participation in recycling collection. But collection is a voluntary choice in the unincorporated areas and in those towns which remain under the franchises regulated by the Washington Utilities and Transportation Commission (WUTC). The County does not have authority to require collection, although State law provides a system for counties to adopt collection districts which would allow for mandatory collection.[6]

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[5] "Measuring Greenhouse Gas Emissions from Waste," U.S. EPA website on Climate Change: www.epa.gov./climatechange/

[6] The options and criteria for mandatory collection are fully discussed in Chapter 5 of the 2000 *Tacoma-Pierce County Solid Waste Management Plan.*

Complex owners may be more willing to provide their residents with opportunities to recycle if a commingled service is available. It also may be easier to encourage multi-family residents to use a commingled system since they would not have to sort materials into separate containers. At the time of implementation of the new Single-Cart Program, a few cities and collection companies converted their multi-family and commercial recycling customers to similar, commingled systems. This was done to automate collection and take advantage of cost efficiencies. Companies serving other large portions of the county and which contract with many of the other cities are also considering ways to upgrade their collection systems and to expand processing capacity to handle more commingled materials.

The County has not revised the minimum service levels ordinance for multi-family complexes and condominiums. The existing service levels may provide sufficient guidance for the haulers to convert their services to a commingled system, but other incentives might be developed or added to boost participation by complex owners and residents.

Yardwaste collection: Collection companies offer yardwaste collection to single-family residents in most cities and towns and throughout most of the designated urban areas and some of the rural areas, such as on the Key and Gig Harbor Peninsulas. It is an optional, voluntary service and residents pay an additional monthly fee for every-other-week collection. Haulers are required to offer a residential yardwaste collection service in urban areas under the County's residential minimum service levels.

Some portions of the rural areas where population is not as dense as in designated urban areas do not have access to yardwaste collection. There is a need to find ways to expand the curbside yardwaste service to these more rural areas, particularly in the south county. There are problems, however, with expanding services in terms of the cost for serving less dense areas and because the county lacks sufficient composting facility capacity.

☛ *The following course of action section contains more detail and policies about issues related to the diversion of organics and facility capacity.*

Commercial recycling: It is unknown how many businesses in Pierce County participate in recycling collection programs or how much additional recyclables could be recovered from the business sector. All solid waste collection companies in the County offer recycling services to their commercial customers and there are other businesses which collect some types of recyclables. All institutions, such as colleges and medical facilities or government agencies, may participate as commercial customers of the collection companies.

The services that are provided are tailored to suit the needs of each business. Commercial recycling collection, unlike residential recycling collection, is not, and cannot be, regulated by local government or by the state because the Federal government deregulated commercial recycling some years ago. The County cannot adopt minimum service levels as it does for residential recycling. Some cities require the hauling company to provide a single-cart type of recycling collection to businesses.

Tacoma's commercial collection: Tacoma's Solid Waste Utility has offered commercial recycling to its customers since 1991. Enhancing commercial services is an important method to carry out the City Council's direction to increase recycling. The City's commercial services have changed to include a commingled system similar to the service offered to residential customers.

The Tacoma Solid Waste Utility is also evaluating cost efficiencies and ways to divert commercial foodwaste from the disposal stream. One of the major considerations for a commercial food diversion system is the capacity to compost the materials and other organics. Currently, Tacoma contracts with LRI to process its organic wastes at LRI's Compost Factory located at the Hidden Valley Transfer Station. Another potential option under consideration is using excess digester capacity at the Tacoma Central Wastewater Treatment Plant to handle foodwaste. Tacoma could then use the methane gas to power micro turbines and produce energy to power the plant operations.

School recycling programs: Solid waste collection companies will work with school districts to provide recycling services to schools, but not many schools have implemented programs. Too often the success and continuation of a program has been dependent upon one teacher's enthusiasm and volunteer efforts. School districts have not adopted guidelines for a system-wide approach.

Educators in the County's Solid Waste Division are working with some schools and collection companies to identify other roadblocks and to develop model programs that could be implemented in school districts throughout the county.

DROP-OFF OPPORTUNITIES

Transfer stations: Under long-term direction of the Solid Waste Plan, recycling collection containers are provided at all solid waste transfer stations for those who self-haul their garbage, recyclables, and yardwaste. The newly implemented Customer Service, Asset Management, and System Sustainability Project (CAS) has created procedures to annually evaluate recycling collection services at transfer stations to identify opportunities to improve the system and track how much material is brought in for recycling.

Household hazardous waste: Residents may take their household hazardous waste free-of-charge to facilities which are strategically located to make easy access available to most residents in Pierce County.[7] The facilities are supported by drop-off sites for used oil or antifreeze at 36 or more private business locations, such as automotive supply or repair businesses, and at sites sponsored by the County and the Tacoma-Pierce County Health Department. Periodic satellite collection events are sponsored by the County in outlying rural areas to reduce the need for rural residents to transport materials to collection facilities.

Glass drop-off sites: Glass is no longer collected through County curbside programs. Residents and businesses can self-haul glass to drop-off sites sponsored by the solid waste collection companies and to recycling centers located at all transfer stations. The County's new minimum service levels for the Single-Cart Recycling Program require the collection companies to provide convenient glass drop-off sites and to keep them clean of litter. The collection companies coordinate with property owners of various businesses or agencies, such as fire stations, to host the drop-off containers and provide access to the public.

Glass was removed from curbside programs because of the problems it posed in terms of breaking and contaminating other recyclables, poor markets for glass, and the additional costs in terms of collection and processing.

Residents use the drop-off systems. About 67% of the amount of glass previously collected at the curb is being recycled at drop-off sites and transfer stations.

Residents have asked that alternatives to glass drop-off be considered to make collection more convenient. The Solid Waste Advisory Committee (SWAC) has asked for continued monitoring of glass recycling and evaluation of other collection alternatives.

SPECIAL COLLECTION PROGRAMS

Event recycling: Recent 2007 legislation requires any gathering, where authorization to hold the event is approved, recognized, or issued by a government, public body, or authority, to have recycling collection if the event occurs where there are established curbside and business recycling services. Events include fairs, musical concerts, athletic games, festivals, tournaments, or any other formal or ceremonial event during which beverages are sold by vendors in single-use aluminum, glass,

[7] The facilities are located at the City of Tacoma's Landfill and Transfer Station and the privately-owned Hidden Valley Transfer Station. The County-owned Purdy Transfer Station is scheduled to offer household hazardous waste drop-off opportunities in 2008. For information about other drop-off locations, see the County's Recycling Directory at www.piercecountywa.org/Recycle.

or plastic bottles or cans. Vendors are required to provide recycling receptacles or reverse vending machines and to provide for the transport and recycling of the materials they sell. There may be opportunities for agencies to pool funds and purchase similar containers.

EPA provides advice and outreach ideas to government agencies and businesses about how to develop recycling programs at large events and transportation hubs under a program titled "Recycle-on-the-Go."

Electronics: Tacoma and the County have joined the Take It Back Network which is a regional consortium of businesses committed to recycling electronics in a safe, efficient and cost-effective manner.[8] Residents can use this network to recycle their unwanted electronics for a small fee. They can also take electronic waste to the Hidden Valley, Prairie Ridge, or Purdy Transfer Stations for a fee.

In 2006, the Washington Legislature passed a law providing electronic product recycling through manufacturer-financed options. Under this Product Stewardship law, manufacturers will establish and finance convenient collection and recycling programs in each county by 2009. The programs will collect 4-inch or greater monitors and video display devices, and desktop and laptop computers. Rules require manufacturer's labels on computers, monitors, and televisions and that the manufacturers register and pay a fee to the Department of Ecology to cover the cost of administering and enforcement of the law. Only labeled products from registered manufacturers can be sold in Washington.

The law encourages a diversity of collectors. Manufacturers will partner with existing electronic waste collectors and will encourage retailers, charities, haulers, local governments and others to become collectors by offering fair compensation for the collection of the products.

Policy 2.1 **Conduct a waste characterization audit to determine how much more of Pierce County's waste stream could be recovered through recycling collection programs.**

✓ 2.1.1 Identify the amounts and types of recyclable materials that are being disposed by different sectors of the community – single-family and multi-family residents, businesses, and self-haulers.
✓ 2.1.2 Determine what materials could be added to existing programs, considering maximum diversion potential, market opportunities, and conservation of energy.
✓ 2.1.3 Identify what materials would need new types of residential collection programs beyond the established curbside services.

[8] Member businesses for the *Take It Back Network* are listed on the County's recycling website: www.piercecountywa.org/ewaste.

Policy 2.2. Expand residential recycling programs.

✓ 2.2.1 Work with haulers to enhance recycling collection services to multi-family complexes and condominiums; evaluate the need to revise the County's minimum service levels; and study options to mandate recycling at multi-family complexes and condominiums.
✓ 2.2.2 Develop new outreach programs to encourage owners of multi-family complexes to provide recycling services to their residents and to promote participation to the residents.
✓ 2.2.3 Develop an education and outreach program to encourage participation of rural residents in curbside collection programs and to increase their awareness of other options for recycling such things as: bulky appliances and furniture, motor oil, yardwaste, electronics, construction debris, and household hazardous waste.
✓ 2.2.4 Work with hauling companies and recycling processors to add materials to curbside collection programs, such as plastic tubs and bags, batteries, paper towels and other organics, and fabrics. For each commodity, consider ease of participation, maximum diversion potential, market opportunities, processing capacity, and environmental impacts.
✓ 2.2.5 Continue to create and maintain measurement programs to monitor efforts to increase the amount of materials recycled from residential collection programs.

Policy 2.3 Work with solid waste collection companies and the Washington Utilities and Transportation Commission (WUTC) to design equitable variable collection rate structures that facilitate new and innovative programs while encouraging maximum diversion of recyclables.

✓ 2.3.1 Investigate ways to expand yardwaste collection to all rural areas and spread the cost of collection across the residential rate base.
✓ 2.3.2 Develop call-to-haul collection systems to increase the convenience for residents to recycle bulky items such as appliances, furniture, carpet, or home-remodeling debris.

Policy 2.4 Work with businesses to increase their participation in recycling collection services.

✓ 2.4.1 Survey the extent of commercial recycling collection services for businesses in the County and develop a comprehensive information package for businesses about the availability of services or drop-off alternatives.
✓ 2.4.2 Work with solid waste and recycling collection companies to provide single-cart recycling services for small and medium-sized businesses.
✓ 2.4.3 Distribute outreach materials about recycling services and other alternatives for the business sector at County and city development counters and information kiosks.
✓ 2.4.4 Develop a one-on-one assistance program for small to medium-sized businesses.
✓ 2.4.5 Create measurement programs to evaluate annually efforts of the business sector to increase the amount of materials recycled.
✓ 2.4.6 Work with cities and towns to create innovative collection systems for businesses within their communities.

Policy 2.5 Continue to evaluate glass collection alternatives.

✓ 2.5.1 Monitor the amounts of glass recycled through the drop-off systems.
✓ 2.5.2 Evaluate and regularly report: the status of alternative uses for glass; any new marketing opportunities; and alternative collection programs.

Policy 2.6 Work with event coordinators to develop, implement, and evaluate effective recycling systems for officially-sponsored indoor events and outdoor gatherings.

Policy 2.7 Ensure there are sufficient and convenient opportunities for the collection of electronics in Pierce County.

✓ 2.7.1 Work with local electronic waste recyclers, haulers, and others to design and implement new collection programs.
✓ 2.7.2 Expand public outreach programs when new services are available to promote recycling of electronics.
✓ 2.7.3 Work with local electronic waste recyclers and the Washington Department of Ecology to evaluate and monitor the success of new electronics collection programs. Consider expanding the program through other product stewardship initiatives to include additional electronic products.

Policy 2.8 Strive to make recycling collection the dominant collection service.

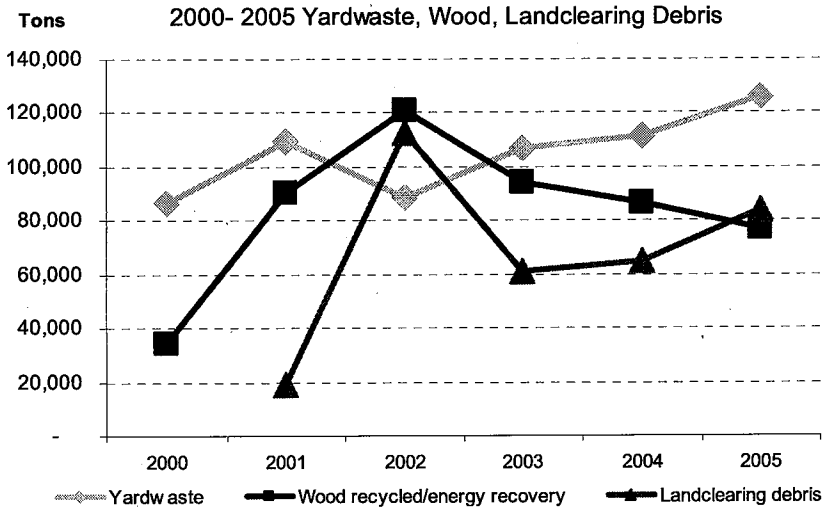
✓ 2.8.1 Evaluate innovative alternatives that would lead to "reverse" collection frequencies so that recycling collection is every week and garbage collection is every-other-week or once-a-month.
✓2.8.2 Study implementing mandatory recycling and garbage collection services throughout the County. The study should consider issues related to: coordination with local cities and towns; applicability to properties producing commercial garbage; possible adoption of an excise tax and how that affects the taxing structure; experiences of other counties; and whether such a system could help fund programs to address illegal dumping.
✓ 2.8.3 Evaluate the impact, and the advisability, of enacting landfill bans for some recyclable materials. Consider if alternative handling methods are as protective of human health and the environment as landfilling.

▶ 3. Recover resources and energy from organics

Maximizing recovery:

Organic materials, such as yard debris, foodwaste, paper, textiles, and wood, may make up more than 30% of what is disposed. Diverting organics has the potential to maximize recovery of materials from the municipal waste stream. These materials can be made into compost which has beneficial uses to replenish the soil and mitigate or offset environmental harm caused by other activities, such as petroleum contaminants in stormwater or CO_2 released by vehicle exhaust. There is also potential for diverting and using more of these organic materials to produce alternative fuels or energy.

Chart 3. PIERCE COUNTY ORGANICS RECOVERY
2000- 2005 Yardwaste, Wood, Landclearing Debris



Large amounts of organic materials are already being diverted in the county. Early in the 1990's, Pierce County developed aggressive yardwaste collection and composting programs and in the last few years has seen private facility capacity expand to handle landclearing and wood debris. For example: in 2005, one-fifth of the yardwaste reported as recycled in the State came from Pierce County and its cities – 126,000 tons. Another 161,125 tons of landclearing and wood debris were reported as recycled or diverted for other uses. This dramatic increase is illustrated in Chart 3.

How much more?

However, we don't know how much of the waste landfilled in the county is organic and might be recoverable through existing or new programs. The last waste audit was completed in 1995. There may be less paper because residents increased the amount of paper they set out at the curb by 88% in the new Single-Cart Recycling Program. But we don't know how much paper and cardboard remains or how much more might be recycled through improved and expanded multi-family residential and commercial recycling programs. We also don't know how much is only suitable for composting, such as pizza boxes, paper towels, or waxed cardboard. Grocery stores and food-processing businesses may also be disposing of large amounts of pre-consumer foodwaste which could be redirected for reuse, recycled, or composted. There may be large amounts of recyclables from home remodeling projects, such as wood or gypsum.

Before any new collection programs can be effectively designed or decisions can be made about both the capacity needs and the type of processing facilities that should be used, there is a need to conduct a new waste characterization audit to

identify just how much of the waste stream is organic. This includes identifying not only the types and amounts of organic materials but, where possible, what percentage of organics is contributed by the different sectors – residential, commercial, and institutional. There is also a need to establish a base amount against which to measure the success of new programs.

Wasteful food habits: The average American household contributes about 470 lbs of food to the waste stream annually. A large proportion of the food they purchase ends up in their garbage even though most of it is edible, which results in a substantial cost because of money wasted on its purchase and money spent on disposal. Those waste management agencies which have developed foodwaste collection programs advocate melding collection with education and outreach to increase citizen awareness of wasteful food habits and to show them how to reduce the amount disposed before it is collected for recycling. The target these agencies have set for their residential programs is to recover 8 – 12 lbs of foodwaste per set-out, or roughly 40 lbs per month per household. For Pierce County, this would mean there may be, theoretically, the potential to divert 70,000 tons of residential foodwaste annually from all of the County's 289,000 households (including Tacoma and the military bases). This amount would grow as the population increased if residents don't also reduce the amount they throw away.

Insufficient composting capacity: Pierce County does not have in-county capacity to compost more organic materials. Public and private facility capacity is over-extended and new capacity is needed just to meet the existing demand and any growth that may occur in yardwaste collected from new customers. Any new programs to divert other organics from the municipal waste stream, such as foodwaste, would need additional composting or other types of facility capacity, or would have to be designed to enable the shipment of organics to facilities outside Pierce County.

Pierce County contracts with LRI for yardwaste composting services. This includes operating the County's Purdy Yardwaste Compost Facility and composting at LRI's Compost Factory located at the Hidden Valley Transfer Station. The Compost Factory has the ability to compost foodwaste but does not have current capacity to handle additional large amounts of organic waste.

New capacity: To provide new capacity, Pierce County, Tacoma, and LRI could partner on the research and development of additional capacity through the expansion of existing facilities or the development of additional facilities. But new facility capacity can not be brought on-line quickly. A short-term solution is already in place through the use of the LRI sub-contract for composting out-of-county.

Existing subsidies may be helping to drive up the amount of yardwaste debris brought to transfer stations by self-haulers. There is a need to study whether or not another method to improve short-term capacity is to remove the subsidies and to determine if subsidies are actually needed or if they are cost-effective.

For new, small-scale model collection programs, there may be some existing facility capacity to handle foodwaste, such as at existing wastewater treatment plant digesters or compost facilities, but there may be other alternatives which could be explored with established food processing businesses or the agricultural community. A better understanding is needed about how local food processing businesses are managing their foodwaste and what steps the agricultural community is taking, or may take in the future, to handle agricultural waste or crop residues. There may be opportunities to coordinate with existing partners and with entities outside the waste management industry on expanding facility capacity, or there may be some model programs or practices that could be emulated.

☛ *The fifth course of action section about fostering research and development contains additional information about exploring and developing partnerships to develop additional facility capacity.*

Burn bans: Also unknown is what percentage of the Pierce County rural population still burns organic debris, how the Puget Sound Clean Air Agency's ban on outdoor burning impacts organics management, and if any future extension of the burn ban boundaries will create additional need for more facility capacity for yard or landclearing debris. A ban on burning landclearing debris throughout Pierce, King, and Snohomish Counties is scheduled to begin July 2008, with public meetings and hearings scheduled in January and February.

Landclearing debris – woody brush and trees – has the potential to be an important celluosic feedstock for conversion to alternative fuels. It is one of the biomass materials that are being considered as a resource for the State's approach to developing an in-state alternative fuel economy. Because of its potential value, it is possible that private capacity to handle the material will significantly expand during the next few years and that the State may develop incentives to assist this process.

Implementing more sustainable green building and development practices could help reduce the amount of material that may be generated through landclearing. Low-impact practices call for limited clearing and the retention of natural soils and plants to prevent erosion and pollution.

Conversion technologies: There are many improved processing technologies which can increase the efficiency of composting processes or can convert organic waste to electricity or to alternative fuels, such as bio-diesel, ethanol, or liquefied natural gas. Europe and Japan have already incorporated these conversion technologies (CTs) into their organic waste management systems, and their use for managing certain materials separated from the municipal waste stream is emerging in California.

Thermal technologies are most suited for low-moisture materials. They include processes which use high temperature, such as pyrolysis, gasification, or combustion. They can accept nearly all organic material (bio-mass and petroleum-based products such as plastics) but they operate best when the material is source-separated and not mixed waste. The state and local permitting processes and environmental requirements for these facilities may be out-of-date in terms of recognizing the improvements in new types of facilities from older models. There is a need at the state level to recognize the potential for using more of these types of facilities to manage some source-separated wastes from various industries, including the solid waste management sector, and to ensure regulations are in place. Studies on some scale-model facilities are underway in California to evaluate whether or not they can meet California's emission requirements, which are considered to be the strictest in the world, and to ensure permitting processes are sufficient. Many international companies that build these facilities intend to build them to meet California standards.

Biological technologies, such as anaerobic digesters and composting facilities, are best suited for high moisture materials, such as foodwaste, agricultural manure, and lawn and garden debris. Anaerobic digesters have been used in wastewater treatment plants and farm and other operations for many years, so the design and operation standards are, for the most part, known. The state permitting process for their use in managing organic solid waste may need to be clarified and there is a need to identify how they are permitted under local zoning codes. The Washington Department of Ecology used anaerobic digesters to forecast that there is enough bio-mass materials from municipal, agricultural and forestry organic waste to produce the equivalent of 50% of Washington's annual residential electrical consumption.

A diversified system which includes composting facilities and anaerobic digesters may offer the most efficient and cost-effective approach to manage organics and other compostable material in the waste stream.

Beneficial uses and the storing of carbon:

Compost and organic mulches can improve soils, reduce erosion and stormwater run-off, and decrease the need for irrigation, fertilizer, and pesticides. All of these contribute to healthy soils which improves salmon habitat. The use of compost is one tool to help restore the waters of Puget Sound because it can reduce the nutrient loading of surface water run-off and groundwater, cleanse stormwater of petroleum contaminants, and can be used in wetland and other land reclamation projects. Incorporating compost in soils in areas undergoing development and using organic mulches in new and established lawns and gardens increases plant health and vigor.

Composting organics helps to prevent the release of methane from decomposition of foodwaste and other organics in landfills. The process stores carbon in the compost. Using greater quantities of compost in reclamation or development projects or as mulches along roads or on agricultural land restores the carbon to

the soil and may help to offset the release of CO_2 from vehicle exhaust or other poor soil management activities. Many of the new conversion technologies complement the composting processes because residues from some facilities can be further composted or used as a compost product.

Foodwaste collection costs: Because new foodwaste collection programs can add considerable expense to the system, many governments, agencies, or private companies are first trying out scaled-down model programs to collect and process foodwaste. Tacoma plans to first experiment with collecting foodwaste from the commercial sector, such as restaurants and grocery stores, and divert it to other existing facilities, such as the anaerobic digester at Tacoma's wastewater treatment plant or LRI's Compost Factory.

Governments in other states and in Washington and Oregon are working with private businesses to expand composting capacity. Some are first focusing on developing model school foodwaste composting programs and putting more emphasis on assisting homeowners to compost foodwaste at home.

Fort Lewis has a yardwaste composting facility and is developing a model worm composting program for residents living on the base.

Construction and demolition debris: Pierce County has more than 13 different businesses meeting the requirements of solid waste regulations and reporting to the Tacoma-Pierce County Health Department about handling of yardwaste, landclearing, or wood debris. In addition to taking residuals to these businesses, residents can dispose of home remodeling waste and yardwaste at transfer stations. But clean, unpainted wood debris from residential home remodeling projects is ending up with the disposed waste because, unlike yard debris, no containers or separate areas are provided at transfer stations to facilitate diversion of clean wood debris.

Job-site recycling: Another practice that has been identified to divert wood and other recyclables from construction projects is job-site recycling. This is where builders provide containers on the site so that recyclable materials can be separated from waste to be disposed. Some development companies are already doing this. However, not all of the materials are being recycled by the businesses hired to haul the materials. Some of the materials are being collected under the guise of "recycling" but are being diverted to out-of-county disposal facilities.

☛ *The seventh course of action section about preparing for emergencies and providing coordinated oversight contains additional information and policies about "sham" recycling problems, particularly with construction debris.*

Policy 3.1 Promote individual responsibility by residents, businesses, institutions, governments, and schools to reduce the amount of organic waste they generate.

✓ 3.1.1 Assist residents to increase their awareness about wasteful food habits and how to reduce and compost foodwaste at home with education, outreach, and home composting programs.
✓ 3.1.2 Work with school districts to create model foodwaste composting and diversion programs.
✓ 3.1.3 Assist institutions, governments and businesses to identify methods to reduce the amount of organic materials they generate and how to recycle or compost the remainder.
✓ 3.1.4 Provide education programs to the community about the benefits of using compost and organic mulches and link this education with information about how the use of compost can help restore the waters of Puget Sound and store carbon in the soil.
✓ 3.1.5 Work with local jurisdictions to adopt practices or to encourage or provide incentives to the developers and to individual property owners to incorporate compost and other organics in soils undergoing development and mulches in new and established lawns and gardens.

Policy 3.2 Determine how much of Pierce County's waste stream is organic by conducting a Waste Characterization Audit and survey current practices.

✓ 3.2.1 Investigate the role of subsidies in the organic management system and in providing capacity. Consider if there would be as much organics to manage if the subsidies were removed.
✓ 3.2.2 Investigate the full array of organic management practices currently in use in Pierce County.
✓ 3.2.3 Determine what percent of the Pierce County population still burns organic debris and the impacts on organic management of the Puget Sound Clean Air Agency's ban on outdoor burning.

Policy 3.3 Study and evaluate potential ways to divert more organics from the waste stream for use as a feedstock for a conversion technology to produce clean energy, alternative fuels, and other products.

✓ 3.3.1 Identify the feedstock needs for different types of conversion technologies.
✓ 3.3.2 Determine the pros and cons of collection programs for different types of organics from different sectors – residential, commercial, and institutional – and how these could impact the choice of a specific technology.
✓ 3.3.3 Compare the costs of different facilities and the programs that would be needed for each type of facility.
✓ 3.3.4 Consider if a diversified system of facilities, including composting facilities, would be most efficient and cost-effective for Pierce County.
✓ 3.3.5 Choose the facility system best suited to Pierce County, and develop a funding strategy and timeline to build or acquire facility capacity and to establish collection programs.

Policy 3.4 Develop an understanding of state and local permitting requirements for conversion technologies, with specific attention to anaerobic digesters.

✓ 3.4.1 Work with state agencies to identify specific environmental mitigations required for each conversion technology and whether or not existing permitting regulations are sufficient.
✓ 3.4.2 Identify if local zoning and permitting processes for facilities are clear and sufficient and propose solutions for siting and permitting of specific technologies if non-existent.

Policy 3.5 Design and implement new collection programs for organic waste.

✓ 3.5.1 Work with solid waste collection companies to design residential collection programs for foodwaste and other organic materials.
✓ 3.5.2 Work with commercial and industrial businesses to find ways to divert their organic materials.
✓ 3.5.3 Coordinate with cities and towns to develop county-wide collection programs.
✓ 3.5.4 Create measurement programs to monitor the efforts to divert organics from the disposed waste stream and evaluate success in reducing emissions or producing alternative fuels.

Policy 3.6 Divert all recyclable construction and demolition debris to legally-permitted and regulatory-compliant recycling facilities.

✓ 3.6.1 Provide opportunities at transfer stations for the diversion of recyclable construction and demolition materials, such as clean wood and gypsum.
✓ 3.6.2 Require job-site recycling for all development projects.
✓ 3.6.3 Provide information at County and city permit counters explaining to the development community and home remodelers about how to recycle construction and demolition debris and where to take the materials.
✓ 3.6.4 Work with land use planning and building permit staff to develop best management guidelines for demolition.
✓ 3.6.5 Work with the solid waste collection companies to provide call-to-haul collection of household construction and demolition materials.
✓ 3.6.6 Develop a public outreach program to communicate the problems with sham recycling to the community and the opportunities available for recycling landclearing, and construction and demolition debris.
✓ 3.6.7 Develop a system to award or publicly acknowledge those businesses which do an exceptional job in diverting construction debris.

► 4. Link government actions with resource efficiency.

Changing building practices to reduce waste:

Changing how we design, construct, operate, and de-construct our buildings is another way to reduce the amount of waste we generate for disposal in the landfill. Washington's *Beyond Waste Plan* identifies that the amount of waste from buildings, in the form of construction and demolition debris, may make up 34% of the waste generated in Washington.

As indicated in the previous section about organic materials, Pierce County has seen substantial progress in the diversion of construction and demolition debris (CD) through the growth and efforts of private businesses, but a waste characterization audit is needed to identify how much more of this material is being disposed and could be diverted.

The problem, however, is that if current trends hold, no matter how much is currently being diverted or is potentially recyclable, there will always be more and more materials as new housing is created for the growing population and the remodeling of old homes continues. There is a need to find ways to produce less waste, not just rely upon expanded facility capacity to handle the materials.

Lead by example:

The *Beyond Waste Plan* identifies that a key approach to significantly reduce these wastes and the use of toxic materials is to increase public awareness and use of green building practices, and for governments to lead by example. Green practices are those which help to eliminate waste generated by building construction and which use, and help to grow markets for, sustainable and easily recyclable building materials. Green buildings are designed to last longer, use healthier materials, and be less expensive to operate because they reduce energy costs.

Reduce energy use and emissions:

The U.S. Environmental Protection Agency (EPA) estimates that building construction and operation account for half of the United States' energy use and greenhouse gas emissions. That is almost as much as industry and transportation combined. Seventy-six percent of all electricity generated by power plants goes to operate buildings.[9]

Recently the American Institute of Architects has adopted *The 2030 Challenge* which is to design new buildings that consume 50 percent less fossil-fuel. The Institute has set goals to build high-performance buildings that are cost effective

[9] U.S. Environmental Protection Agency (EPA) website: www.epa.gov/greenbuilding/.

over the long run and which are made of durable, low-maintenance materials; require less water; and provide more natural ventilation and light. [10]

Making buildings more energy efficient is also incorporated in the Governor's executive order establishing goals for Washington's Climate Change Challenge. The goals are for the State to lead "the nation in adopting high performance green building standards" and to "have one of the most energy efficient building codes in the nation." [11]

Deconstruction techniques: Changing deconstruction practices is part of this approach and there is a good local example how to do it. Fort Lewis won the 2007 White House Closing the Circle Award by pioneering a model for military bases to manage debris generated by the removal of excess buildings. The Fort achieved 100% diversion of 3,583 tons in its removal of 12 buildings through using a combination of extensive prior planning, recycling, reuse, and donations of materials for private projects. The award notes that "By using local recycling and salvage contractors (20 mile radius), Fort Lewis ....saved the energy spent on transporting materials to new markets. Additionally, the use of local subcontractors created additional jobs resulting in more than $80,000 of economic impact." Fort Lewis was named Recycler of the Year in 2007 by the Washington State Recycling Association.

Providing incentives and technical assistance: Besides promoting general awareness of green practices, the *Beyond Waste Plan* focuses on: developing and implementing incentives for green design and construction; removing disincentives for builders and home remodelers; and maximizing reuse and recycling of construction and demolition materials. Some of the actions state agencies plan to undertake are to: adopt LEED standards for new state buildings; provide technical assistance to builders, architects, and contractors; implement procurement guidelines for state offices; and to work with national partners on product stewardship for building materials. The Legislature recently adopted legislation which includes requirements for state and local governments to use renewable fuels and for utilities and governments to purchase alternative, renewable energy. [12]

The Department of Ecology also plans to work with local governments to ensure adequate processing capacity for construction and demolition debris and to support the deconstruction industry through grants, pilot programs, and training.

Educating consumers: Educating consumers about recycled, reused, and non-toxic materials for homes is not a new activity in Pierce County or Tacoma. For ten years, Pierce County designed, staffed, and sponsored an 875-square-foot modular home exhibit, *The*

[10] American Institute of Architects webpages: www.aia.org and www.architecture2030.org/
[11] Washington Department of Ecology website: www.ecy.wa.gov/climatechange.
[12] Washington Department of Ecology website: www.ecy.wa.gov/beyondwaste/

GreenHouse. It demonstrated consumer products such as: recycled carpet and clothing made from plastic; solar energy hot water heaters; non-toxic paint; alternative materials for countertops; cabinets free of formaldehyde; roofing from recycled materials; and flooring made from sustainable or recovered wood. The exhibit was very popular each year at the Puyallup Fair, and, during its life, was showcased at other home building/remodeling events in which it won a number of awards.

New life has been given to the modular home now that Tacoma has converted it to a permanent exhibit, the *EnviroHouse*, which is open to the public free-of-charge, year round. Located at the Tacoma Landfill and Transfer Station, it is a "hands-on showcase of green building and landscape ideas, materials and techniques that create a healthy home and planet" which "champions the benefits of sustainable living and building practices to homeowners, builders, suppliers, landscapers, real estate agents and the general public...." [13]

Recognizing business achievements: The Tacoma-Pierce County Health Department provides recognition for small businesses through the EnviroStars program[14] which certifies those businesses working to reduce, recycle, and properly manage their hazardous waste. The program has certified more than 121 businesses, ranging from automotive to dental offices and dry cleaners to marinas and landscape nurseries. The program rates businesses from 2 to 5 stars according to their environmentally responsible practices. The higher the star rating, the more proactive the business has been in reducing waste and building environmentally friendly systems into their operations.

The Health Department also works with small businesses to reduce and handle certain toxic materials by providing technical assistance and shop audits, and by working through trade associations to provide information materials.

Developing partnerships: Citizens may be primed to respond to more active outreach programs because businesses are already promoting less-toxic and recycled materials, energy-saving appliances or fixtures, or reusable or durable goods. There also appears to be a momentum within the local development community – builders, architects, building supply stores, and landscape nurseries - to incorporate green building practices and products into their services or homes. Because the U.S. Environmental Protection Agency (EPA) estimates that residential construction and remodeling activities generate more waste than commercial or industrial building projects, Oregon has adopted a strategy which first emphasizes outreach activities aimed at residents and the businesses serving residents and which will incorporate information about consumer durables, such as household furnishings.

[13] City of Tacoma website: www.cityoftacoma.org/EnviroHouse
[14] www.envirostars.org/ and www.tpchd.org/page.php?=30

There are opportunities for Pierce County, Tacoma, and the Health Department to partner with local businesses and the Department of Ecology on promotional programs and activities. Ecology is already taking the lead to work with agencies and municipalities about ways to reduce toxic waste, such as mercury, and to jointly sponsor collection programs for items like fluorescent light bulbs. It is also providing expertise on green building standards and designs and developing a comprehensive information clearinghouse and technical assistance centers or events. The County and Tacoma could coordinate with the local building community to do complementary outreach programs which could include events, special activities, newsletters or information handouts and other assistance. Or municipalities could work with the development community to identify and remove disincentives in development codes which make it difficult for businesses or residents to implement new green practices.

Some specific needs for outreach have already been identified. There is a need for more information at the County and cities' building permit counters and other venues (such as building materials supply stores) about how to prepare and where to take construction debris for recycling. There is also a need to make the community more aware of the problems with "sham" recycling activities that have resulted in past environmental cleanup problems and why it is important to take materials to a properly permitted processing business.

Showcasing government buildings: Pierce County has not developed guidelines for a distinct approach to green building practices for County-owned buildings. The Environmental Services Building (ESB) located on the Chambers Creek properties in University Place is a green building designed to showcase various green actions including: energy efficient lighting and designs; products made from recycled materials such as carpets, glass tiles, and sustainable wood; and best management practices for storm water management and natural landscaping. The Public Works & Utilities Department did not apply for LEED certification for the ESB because of the cost of the application. Instead the Department spent the money on educational signs to help guide visitors about the history of and environmental practices on the site. For instance, all the stormwater runoff from the adjacent roads and on the property is channeled into stormwater ponds that mimic the natural cleansing process of soils, organisms, and plants before the water is used to recharge the aquifer.

Establishing procurement policies: Another part of the *Beyond Waste Plan* strategy is to implement policies and procedures to require state agencies to buy environmentally preferable products, and to work with local governments and agencies to implement similar programs. Federal agencies have adopted procurement guidelines and the U.S.EPA has established an outreach program, *WasteWise*, to assist organizations, businesses, and governments to generate less waste. In 2006, Kitsap County was awarded the WasteWise Local Government Partner of the Year.

Pierce County's procurement policy is out-of-date and not comprehensive. The procurement policy was adopted in 1990 and set guidelines for the procurement of recycled paper and paper products. Since that time, however, the County decentralized its purchasing procedures and information about the County's purchasing habits is not available. It was easier to track purchasing when a central print shop purchased the paper.

There is no overall, broad approach towards purchasing more sustainable products within County government, although some departments purchase recycled vehicle oil or recycle certain materials, such as metal traffic signs. The Public Works and Utilities Department has recently purchased hybrid vehicles and one of the Solid Waste Division's vans uses natural gas. The County promotes reuse through its intranet website where departments can notify other departments of the availability of surplus materials, equipment, furniture, or other property.

Other governments are developing procurement procedures which go beyond specifying recycled content for paper to include automotive and other office products; establishing a green fleet; and construction and landscaping programs. Portland and the State of Oregon require all government agencies to use renewable energy sources and have developed a number of innovative models to implement this requirement. For instance, one of Portland's facilities which composts organic road debris is powered by solar and wind.

Recent 2007 Washington legislative action sets goals for state agencies and local governments to satisfy 100% of their fuel needs for all vessels, vehicles, and construction equipment from bio-fuels certified as having been produced from recycled materials or Washington feedstocks.

Expanding employee recycling:

A need has been identified to upgrade the County's desk-side recycling program for employees. Like the procurement program, the in-house recycling system began in the early 1990's. The County contracts for desk-side collection which provides containers for employees to recycle waste paper. Central collection systems for items such as newspaper, aluminum and tin cans, glass, plastics and laser cartridges are located for most offices. Where possible, larger containers for other material, such as cardboard, are placed outside. During employee orientation, new employees are provided with an in-house recycling brochure and tips about practices to reduce waste.

Policy 4.1. Promote green building and landscaping practices and the use of environmentally preferable building and home furnishing products.

✓ 4.1.1 Continue to support and expand existing outreach activities to educate consumers about recycled, reused, and non-toxic building materials and home furnishing products.
✓ 4.1.2 Develop new informational outreach activities which expand upon or use existing local and state "built green" technical information and programs and which assist residents and businesses to access state information clearinghouses and technical assistance centers.
✓ 4.1.3 Work with local developers and builders to coordinate outreach programs and to sponsor activities or events.
✓ 4.1.4 Evaluate methods of working with local building supply stores and landscape nurseries to deliver outreach messages to residents and to small landscape maintenance and home remodeling businesses.
✓ 4.1.5 Incorporate information about efficient designs which emphasize life-cycle costs, renewability of building materials, capture of waste heat, and lighting efficiency and controls.
✓ 4.1.6 Coordinate with local utilities to develop complimentary outreach programs and activities which promote energy efficiency alternatives and products.
✓ 4.1.7 Work with the Washington Department of Ecology and other municipalities to implement product stewardship programs for building materials.
✓ 4.1.8 Assist school districts to establish green building practices and develop cost-effective recycling and composting programs.
✓ 4.1.9 Evaluate whether current landclearing practices are economically and environmentally sustainable.
✓ 4.1.10 Work to develop a native plant recovery / salvage system for development projects.

Policy 4.2 Develop publicity programs about buildings in Pierce County that are "green."

✓ 4.2.1 Develop an awards and incentives program for businesses that build green buildings or develop innovative practices which reduce the waste they dispose.
✓ 4.3.2 Publicize the efforts of EnviroStars businesses so that the general public is more aware of and recognizes their achievements.

Policy 4.3. Establish and implement green practices and environmentally preferable purchasing guidelines for County government offices.

✓ 4.3.1 Designate a staff member as "procurement czar" whose duties would include studying and reporting on existing purchasing policies; identifying barriers and solutions; creating guidelines for adoption; and working with all departments on implementation and effective maintenance practices.
✓ 4.3.2 Evaluate whether or not new government buildings should be LEED certified.

✓ 4.3.3 Incorporate organic diversion programs into agency guidelines and evaluate the value and potential for utilizing compost in all County utility, road, and development projects.
✓ 4.3.4 Upgrade the In-House Employee Recycling Program to make it more cost-efficient and productive.
✓ 4.3.5 Set target goals to reduce the amount of waste disposed by Pierce County government offices each year.
✓ 4.3.6 Evaluate cost-effective and innovative alternatives for County and city governments to address the State's goals to use renewable energy and bio-fuels.
✓ 4.3.7 Work with other Pierce County municipalities to implement model programs for government agencies that take advantage of "efficiencies of scale" to reduce costs for implementation.
✓ 4.3.8 Develop systems to track and monitor the effectiveness of implementation of government programs and activities.
✓ 4.3.9 Evaluate government programs annually and identify how these programs reduce the waste disposed by municipalities and help to achieve State climate change initiatives.
✓ 4.3.10 Publicize government actions as a way to help promote general public acceptance and usage of green building practices and sustainable products.

Policy 4.4 Change building codes to incorporate high performance green building and energy efficiency standards.

✓ 4.4.1 Work with state agencies to implement standards which meet the goals of Washington's Climate Change Challenge.
✓ 4.4.2 Consult with local architects to evaluate if LEED or better standards should be incorporated into building and other development codes and what options would add flexibility to the standards.
✓ 4.4.3 Work with local developers, builders, citizens, and planning agencies to identify and remove permitting or other code barriers that act as disincentives for using green building practices.
✓ 4.4.4 Provide for a method to add flexibility or to relax standards to support alternative green building designs but not those which would compromise safety aspects of building codes.
✓ 4.4.5 Encourage developers and builders to plant green roofs.
✓ 4.4.6 Ensure that staff at building permit counters are trained and well-versed in green building practices and new standards.
✓ 4.4.7 Develop outreach materials for distribution with permit applications and at building and development permit counters which clearly explain alternatives and reasons for choosing green building practices.
✓ 4.4.8 Work with municipalities to develop similar practices and coordinate outreach materials.

Policy 4.5 **Conduct a Waste Characterization Audit to determine how much woodwaste and other construction debris could be recycled or diverted to produce alternative fuels or energy.**

Policy 4.6 **Divert recyclable construction and demolition debris from disposal facilities to legally-permitted and regulatory-compliant recycling facilities.**

✓ 4.6.1 Require developers to provide a system to recycle construction debris at each job-site and to document that recyclable materials were taken to a legally permitted recycling facility or otherwise reused.
✓ 4.6.2 Create incentives for developers, builders, and residents to recycle construction and demolition materials.
✓ 4.6.3 Work with building departments to provide information at permit counters about best management practices to prepare construction debris for recycling; locations to take materials; and information about the importance of taking materials to a legally-permitted business to prevent "sham" recycling.
✓ 4.6.4 Develop call-to-haul collection opportunities to help residents with small-scale residential remodeling projects so that they may more easily recycle construction materials and dispose of residuals.
✓ 4.6.5 Provide opportunities and incentives at transfer stations for self-haulers to separate clean wood and other recyclable construction debris from waste to be disposed.
✓ 4.6.6 Develop and adopt deconstruction best management practices for demolition activities in coordination with building and planning staff.
✓ 4.6.7 Work with the Washington Department of Ecology to ensure sufficient processing capacity for construction debris.

Policy 4.7. **Work to attract businesses to Pierce County which use recycled feedstock for building materials and consumer home furnishings.**

✓ 4.7.1 Propose that state legislators adopt tax breaks for recycled goods manufacturing.
✓ 4.7.2 Provide information to economic development agencies and organizations in the County so that they understand the value of the existing system of recycling collection programs, processing businesses, and residents committed to recycling. They could promote this infrastructure support system to attract green businesses.

▶ 5. Foster research and development and explore new partnerships

Climate change partnerships: Pierce County can take advantage of the momentum in Washington to address climate change by developing partnerships with other entities to implement waste management practices which reduce emissions, produce electricity, bio-fuels or bio-products, or sequester carbon. Washington's elected leaders have set goals to reduce greenhouse gas emissions and adopted legislation to encourage the growth of a clean energy economy by using alternative fuels produced in the state. Changing waste or residue management practices in all industries is seen as part of the solution. A number of financial incentives may become available which might assist to do research and studies into best management practices or to help finance some types of facilities.

New legislation establishes timelines for energy utilities and other power generators to reduce emissions and to acquire a percentage of their power from alternative, renewable resources. By the year 2015, all state agencies and local government subdivisions must satisfy 100% of their fuel needs for vessels, vehicles, and construction equipment with fuels certified as having been produced from recycled materials or Washington feedstocks. Another incentive adopted by the state is the Energy Freedom Program which provides assistance and financing for the development of alternative fuels or other projects to increase energy independence.[15]

Agriculture and forestry industries: The agricultural community and forestry industries have not generally been involved in the development of comprehensive municipal waste management practices. New partnerships with these sectors may be useful because the same sorts of facilities or practices that can be used to manage their organic waste can be used to manage organic waste from the municipal waste sector or food processing industries.

Utilities: Energy utilities might also be interested in working as partners in order to expand their renewable energy portfolios to buy more alternative energy or fuels produced from municipal organic waste. For instance, Puget Sound Energy purchases the energy produced from a Lynden dairy farmer's digester. Three farms in the area contribute manure from 1,000 cows to the digester where methane gas is converted to electrical energy. At full capacity the project is expected to create enough energy to power approximately 180 homes.

[15] Legislation related to energy and climate change that was adopted in 2007 include: ESSB 6001, E2SHB 1303, 2SHB 1636, and SHB 2056. The Governor's Executive Order on Climate Change can be found on the Washington Department of Ecology website: www.ecy.wa.gov/climatechange.

Facilities: Compost facilities are examples of facilities which manage organic waste and can reduce emissions and sequester carbon. There are other conversion technologies (CTs), such as anaerobic digesters, which can capture methane from organic materials and convert it to electricity or to create bio-fuels or bio-products. Europe has already taken a holistic approach to organic waste management and is using various types of technologies to reduce the amount disposed and to convert organics to energy use or alternative fuels. Anaerobic digesters are converting over 12% of all municipal waste in Europe to biogas.[16] Partnerships are emerging throughout California.

Federal programs: Federal programs exist to assist farms to manage manure and other agricultural residues. In coordination with the Department of Agriculture, the U.S. Environmental Protection Agency (EPA) runs the AgSTAR Program which is designed to assist farmers to recover biogas to produce electricity, heat or water. The program includes tax incentives, grants, and loan programs. The 2007 funding for this program allows loan guarantees to cover up to 50% of a project's costs, not to exceed $10 million. Grants are available for up to 25% of a project's costs, not to exceed $250,000 for energy efficiency improvements, and $500,000 for renewable energy systems.

EPA and the Department of Agriculture have focused on methane recovery because it is one of the easiest ways to reduce emissions. The technologies, mostly anaerobic digesters, have been available for many years and are used in all sorts of waste management practices, such as wastewater treatment plants. Worldwide, agricultural activities account for approximately 50% of global, human-caused, methane emissions and 85% of nitrous oxide emissions. Both of these are substantially more potent greenhouse gases than carbon dioxide (CO_2). (Attention has focused on CO_2 because it is the reference gas used by the Intergovernmental Panel of Climate Change (IPCC) for evaluating emissions.)

Anaerobic digesters are the long-time preferred, and considered "the key" technology by the two federal agencies for managing manure from dairy farms and stock-feeding lots.[17]

Partnership examples: Mason County has already moved in the direction of establishing partnerships by developing a High Solids Community Digester. The County's partners include the Washington Center for Trade and Economic Development, Mason Conservation District, Puget Sound Action Team, WSU Energy Extension, WSU Center for Biological Research, and the Skokomish Tribe.

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[16] *California Municipal Utility Looks to Biomass for Renewable Energy*, by Ruth MacDougall, Producing Power with Anaerobic Digestion (Manual), Biocycle Journal, page 47.

[17] *Greenhouse Gas Mitigation Potential in U.S. Forestry and Agriculture*, November 2005, U.S. Environmental Protection Agency website: www.epa.gov/sequestration/greenhouse_gas.html.

Feedstocks for the community digester may include municipal organic wastes, farm manures, and waste from a correction facility. The correction facility is planning on purchasing the gas and reducing their solid waste disposal costs.[18]

The Department of Ecology has completed a Biomass Inventory and Bioenergy Assessment for Washington which uses anaerobic digestion and other conversion technologies to project biomass potential for electricity. Ecology worked with WSU to develop a pilot-scale, mobile anaerobic digester to handle agricultural waste.

Policy 5.1. Support research and development into best management practices for organic waste that can help capture or sequester carbon and recover energy resources.

✓ 5.1.1 Evaluate financial options created by state and federal tax credits and programs for renewable energy resources that might be used to develop facilities to manage organic waste.
✓5.1.2 Investigate financial incentives for businesses to produce alternative fuels, such as ethanol, syngas, or bio-diesel.
✓5.1.3 Work with the agricultural and forestry industries in Pierce County to survey their needs and plans to change management practices to meet Washington's emission reduction goals or to produce energy or bio-fuels.
✓5.1.4 Evaluate the potential for partnerships with private businesses, energy utilities, forestry and agricultural industries, and other government agencies or organizations to research and develop organic waste management practices or facilities.
✓5.1.5 Evaluate the potential for diverting some organic wastes to existing facilities such as wastewater treatment plants.

Policy 5.2 Take the lead in initiating public discussion and a broader perspective about sustainable practices to manage organic waste in all industries and agencies in Pierce County.

✓ 5.2.1 Host events and workshops.
✓ 5.2.3 Develop model collection and processing systems.
✓ 5.2.4 Act as a coordinator to disseminate information about alternatives and new ideas.
✓ 5.2.5 Work with colleges and universities to develop research projects on best management practices for Pierce County's waste.

[18] Mason County website: www.masoncd.org.

▶ 6. Invest wisely in facilities and preserve landfill capacity

Secured disposal capacity:

Pierce County has sufficient in-county disposal capacity for the next 20-23 years to handle municipal solid waste (MSW) from the County, Tacoma, and the military's waste management systems, contingent upon the landfill facility building out to its permitted site design and size and only limited use of the landfill for the disposal of non-MSW waste streams. Waste from all three waste management systems is disposed in the privately-owned LRI Landfill. Each system operates under separate contracting authorities.

Aggressive implementation of waste reduction and recycling actions discussed elsewhere in this Supplement has the potential for substantially extending the life of the disposal facility. Table 4 projects the total twenty-year capacity needs for MSW tonnage if these actions are not taken. It represents a no-action scenario using the existing recycling and per capita disposal rates.

Table 4. Projected Capacity Needs for MSW [19] from 2008 through 2027 for Tacoma, Pierce County, and Fort Lewis Waste Management Systems	**15,114,456 tons.**

LRI Landfill status:

In 2006, the Tacoma-Pierce County Health Department re-issued the Solid Waste Permit for the LRI Landfill, extending it ten years to February 2016. The landfill, located at 304th and Meridian, is projected to have an operating life extending to 2028. In 2005, the Washington Department of Ecology identified the LRI landfill as providing 11% of Washington's landfill disposal capacity. At full-build out the landfill has a total ultimate capacity (for MSW and non-MSW) over its entire life of 26.9 million tons.[20]

The Solid Waste Permit authorizes a total of 168 acres for disposal cells (landfilling), contingent upon the relocation of Woodbrook Road. According to the Health Department, the southern area "was included in the original proposal and approvals," and development of cells in this area would "not represent an expansion." No modification of the solid waste permit would be required if LRI succeeds in obtaining rights to relocate the road and complete development of the southern portion of the site. There are no plans to expand the facility beyond the boundaries and height approved in its Solid Waste and land use permits.

[19] The projections are solely for contracted municipal solid waste (MSW). A substantial amount of non-MSW waste is disposed at the LRI Landfill. This replaces Table 8-2 of the Year 2000 Solid Waste Management Plan.

[20] 2006 Solid Waste Permit, Tacoma-Pierce County Health Department. The capacity is estimated "air space" and is based on a number of factors such as compaction density or on how leachate is collected or used. For more detail and information about how capacity is estimated, contact the Health Department.

The LRI Landfill is identified as an essential public facility in the Pierce County Comprehensive Plan and the Capital Facility Plan. It is recognized in the Graham Community Plan and Pierce County Development Regulations with an Essential Public Facility - Solid Waste Overlay.

Limitations: Two limitations within the facility's Solid Waste Permit have helped preserve long-term disposal capacity: 1) a 'cap' limiting the disposal of waste generated within the City of Tacoma, and 2) a prohibition on out-of-county waste.

The cap limits the landfill to accepting a total of 2 million tons from the City of Tacoma over the initial 20 years the facility is in operation. It was written to ensure sufficient capacity for MSW from the Pierce County waste management system if Woodbrook Road was not moved. If the road is relocated, the need to limit the amount of Tacoma waste is unnecessary. According to the Solid Waste Permit, the cap can be lifted if the Solid Waste Management Plan "is amended to expressly allow additional, or unlimited, waste disposal by the City of Tacoma."

Both the Solid Waste Permit and the land use permit restrict the LRI Landfill from accepting waste from outside the county. Both permits must be amended before this restriction could be changed. The 2000 Solid Waste Plan requires that impacts to the system must be addressed during the public amendment processes for these permits and must be reported to the County Council. Besides environmental and land use issues, capacity would be an important impact to evaluate.

WDAs In 2003, the Solid Waste Division established a policy and a coordinated process to review Waste Disposal Authorizations (WDAs) issued by the Health Department for wastes destined for the LRI Landfill. The WDAs are issued after review for non-traditional wastes such as petroleum contaminated soils, industrial sludge, certain types of ash, and similar materials to be disposed or treated at solid waste facilities in Pierce County. The WDA review process was created by the Health Department to ensure, prior to final disposal or treatment, that wastes meet the definition of "solid waste" and other conditions of the solid waste handling permit.

The Solid Waste Division's review was created to ensure that all such non-traditional waste was generated within the boundaries of Pierce County according to the direction of the Solid Waste Plan. It was also established to track the amounts of material coming from Tacoma, the military, or from within the County's waste management system, including unincorporated areas and all cities and towns. For the last two years, contaminated soils and sediments are the largest amounts approved through the WDA process. The contaminated soils are "soils that have levels of contamination below the threshold to be classified as dangerous or hazardous waste."

Landfill gas: The gas management system at the LRI Landfill is the standard Best Available Control Technology (BACT) method most frequently used to meet the emission

standards. Landfill gas is captured through a series of gas extraction wells and channeled to a flare which destroys the gas through combustion. The flare maintains a 98% destruction of emissions and surface monitoring of emissions also shows the site to be in compliance with regulatory requirements.

Although the U.S. Environmental Protection Agency (EPA) still considers flaring an approved method of meeting emission requirements, the agency revised the guidance it provides to regulators, operators, and the public. Since 1994, the agency has advocated the beneficial re-use of landfill gas for energy production.

EPA has identified MSW landfills as the largest source of human-related greenhouse gas emissions in the U.S, contributing about 25% of the methane emissions. Methane is over 20 times more effective in trapping heat in the atmosphere than carbon dioxide (CO_2). Once in the atmosphere, methane absorbs terrestrial infrared radiation that would otherwise escape into space.

While methane is a problem as a greenhouse gas, it also has value as a prime constituent of natural gas and as an important energy source. According to EPA, efforts to utilize methane emissions can produce significant energy, economic, and environmental benefits by both reducing emissions and creating needed energy or the kind of fuels which reduce transportation emissions.

Further, energy recovery and conservation are priorities of Washington's solid waste management regulations and have been a long-term goal of the Solid Waste Plan. One way to address this goal is to convert landfill gas to alternative fuels or to produce energy.

BACTs: The Solid Waste Permit requires LRI to "utilize the best available control technologies" (BACTs). LRI is exploring the possible conversion of landfill gas to compressed natural gas or liquid natural gas for use as a vehicle fuel. The Health Department has consulted with the Puget Sound Clean Air Agency, the Department of Ecology, and the Environmental Protection Agency and "concurs, that, in general, energy production from landfill gas is a best available control technology. Final determination regarding BACT can be made only upon review of a specific proposal by the landfill operators."

For an energy conservation project to be added to the existing gas management system at the LRI Landfill, operators of the landfill would need to submit a specific proposal that demonstrated it meets emissions standards and get approval, at a minimum, to modify the approved landfill gas management plan from the Health Department. Depending upon the extent of proposal there might be a need to amend the solid waste permit. The proposal would also need to meet the land use permitting requirements of the recently adopted *Graham Community Plan.*

Disposal alternatives: A policy recommendation in the 2000 Solid Waste Plan states that Pierce County should maintain the *Pierce County Landfill Siting Study.* The study is out-of-date

because of land use development within the study areas and a change in state law which substantially limits the possibility of siting any new MSW landfill in Pierce County. Legislation adopted in 1999 restricts the design, height, and size of any landfill from being located within the Central Pierce County Aquifer System designated by the U.S. Environmental Protection Agency (EPA) as a 'sole source aquifer.' There are few other suitable locations for siting a landfill that could meet both the State's siting criteria and the size needed for long-term capacity. It would not be economically efficient to build any new MSW landfill smaller than 100 acres, which eliminates any practical consideration for any new landfill.

Out-of-county disposal: Long-hauling by rail or trucks to a facility in another part of the state or out of state is another previously studied alternative. LRI long-hauls a small portion (about 3.5% in 2006) of the County's contracted MSW waste to the Roosevelt Regional Landfill. The Plan allows for long-haul "if there is a lack of landfill capacity or if the County determines by resolution that out-of-county disposal options are cost-effective." Many of the previously studied issues related to long-hauling[21] remain the same but infrastructure capacity limitations and the rail industry's priorities are driving up the cost.

Many of the counties and cities in western Washington are now long-hauling and strains to the system are showing up as needs are beginning to surpass infrastructure and rail traffic continues to grow. The railroad industry's priorities seem to be focused on moving more profitable cargo instead of garbage and there is no planning focus on providing more rail line infrastructure, either from the Federal government or the rail industry.

Truck haul still remains a viable option; however, the rising costs of energy are driving up the cost of this option as well. Any new study of long-haul alternatives needs to take into account the rising costs of rail and truck haul; capacity limitations; back-up needs in case of emergency situations; and the availability of other landfills.

Emergency backup issues: One of the problems with rail haul is that alternate transportation or routes are necessary when heavy rains, snow, flooding, or other factors interrupt transport. Sometimes a single event could incapacitate both the primary and backup methods, leading to the need for short-term storage at transfer stations and/or long-haul vehicles, or for disposal at backup landfills (locally, or at other regional landfills which are not affected by the transportation disruptions).

Long-term landfill capacity in western Washington is limited. Three landfills have more than one but less than 10 year's capacity. The largest of these is the publicly-owned Cedar Hills Landfill in King County which provides for 5% of the state's total disposal capacity but it is scheduled to close within a decade.

[21] *Tacoma-Pierce County Solid Waste Management Plan*, Chapter 8, pages 8-7, 8-10, & 8-19 through 8-22

Tacoma Landfill: The City of Tacoma's landfill has approximately one year's worth of capacity for Tacoma's disposal needs if the City chooses to use it. The current policy of the City is to preserve the remaining capacity for emergency purposes and for use during the construction of a new transfer station. The City will continue to evaluate methods to extend the life and increase the capacity of its existing cell as directed in the Solid Waste Plan.

Flow control: Flow control remains a problem for any county wanting to change to a long-haul alternative, particularly for a county such as Pierce County with a legally permitted and operating landfill with sufficient long-term disposal capacity. A lack of flow control may result in higher overall rates to users if fixed costs or contractual obligations cannot be met.

Flow control refers to the ability of local governments to control the delivery of waste generated within a given geographic area to a specific facility, thereby providing the ability to guarantee delivery of wastes. United States Supreme Court decisions in 1994 and 2007 limit local government's ability to control the flow of waste, except to facilities owned by local government.

Asset management: Much of the waste that is eventually recycled, diverted, or disposed passes through one or more publicly or privately-owned waste transfer stations. Recently, the Solid Waste Division initiated the Customer Service, Asset Management, and System Sustainability (CAS) Project to develop a new approach to planning, operating, and managing portions of the solid waste system. The County and LRI are in the first year of jointly implementing the asset management plan. The project was started to address the direction in the Solid Waste Plan to investigate usage patterns and to determine the cost-effectiveness of existing services. The Plan also directs the Division to determine if there is a need for new facilities and to review ownership options.

The CAS system has five program elements: The first is a solid waste system monitoring program designed to scrutinize key performance indicators on a regular basis. The second is an evaluation program of the County-owned facilities to assess the condition, performance, and capacity of each facility. The third element is a financial evaluation program to monetarily quantify solid waste system progress. The fourth element is designed to provide enough information to estimate future solid waste handling needs. The last element is a program to annually evaluate the CAS project's program effectiveness and recommend appropriate changes and improvements.

Tacoma's transfer needs: Tacoma is conducting an ongoing review of its operations. Solid waste handling in the City has evolved rapidly and its facilities have not always evolved as quickly as the programs, so many of Tacoma's facilities are outdated, inefficient,

and undersized. Some of the things which have occurred that have impacted the system are: permanent closing of the Tacoma Steam Plant; commingled recycling; changes at the Transfer Station to resolve safety issues; and an increase in the amount of yardwaste and related organic materials.

As a result of the changes, Tacoma has identified many potential improvements for its facilities and system and is working on a strategic plan to address the improvements. The City has begun working on upgrading its transfer facility and developing the funding system needed to implement all improvements.

Policy 6.1 Monitor disposal needs and establish programs and contracts that assure long-term capacity for disposing the municipal solid waste generated within Pierce County.

✓ 6.1.1 Identify materials that could be remediated, reused, or disposed elsewhere.
✓ 6.1.2 Evaluate the use of alternative long-haul facilities and services and consider a blending of long-haul and local disposal costs.
✓ 6.1.3 Explore opportunities to increase partnerships between Pierce County, LRI, the City of Tacoma, and Fort Lewis/McChord Air Force Base.
✓ 6.1.4 Before removing the cap on Tacoma tonnage, require Tacoma and LRI to document and provide assurances that the acceptance of Tacoma's waste beyond the amount of the cap will not negatively impact LRI's ability to accept County waste.

Policy 6.2 Ensure the operation of the waste transfer system maintains sufficient capacity for the demands placed on the system.

✓6.2.1 Update the CAS Program as needed and use it to identify facilities that need replacement, expansion, or closure.
✓6.2.2 Work with private companies to extend the asset management system for County-owned facilities to the privately-owned facilities in order to ensure cost-effective and resource efficient service.
✓6.2.3 Develop and implement best management practices for all transfer facilities which consider environmental, energy, and greenhouse gas impacts when making decisions to transport waste.
✓6.2.4 Identify whether new transfer station locations are needed or whether non-capital alternatives to transfer station expansion or siting are viable, cost-effective, and support waste reduction and recycling goals.
✓6.2.5 Develop and implement best management practices for all transfer facilities which will allow for maximum diversion of waste from disposal and which will allow for seizing of new recycling and diversion opportunities.
✓6.2.6 Participate in efforts initiated by the Pierce County Department of Planning and Land Services to clarify the rules and procedures for identifying whether existing, or future, solid waste transfer stations should be labeled as essential public facilities.

Policy 6.3 **Work with LRI to research, develop, and implement best management practices to maximize landfill capacity, extend the life of the landfill, reduce emissions, and address climate change initiatives.**

✓ 6.3.1 Incorporate benchmarks into the County's waste handling agreement with LRI to evaluate performance to meet customer service and operational or financial objectives.
✓6.3.2 Work with LRI to implement environmental management standards (EMS) to reduce environmental impacts of activities, products, and services and to achieve and maintain certification for the landfill as meeting the best environmental standards.

Policy 6.4 **Participate in regional efforts to identify back-up and emergency disposal capacity.**

✓6.4.1 Coordinate with other jurisdictions to explore efforts to enhance the waste transportation system.

▶ 7. Prepare for emergencies and provide coordinated oversight

Preparation and prevention: Pierce County and its cities and agencies are charged with ensuring that all wastes are handled in a manner which protects the environment and the public health and safety. This necessitates ongoing coordination with many different agencies and County departments and with other counties about anticipating emergencies, permitting of facilities, and preventing problems from developing through continued monitoring and oversight of how the regulations are enforced or interpreted.

All of these are fundamental strategies built into the solid waste management system in Pierce County to prevent pollution and keep Pierce County a livable community. The following discusses some recent issues related to emergency planning, solid waste and land use permitting and oversight, and sham recycling.

Emergencies

Preparation: Mountains may crumble, trains may tumble off tracks, winds and rains may knock down trees and flood valleys and all of these events can require some sort of debris or municipal waste management program. With a little forethought in preparing for emergencies, government agencies can assist residents to get back on their feet and can move quickly to restore services or mitigate environmental impacts.

Since 1993, the Solid Waste Division has been involved in more than six major programs related to emergencies. The two most recent events were in 2006. During the floods in November, Solid Waste staff assessed the scope of damage, placed dumpsters and assisted in debris removal. Staff contacted every person who reported damage to the Emergency Operations Center and arranged site visits to issue flood vouchers which allowed those people to haul unlimited flood damage debris to a transfer station. For the December windstorm the Division immediately initiated a program for residents to self-haul windstorm debris to the transfer stations free-of-charge.

Debris plan: The lesson learned in 2006 is that there is a need for a written debris management plan which identifies procedures to follow after a storm or other emergency event. Through trial-by-fire over the last 14 years the staff has learned how to respond quickly to emergency debris events; whom to contact for assistance; and what works best in certain situations. The problem is that the accumulated staff expertise isn't written down.

Another problem to address is that the public needs to know that the response and cleanup efforts that served a decade ago, such as county-wide curbside service for debris removal, are no longer possible. Property owners need to know how to prepare for emergencies, how to prevent some of the problems, what to do after the event, and how agencies will announce programs that are made available. Countywide curbside debris programs are no longer feasible because of the cost and because collection companies have converted to automated trucks to haul garbage which can not be used to collect large amounts of tree limbs or trunks.

Another reason why procedures need to be clear and that everyone understands what to expect is to ensure a system is followed for financing emergency programs. Agency directors and staff need to know before making a commitment what activities may or may not be reimbursed and there needs to be coordination between all of the County's emergency responders on an agreed-upon approach under different scenarios. Policy decisions about what actions to finance will dictate the type and length of any emergency program. The Solid Waste Division committed $170,000 to cleanup efforts in the aftermath of the 2006 flood and windstorms.

Solid Waste and emergency management staff have received training on emergency debris management and Pierce County and LRI have sponsored training classes for others.

Preparing for a major event: An earthquake or some other major catastrophe in Western Washington could trigger other issues, and planning to address them is already underway. Pierce, King and Snohomish counties and the cities of Tacoma and Bellevue have received grant money to develop hazardous debris plans.

A regional plan is needed because access could be cut off to Eastern Washington or Oregon disposal sites for extended periods of time during an emergency. Within a decade, the LRI Landfill will be the only MSW landfill in the Puget Sound region. Cities and counties to the north of Pierce County are already shipping their municipal waste by train for disposal in Eastern Washington or Oregon. Every year, there are transportation issues with the railroads when rail lines are washed out or damaged by storms, and counties have requested to use the LRI Landfill for emergency disposal. To date, the requests have not been approved.

The LRI Landfill is not permitted to accept out-of-county waste under normal circumstances. There are, however, provisions that allow for a waiver in an emergency, but there is no current process to advise the County Executive on what emergency is significant enough to trigger the waiver of the out-of-county waste restriction.

Trains are not the only problem. Western Washington needs to prepare for the sort of emergency where all access is cut off and road access within the region is

severely limited. How will residents cope with decomposing waste? What information would help them to prepare? How soon can all counties, cities and towns, and haulers expect to get basic waste management services up and running? What types of capital equipment are needed for short-term fixes? Where will the waste go? What other solutions should be considered under other event scenarios? These are the sorts of questions that need to be considered for possible solutions.

Facility permitting and oversight

Solid waste permits:

There are strong mechanisms in place to ensure that most waste facilities are operated in ways to protect the environment and the public. There have been no major problems with those waste facilities which have solid waste permits. Washington adopted landfill regulations, WAC 173-351 Criteria for MSW Landfills, in 1993. In 2003, Washington replaced older standards for other solid waste and recycling facilities with new regulations –WAC 173-350 Solid Waste Handling Standards. The new regulations clarify definitions; incorporate new waste handling technologies; and have more up-to-date siting, design, and operation requirements. These regulations apply to more than just transfer stations and landfills. They include all sorts of businesses which process recyclables, landclearing debris, or construction waste; or those which compost organic materials.

As administrator of the solid waste permit regulations, the Tacoma-Pierce County Health Department adopted the State regulations and added financial assurance requirements for some facilities that are more stringent that those of the State. This was done to ensure that financial resources would be available at closure to properly dispose or recycle those wastes being handled at the facilities. All existing and new facilities that require solid waste permits must meet the requirements of these regulations. Permits are renewed annually and require a variety of reports, inspections, and analysis of environmental protection systems in place at each facility. The Board of Health also adopted new standards for enforcement, appeal processes, and monetary and criminal penalties.

Funding for the Health Department's oversight is partially provided by the solid waste permit fees and grants, and from funds from the Department of Public Works and Utilities. In 2006, the County's Solid Waste Fund directly provided for 56% of the Health Department's solid waste related programs and secured an additional 12% through Department of Ecology grants.

Coordination gaps:

As often happens when new regulations are adopted by the state or another agency, gaps occur between what is defined as a permitted land use activity in zoning codes and what is defined as a facility requiring a solid waste permit. Some gaps have been identified which have made it difficult for agencies to

ensure that all recycling-type businesses are properly sited, located, and meeting all requirements to protect the environment and their neighbors.

For good coordination, it is important for all permitting agencies to ask whether or not an existing business is beginning a solid waste activity that will transform it into a land use not allowed in the zone. Is it a legal, non-conforming use that is expanding, and by doing so, will it become another type of land use? How will this impact traffic? At what scale does it become another land use and when should it only be allowed in a zone with other industrial uses?

"Sham" recycling: One problem that has been identified is when an existing business which doesn't usually handle waste materials as part of its activities expands and starts taking in waste from the public. The County has had problems with these "sham" recycling businesses which have resulted in expensive site cleanups. Many of the original Pierce County Responds "Dirty Dozen" sites were legal, non-conforming uses under zoning regulations which expanded their activities under the guise of "recycling" without oversight.

Those that have taken in waste materials have undercut the costs of those businesses which operate legally with solid waste permits because they charge less and do not install or meet the necessary environmental mitigations. Some have made no attempt to process the waste and this has resulted in stockpiles which have caught on fire or caused odor problems and resulted in enforcement actions. Or they began noisy operations adjacent to residential development in areas where the scale of their operations was not permitted. Four of the Dirty Dozen sites were cases where the property owners were claiming to recycle waste, when in fact they were permanently stockpiling or burying waste (including vehicles).

Outside storage: To address the problem, the County Council directed that the Planning and Land Services Department (PALS), the Tacoma-Pierce County Health Department, and the Solid Waste Division review and identify actions to correct problems in regards to the definitions and regulations of uses that involve outdoor stockpiling of materials for recycling, sale, or disposal. Amendments to the Development Regulations that may solve the problem, and improve coordination between agencies for early prevention action, were adopted as part of a development code amendment package by the County Council in Fall 2007.

Exemptions: Another problem is with "permit exemptions" in the state rules. Certain facilities are "conditionally exempt" from solid waste permitting if they meet reporting and operating requirements. The businesses must notify the Health Department and Washington Department of Ecology of their intent to operate as an exempt facility and must make annual reports on their operations and about the waste they are handling. All exempt facilities must comply with the performance and operating standards, and must allow the Health Department staff to inspect their operations.

A business that does not meet the requirements or operates in ways contrary to design and operating procedures becomes ineligible for the "permit exemption" and can then be required to obtain a solid waste permit.

The major problem with the exemptions is that the state's regulations do not provide a mechanism to fund oversight and preventative actions for exempt facilities. The Health Department's locally-adopted facility review fee for exempt facilities is intended to solve the funding problem, but it relies upon self-reporting by the potentially exempt facilities or after-the-fact enforcement.

Potential inequalities: The state's regulations also have the potential to foster unequal treatment of similar businesses. This may impact the County's overall management system which relies upon private businesses to process recyclables and other waste. One business may be doing the exact same thing as another business but as a "conditionally exempt" business it has fewer expenses than the processing business that is required to expend money annually to have a solid waste permit, verify that it is meeting operation requirements, and, possibly, to meet financial assurance requirements. Thus, the regulation system has created an incentive for some businesses to self-report inaccurate information or not to report at all. They may assume that enforcement may not happen until well after they have started or expanded their activities and that the odds are in their favor because enforcement after the fact is a long-drawn-out process which will allow them to continue what they are doing for a long time.

Economic impacts: Another sham recycling practice is to collect materials under the guise of "recycling" (particularly construction debris) and divert the materials to out-of-county landfill disposal facilities. Companies which claim to be hauling recyclables, only to transport them to a transfer station or disposal facility outside the county, dupe unsuspecting businesses into diverting materials away from recycling and reclamation and into disposal. The non-regulated sham recycler transports waste at a much lower cost because it is not subject to the environmental and regulatory controls of those who haul materials for disposal.

Lost revenue: This sort of sham recycling impacts the viability of City and County-planned, sanctioned, and funded waste reduction, recycling, and environmental control programs. The illegal diversion of disposable waste to facilities outside Pierce County reduces the County's disposal surcharge revenue and franchise fee revenue to cities.

A new state law in July 2005 attempts to solve some of this problem by adding institutional controls that require recyclable materials to be sent to actual recycling facilities and materials requiring secure disposal are safely transported to disposal sites. Pierce County government advocated these changes to the law because of the County's experience with illegal dumpsites.

STEPPING UP TO THE CHALLENGES

2008 Supplement to the

Tacoma-Pierce County Solid Waste Management Plan

Pierce County Department of Public Works and Utilities

January 2008

Available online: www.piercecountywa.org/swplan

The Solid Waste Division is working with the Health Department, Department of Ecology, City of Tacoma, and private companies to better monitor the activities of sham recyclers in unincorporated Pierce County; to tell the "story" of sham recycling; and to discuss steps to enhance local regulatory controls. The Division assists city and town governments with their monitoring of sham recycling activities within city limits. Cities and towns have regulatory tools, which the County lacks, to quickly stop sham recyclers' operations within their boundaries.

Policy 7.1 Prepare debris management guidelines and a regional emergency waste management plan.

✓ 7.1.1 Develop interagency commitments about procedures and funding.
✓ 7.1.2 Create processes to follow under specific conditions which advise the County Executive on steps to take during regional emergencies.
✓ 7.1.3 Create an on-going public outreach program. Develop workshops with the media, public, and businesses to gather their input on solutions; to keep them informed of potential program alternatives; and of how agencies will make announcements about programs following a storm or other emergency event.

Policy 7.2 Enhance local regulatory controls to improve permitting processes, to prevent illegal activities, and to provide necessary funding for oversight actions.

✓ 7.2.1 Complete a broad review of all local regulations related to solid waste handling for inconsistencies between codes to identify revisions that would lead to a more integrated and consistent approach between permitting agencies.
✓ 7.2.2 Evaluate which existing uses may need additional review as solid waste handling facilities beyond those uses already recognized as traditional waste handling facilities, such as wrecking yards.
✓ 7.2.3 Develop improved and innovative coordination techniques between agencies that focus on prevention rather than after-the-fact enforcement activities.
✓ 7.2.4 Consider new methods for funding enforcement oversight, such as licensing requirements for certain exempt facilities.
✓ 7.2.5 Ensure outside storage standards are met and enforced and that existing businesses do not expand into sham recycling operations.
✓ 7.2.6 Identify solutions to reduce inequalities in the Washington solid waste regulations.
✓ 7.2.7 Work with the Health Department to identify requirements for conversion technologies and to ensure permitting processes are in place in zoning and waste permit regulations, if necessary. Coordinate with Washington Department of Ecology.

Policy 7.3 Work to reduce sham recycling activities in Pierce County and its cities and towns.

✓ 7.3.1 Improve methods for monitoring activities that lead to sham recycling.
✓ 7.3.2 Work with the Washington Department of Ecology, other agencies, counties, and private companies to evaluate the effectiveness of recent sham recycling legislation; additional ways to counteract problems; and implement procedures to reduce the problems.
✓ 7.3.3 Incorporate information about the problems with sham recycling into public outreach messages to residents and businesses to warn them about the potential of their waste becoming an environmental problem. Include tips about how residents can ensure they contract for recycling with a reputable recycling business.
✓ 7.3.4 Work with cities to incorporate job-site recycling practices for construction and demolition material into their permitting and government operations to ensure debris is properly handled and is managed within the Pierce County system.
✓7.3.5 Work with adjacent counties to identify and reduce the amount of waste materials crossing county boundaries for disposal in other counties.

IV. PRIORITY ACTIONS TO TAKE FOR THE NEXT FIVE YEARS

The Solid Waste Advisory Committee (SWAC) completed a review of the thirty-seven proposed policies presented in the previous section III and has ranked the relative importance of each policy in terms of its role in helping achieve the 20-year vision statement. These rankings serve as the basis for identifying new programs or program emphases for 2008 to 2012.

Implementation in 2008

1. Waste Characterization Conduct a waste characterization audit and a survey of current practices to determine how much more of Pierce County's waste streams could be recovered through recycling programs or diverted to produce alternative fuels or for use as clean energy. (Policies 2.1, 3.2, and 4.5)

Responsibility of: Pierce County and Tacoma

Milestones:

- Establish scope, schedule, and budget; Allocate staff and financial resources.
- Procure contractor.
- Perform work.
- Incorporate results into other projects.

Measurements:

- Project completed per an approved scope, schedule, and budget.

Implementation 2008 to 2012

2. Disposal Needs: Monitor disposal needs and establish programs and contracts that assure long-term waste disposal capacity. (Policy 6.1) "Sub-policy" actions grouped under Policies 6.2 and 6.3 may also be appropriate for consideration in this action.

Responsibility of: Pierce County and Tacoma

Milestones:

- Establish scope, schedule, and budget; Allocate staff and financial resources.
- Identify materials that could be remediated, reused, or disposed elsewhere.
- Re-evaluate potential to long-haul some waste streams.

Measurements:

- Reduction in *per capita* contribution to LRI Landfill.
- Potential life of the LRI Landfill extended.

3. Environmental Education: Continue to expand and fund environmental education programs including working with school districts to implement comprehensive recycling programs in all schools. (Policies 1.2 and 1.4)

Responsibility of: Pierce County and Tacoma

Milestones:

- Complete Environmental Education Program Work Plan (started in 2007).
- Establish scope, schedule, and budget; Allocate staff and financial resources.
- Reinvigorate waste reduction and waste prevention messages in existing curricula.
- Help schools establish their own recycling programs.
- Incorporate climate change, Puget Sound protection, and product stewardship messages.
- Develop and launch an adult classroom program to promote backyard composting.

Measurements:

- Increase in number of schools with recycling programs.
- Reduce per person disposal needs from schools.
- Double number of adults participating in classroom presentations and training.

4. Business Assistance: The Waste Characterization Audit will identify materials and sources to be targeted. Develop assistance programs for the business sector and work with businesses to increase their participation in recycling collection services. External outreach would begin in 2009. (Policies 1.1 and 2.4) In 2008, use Pierce County government as a model for program development and implementation (Policy 4.3); work with solid waste collection companies and the Washington Utilities and Transportation Commission (WUTC) to design equitable variable collection rate structures that encourage maximum diversion of recyclables (Policy 2.3).

Responsibility of: Pierce County

Milestones:

- Complete Waste Characterization Audit and develop business sector waste profile.
- Establish scope, schedule, and budget; Allocate staff and financial resources.
- Develop environmentally preferable purchasing and materials management guidelines for County offices.
- Ensure compatibility between recycling goals and recycling rate structures.
- Develop model programs for businesses based on evaluation of County programs.
- Launch formal business outreach program.

Measurements:

- Reduce per employee disposal needs from County government offices.
- Annual increase in number of businesses participating in waste prevention and recycling programs.
- Shrinking business sector waste profile upon a "re-audit."

5. Semi-Annual Reporting: Issue reports each Spring and Fall to the Pierce County Executive, Pierce County Council, Cities and Towns, and the Department of Ecology. Report on progress in achieving plan goals. (Existing Solid Waste Plan Policy #10-1)

Responsibility of: Solid Waste Advisory Committee and Solid Waste Division

Milestones:

- Allocate Division staff and financial resources to work with SWAC to develop report format and information to be reported.
- Prepare and deliver reports.

Measurements:

- Reports contain relevant information and delivered in a timely manner.

Implementation 2009 to 2012

6. Construction Debris: The Waste Characterization Audit will identify materials and sources to be targeted. Divert all recyclable construction and demolition debris to legally permitted and regulatory-compliant recycling facilities. (Policies 3.6 and 4.6)

Responsibility of: Pierce County

Milestones:

- Complete Waste Characterization Audit and develop construction sector waste profile.
- Establish scope, schedule, and budget; Allocate staff and financial resources.
- Provide opportunities at transfer stations for the diversion of recyclable debris.
- Identify and publicize facilities capable of handling and processing recyclable debris.
- Enhance opportunities for job-site recycling.

Measurements:

- Increase the recycling and diversion rate for construction debris.
- Annual increase in businesses participating in waste prevention and recycling programs.
- Shrinking construction sector waste profile upon a "re-audit."

Implementation 2010 to 2012

7. Organic Waste: The Waste Characterization Audit will identify materials and sources to be targeted. Support research and development into *sustainable best management practices* for organic waste that can help to capture or sequester carbon, recover energy resources, and produce product. (Policies 3.3, 3.4, 3.5, 5.1 and 5.2; possibly 3.1)

Responsibility of: Pierce County

Milestones:

- Complete Waste Characterization Audit and develop organic waste profile.
- Establish scope, schedule, and budget; Allocate staff and financial resources.

- Identify regional public and private sector partnerships to better target the recycling and diversion of organic wastes.
- In partnership, develop and implement cost-effective best management practices for organic wastes.
- Identify and publicize facilities capable of handling and processing organic wastes and enhance systems designed to collect and deliver such waste.

Measurements:

- Increase the recycling and diversion rate for organic debris.
- Annual increase in number of residents and businesses participating in organic waste prevention and recycling programs.
- Shrinking organic sector waste profile upon a "re-audit."

8. Residential Recycling: Expand residential recycling programs based on the results of the waste characterization audit and any identified need/ability to capture organics from the residential waste stream (Policies 2.2 and 3.5). Include design of equitable variable collection rate structures that encourage maximum diversion of recyclables. (Policy 2.3)

Responsibility of: Pierce County

Milestones:

- Complete Waste Characterization Audit and develop residential sector waste profile.
- Establish scope, schedule, and budget; Allocate staff and financial resources.
- Focus initial efforts on underserved segments (e.g. multi-family, rural yardwaste).
- Explore opportunities to provide "on-call" service to collect and recycle white goods, furniture, carpet, and/or electronics.
- Expand existing programs in tune with market demand and economic efficiency.

Measurements:

- Increasing *per capita* rate of recycling and diversion by residents.
- Decreasing *per capita* rate of disposal by residents.
- Shrinking residential waste profile upon a "re-audit."

9. Plan Review: Update the Solid Waste Plan to reflect implementation of these priority actions. Measure our progress in moving towards the Vision. Assess whether Priority Actions have helped make recycling collection a more dominant collection service (Policy 2.8).

Responsibility of: Pierce County

Milestones:

- Secure agreement to conduct plan review every two years.
- Establish scope, schedule, and budget; Allocate staff and financial resources.
- Report on the implementation of the priority actions, including performance on milestones and achievement of measurable objectives.

- Assess need for new capital facilities or expansion of existing facilities to assist in the implementation of priority actions.
- Adjust listing of priority actions.

Measurements:

- Number of milestones achieved, in progress, or deferred.
- Number of measurement objectives on target or falling short.
- Progress in making a shift in usage of collection programs.

Continuing Programs 2008 to 2012

Although the SWAC has not identified the following as areas requiring **new emphasis**, it recommends the Solid Waste Division continue working on these functions.

Emergency Disposal: Participate in regional efforts to identify back-up and emergency disposal capacity. (Policies 6.5 and 7.1)

Regulatory Controls: Continue to monitor local regulations to help improve permitting processes, prevent illegal activities, including "sham" recycling, and provide necessary funding for oversight actions. (Policies 7.2 and 7.3)

Household Hazardous Waste: Maintain awareness of, and provide collection opportunities for, handling and managing household hazardous waste and electronic waste. (Policies 1.5 and 2.7)

Pierce County Responds: Support Pierce County Responds and create an outreach program to raise awareness about the impact of litter on the environment. (Policies 1.6 and 1.7)

Capital Facilities Planning Based on Priority Actions

At this stage of plan development, the Solid Waste Advisory Committee has not recommended any policies or sub-policies that require the immediate planning and implementation of new capital projects. The 2008 to 2012 Priority Actions focus on research, program development, policy review, and public outreach.

Thirteen "sub-policies" may, after considering other alternatives, result in capital projects. These can be grouped into six categories. The 2010 plan review will be used to formally document long-term capital planning needs that arise from implementation of the 2008 to 2012 Priority Actions

1. "Call-2-haul" services for bulky or specialized wastes (1.5.3, 2.3.3, 3.6.5, and 4.6.4)
2. New drop-off locations for household hazardous and electronic waste (1.5.2 and 2.7.1)
3. Composting or processing organic waste (3.3.5 and 5.2.2)
4. Recycle construction debris at existing transfer stations (3.6.1 and 4.6.5)
5. County government ("in-house") recycling program upgrade (4.3.4)
6. Transfer Station additions, replacement, or expansion (6.2.1 and 6.2.4)

Continuing Capital Facilities Planning Consistent with Priority Actions

Annually, the Solid Waste Division prepares a six-year Capital Facilities Plan for adoption by the Pierce County Planning Commission and the Pierce County Council. The 2008 to 2013 Capital Facilities Plan includes seven projects, valued at $3,536,500, that are consistent with the 2008 to 2012 Priority Actions. A fund analysis prepared in conjunction with the 2008 to 2013 CFP and the 2008 annual budget has identified sufficient "fund balance" to complete all of these projects without a rate increase.

Household Hazardous Waste Facility – 2008 Project - $120,000

Pierce County will construct a Household Hazardous Waste collection facility at the Purdy Transfer Station to provide two-day-per-week service to the residents of the Gig Harbor and Key Peninsulas. Supports Policies 1.5 and 2.7.

Purdy Transfer Station Employee Facilities – 2008 Project - $108,000

Remodel and expand staff quarters (including storage, changing areas, and bathrooms) given current staffing levels. The facility currently lacks bathrooms for each gender. Supports Policy 6.2.

Purdy Compost Facility Working Surface Expansion – 2008 Project - $53,500

The Purdy Composting Facility requires an extension of its concrete composting slabs which would allow the rotation of the SCAT compost turning machine and other equipment on concrete, rather than on gravel. The current condition causes contamination of the compost and increases maintenance and operations costs at the facility. Supports Policy 6.2.

Key Center Transfer Station Fencing – 2008 (or later) Project - $125,000

Assist the Key Peninsula Metropolitan Park District in the separation of solid waste and recreational uses on adjacent properties owned by Pierce County and the Park District. The Parks District will enter into a partnership to use the western portion of the Key Center property (which has not been used historically for solid waste purposes) for outdoor recreation programs. Supports Policies 1.4 and 6.2.

Environmental Education Center – 2009 (or later) Project - $2,750,000

Pierce County and the Chambers Creek Foundation are working cooperatively to realize the environmental education destiny of the Chambers Creek Properties. The Solid Waste Division, as the current provider of youth-oriented environmental education services for the County, has been tasked with leading this project on behalf of the Department. Supports Policy 1.4.

Purdy Transfer Station Scale Plaza – 2009 or later Project - $380,000

Replace existing scales with an expanded scale plaza to improve operational efficiency and customer service. Supports Policy 6.2.

V. RETAINED SUPPORT POLICIES AND GUIDELINES

Implementation actions: Since adoption of the Year 2000 *Tacoma-Pierce County Solid Waste Management Plan*, the County and its cities have taken action to address 36 of the 40 goals of the Plan and have fully or mostly implemented 84 of 111 policy recommendations that could have had possible action. (Thirteen of the total 124 program actions were no longer applicable.) No action or little action was taken to implement 16 recommendations. The remaining recommendations that were not addressed are guidelines or support policies for required maintenance of the system established in 1992. Some of these guidelines would only come into play if certain situations were to occur.

Actions that were completed or incorporated into program and management activities are not included in this Supplement. An example of an action that was completed and incorporated would be when the Tacoma-Pierce County Health Department included additional financial requirements above and beyond those required in state regulations as the Plan required.

Integrated new policies: For the most part, the 16 actions that were not addressed were melded into the new recommendations in the previous sections of this Supplement.

Retained guidelines: The following are policy support recommendations retained from the Solid Waste Plan. Most of them provide guidance for actions to take if an event should occur or they offer basic support for the system and are not impacted by the new policies in the previous sections of this Supplement.

Recycling Policy Support Guidelines from Chapter 4:

- Source separation of waste at the place where the waste originates should remain a fundamental strategy of solid waste management, pursuant to RCW 70.95.010.
- Evaluate and pursue each recycling effort based on ease of participation, consideration of waste stream contribution, maximum diversion potential, market opportunities, and environmental impacts.
- Environmental benefit and avoided cost of disposal should be factors in evaluating the success of recycling programs.
- Governments and the private sector should cooperate together to carry out recommended recycling programs.
- The County should use financial subsidies that recognize avoided cost of transportation and disposal to encourage a higher level of participation.

PROGRAMMATIC GUIDELINES

Waste Reduction and Recycling

#4-1 For the cities and towns using the County's waste management system, the Pierce County Solid Waste Division should continue to serve as the agency responsible for promoting county-wide waste reduction and recycling activities; to provide educational resources and technical assistance; and to evaluate efforts of these activities. The County should continue to coordinate its public outreach with the City of Tacoma, the Tacoma-Pierce County Health Department, and other agencies.

#4-2 Pierce County should continue to provide adequate funding and staffing to assist cities and towns in implementing waste reduction and recycling activities discussed in the Plan. The Pierce County Solid Waste Division should remain the coordinator of these programs for the County and those cities and towns using the County's waste management system.

#4-32 Pierce County should retain the use of rate-based incentives in promoting waste reduction and recycling. The County should work closely with private collection companies serving the County to identify equitable, implementable rate strategies that will be acceptable to the Washington Utilities and Transportation Commission. Pierce County should also continue to work directly with the Commission to identify and implement these types of alternatives.

Transfer Facilities and Collection Systems

#5-1 Transfer stations should be operated or sited to meet the collection needs of self-haul residents. Any changes in the locations, replacement facilities, or closures should be evaluated in terms of the effect on self-haul residents and how the changes could impact the refuse collection system.

5-4 The City of Tacoma will continue to provide solid waste collection and disposal services within its corporate city limits. The City shall retain the right to determine all minimum service levels and collection and disposal rates as adopted by the Tacoma City Council, pursuant to RCW 35.21.120.

#7-4 As becomes necessary to ensure sufficient transfer facilities, Pierce County should obtain the use of additional transshipment facilities, public or private, for transferring waste out-of-county disposal facilities.

#7-5 Pierce County encourages private transfer facilities located within Pierce County to reserve transfer capacity for waste generated within Pierce County.

Solid Waste Processing Technologies

#6-3 Pierce County encourages private recycling, composting, and processing facility operators located within Pierce County to reserve processing capacity for materials generated within Pierce County.

#6-5 Only those technologies with demonstrated reliability should be implemented as primary processing alternatives of the solid waste management system. However, governments and the private sector may wish to conduct pilot programs and explore new and innovative ideas. The appropriate regulatory agencies shall determine whether or not any potential technology meets the requirements of this Plan.

#6-6 Only processing technologies that are protective of human health and the environment (for example those that create no adverse odor impacts to neighboring properties) should be deemed to be in compliance with the Solid Waste Management Plan. As new processing technologies emerge, the environmental and health impacts should be carefully considered.

#6-8 With any alternative technology project, the operating vendor must provide sufficient financial assurances to minimize financial risk to the public for environmental and technical performance. Each city, town, and the County Council will independently determine the level of financial and environmental assurances that will be required for projects under their own jurisdiction.

Disposal and Landfilling

#8-1 If there is a lack of landfill capacity in Pierce County for solid waste generated in the Pierce County solid waste management system in the future or if the county determines by resolution that out-of-county disposal options are cost effective, the County may contract for the use of an out-of-county landfill.

#8-3 When the Tacoma-Pierce County Health Department and the Pierce County Department of Planning and Land Services review permit applications to site, develop, and operate new MSW landfills, or to expand existing MSW landfills in Pierce County or whenever Pierce County is considering decisions to contract for MSW disposal, the agencies must include in the decision-making process an evaluation of:

- Effect on public health and safety;
- Protection of the environment, including aquifers and waters of the State;
- Pierce County's waste generation habits and trends with an assurance that options are adequate for meeting Pierce County's waste generation needs;
- Competition for disposal services;
- Meeting the potential emergency needs should a primary disposal site suddenly become unavailable; and
- The costs of using various alternatives which will be analyzed and verified through the use of publicly available data published by other government organizations, formal requests for proposals, qualification or information (RFP, RFQ, or RFI), or through another method as recommended by the Solid Waste Advisory Committee.

The Solid Waste Division shall have primary responsibility for the evaluation, but will work with the Department of Planning and Land Services, the Tacoma-Pierce County Health Department, and the applicant to minimize duplication of effort.

#8-4 MSW landfill expansions within unincorporated Pierce County shall undergo a permitting process with adequate public notice and opportunity for public comment. Expansions shall be required to meet the regulations in effect at the time of expansion and to protect public health and safety and the environment. Expansions shall be prohibited for any landfill that is in violation of existing surface water or groundwater standards.

#8-5 The County shall require, to the extent allowed by law, private MSW disposal companies located within unincorporated Pierce County to reserve existing disposal capacity to handle MSW generated within the Pierce County solid waste management systems. When negotiating disposal contracts with any such facility owner/operator, the County shall propose terms which:

- Reserve adequate disposal capacity to serve the Pierce County solid waste disposal system as projected in the 'County-wide' column of Table 8-2, 'Projected Long Term Disposal Needs;'
- Require the mutual agreement of the contracting parties before the contractor can bring in waste from outside the County solid waste management system.

#8-6 No municipal solid waste landfill located within unincorporated Pierce County shall accept waste from outside the Pierce County solid waste management systems without addressing the impacts of that action. The impacts under the facility's conditional use permit shall be reviewed by the Pierce County Hearing Examiner. The impacts under the facility's solid waste handling permit shall be reviewed by the Tacoma-Pierce County Health Department. These reviews shall be conducted as a public process and follow the applicable laws and regulations governing the conditional use permit and the solid waste handling permit processes. The results of the review shall be reported at a Pierce County Council meeting.

#8-7 While this Plan recognizes and describes the complex authorities and regulation of waste disposal, nothing in the Plan specifically authorizes or specifically prohibits the importation of solid waste from outside the County solid waste management systems to MSW landfills located in unincorporated Pierce County.

#8-8 Before approving the acceptance of municipal solid waste from outside the Pierce County solid waste management systems or before approving a substantial change in the design or operation of a municipal solid waste landfill within unincorporated Pierce County, the TPCHD shall give the public notice of the issue and provide the public an opportunity to be heard.

#8-9 Continued landfill improvements at the City of Tacoma Landfill are recommended. The City should continue to evaluate all available options to obtain additional landfill space.

Enforcement and Administration

#10-1 The Pierce County Solid Waste Division shall report to the Pierce County Council on a semi-annual basis about: 1) significant solid waste disposal decisions made by other Pacific Northwest jurisdictions; 2) the development, implementation, and consequences of new, innovative and unusual approaches to solid waste management; and 3) the current

status of long-haul alternatives, particularly with the cost impact of fuel generated from waste.

#10-2 The Pierce County Solid Waste Division should coordinate with and regularly present the interests of Pierce County citizens to the Washington Utilities and Transportation Commission.

#10-4 When Pierce County and the Cities and Towns (excepting Tacoma and Ruston) enter into Interlocal Agreements to implement this plan, those Agreements shall require the planning partners to work cooperatively in a common solid waste transfer and disposal system. This is necessary to: provide economies of scale; avoid unnecessary and costly duplication of services; and minimize the number of solid waste related facilities which must be developed and permitted to implement this plan.

#10-5 Where practical, the solid waste management system should be advanced through an open competitive procurement process to benefit public interest.

#10-6 If future changes to federal law allow local governments to ban waste imports or to engage in "flow control," the County shall investigate the impact a ban on waste imports (either by Pierce County or by other jurisdictions) or new flow control authority would have on solid waste disposal rates and services, and publicize its findings for citizen review and comment.

#10-7 When state and federal solid waste regulations are revised, the Comprehensive Solid Waste Management Plan and applicable local solid waste regulations should be amended to, at a minimum, meet the new state and federal regulations.

#10-8 The Tacoma-Pierce County Health Department shall implement ways to increase public notice, input, and involvement in the solid waste handling facility permit application review process. The following issues were identified as particular areas the Health Department should review:

- Formal public notice and comment periods when issuing and modifying solid waste handling facility permits.
- Public meetings on the basis of requests, a significant degree of public interest, or to clarify one or more aspects important to compliance with the requirements of applicable permit; and
- Identification of impacts which may occur across jurisdictional boundaries.

#10-9 When an applicant applies for a Solid Waste Permit, the Tacoma-Pierce County Health Department shall notify the property owner(s) and verify that the owners understand they will be responsible for clean-up of any waste left by any solid waste facility or activity on their property.

#10-10 When state or local solid waste regulations are revised, staff of the Solid Waste Division should work with the Tacoma-Pierce County Health Department and the SWAC to review zoning for solid waste and recycling facilities. The SWAC will submit proposed code amendments to the Council for consideration.

#10-16 The current funding mechanism used to support the Tacoma-Pierce County Health Department and the County's solid waste programs should continue to be used.

#10-22 The County should identify and support initiatives or actions which legislative bodies could undertake that, in Pierce County's judgment, would assist Pierce County and the cities and towns to achieve the goals within the Plan, including the authority to control the flow of waste.

#10-23 Under this Solid Waste Management Plan, the City of Tacoma will retain control over all aspects of solid waste management within its corporate city limits, such as collection and disposal rates, minimum service levels, and waste management programs.

VI. APPENDICES to 2008 Plan Supplement to Year 2000

Tacoma-Pierce County Solid Waste Management Plan

A. GLOSSARY

Additional acronyms and definitions are found in Appendices A, B, and C of the Year 2000 *Tacoma-Pierce County Solid Waste Management Plan.*

BACT	Best Available Control Technology
Beyond Waste Plan	Washington's solid waste management plan.
BTU	British Thermal Unit
CAS	Customer Service, Asset Management, and System Sustainability Project
CD	Construction and Demolition debris
CTs	Conversion Technologies
EPA	U.S. Environmental Protection Agency
MMTCE	Million Metric Tons of Carbon Equivalent (International measurement system for measuring greenhouse gases which converts other greenhouse gases to the equivalent amount of Carbon Dioxide, CO_2)
MRF	Material Resource Recovery Facility (Recycling processing facility)
MSW	Municipal Solid Waste
OFM	Washington State Office of Financial Management
Per Capita	Per Person
PCC	Pierce County Code
PCR	Pierce County Responds
Source - separation	Recycling collection programs where recyclables or organic materials are separated from garbage at the place where the materials are first generated, such as a residence or a business.

B. BACKGROUND BRIEFING PAPERS - SYNOPSIS

The following documents update the description information and data in the Year 2000 *Tacoma-Pierce County Solid Waste Management Plan.*

City of Tacoma - Briefing Papers

• Commercial Recycling Programs	Changes to commercial recycling collection programs, new strategies, and a proposed model foodwaste collection program. *Page 6*
• Residential Collection Programs	Recycling and yardwaste collection programs and strategies to improve collection efficiencies. *Page 8*
• MSW Disposal	Disposal trends, contract disposal capacity, and Tacoma Landfill improvements. *Page 10*
• Processing and Transfer Facilities	Needs identified to upgrade processing and handling facilities to match changes in collection programs and disposal decisions. *Page 13*
• Waste Processing – Steam Plant	Closure of steam plant and retrofit of Resource Recovery Facility. *Page 15*
• Waste Reduction Programs	Increased efforts related to waste reduction and public education programs including: reuse programs, Waste Free Holidays, *EnviroHouse*, product stewardship, and global warming issues. *Page 17*

Pierce County – Briefing Papers

Capacity Issues

• Waste Trends & Disposal Projections	Five year trends in disposal and recycling tonnage and projected needs for 20 years of MSW disposal capacity. *Page 20*
• Residential Waste Trends	Changes in residential disposal rates since the advent of Single-Cart Curbside Recycling. *Page 25*

Collection, Transfer, and Disposal System

• Resource Efficiency, Climate Change, & Landfill Gas	Beneficial re-use of landfill gas for energy production or alternative fuels. *Page 26*

• Landfill Status & Disposal Alternatives	Capacity, projections, and facility status for municipal solid waste generated within Pierce County. Update about disposal alternatives, transfer system limitations, and inert and limited purpose landfills. *Page 33*
• Sole Source Aquifer	Update on criteria for siting municipal solid waste landfills. *Page 41*
• Waste Disposal Authorizations	Review processes to characterize and track non-traditional waste destined for disposal. *Page 43*
• Household Hazardous Waste	Collection facilities and services for all residents in Pierce County. Description of Tacoma-Pierce County Health Department's coordination role and outreach programs and recognition of small businesses through *EnviroStars* program. *Page 46*
Illegal dumping & nuisance vehicles	
• Pierce County Responds	Comprehensive response program to address illegal dumping of waste and nuisance vehicles. *Page 49*
Recycling, Waste Reduction Education, and Public Outreach	
• Single-Cart Curbside Recycling	Update on implementation of new minimum service levels for curbside recycling for single-family households. *Page 53*
• Education Program	School-based interactive presentations and adult workshops. *Page 58*
Public Outreach	Overview of Pierce County waste reduction programs and other outreach activities. *Page 63*
• Electronics Recycling	State and local efforts to recycle electronic waste. *Page 68*
Organics Issues and Technologies	
•Organics and Facility Capacity	Reducing the waste stream by diverting organics to composting facilities or other technologies with a discussion of capacity needs. Includes information about collection issues related to yardwaste, foodwaste, and landclearing and construction debris. *Page 72*

• Conversion Technologies	Emerging technologies for converting biomass (or source-separated organic waste) to alternative fuels or energy. *Page 80*
• Agricultural Waste Management	Technologies to manage agricultural and municipal organics. *Page 89*
Permitting Issues	
• Facility Permitting	Permitting oversight to protect the environment in the Solid Waste Handling Standards (WAC 173-350) and local regulations. Includes discussion about the need for coordination with land use regulations. *Page 92*
• Essential Public Facilities	State land use requirements, Pierce County comprehensive plans and development regulations, and the relationship to solid waste facilities. Page 100
• Sham Recycling	Statewide efforts to regulate the transportation of recycling materials to ensure economically sound and environmentally secure handling of waste materials. *Page 104*
• Definitions, Use Level Listings & Outdoor Stockpile Standards	Zoning code definitions and outdoor stockpile standards, Pierce County Code, Chapters 18 and 18A. Updates Appendix H of the Solid Waste Plan. *Page 108*

Tacoma Commercial Recycling Programs

Current programs: Commercial recycling in the City of Tacoma has been implemented in stages since 1991. The services offered and availability has varied greatly over the years. Tacoma now offers a wide variety of services to its commercial customers, including the following:

Commingled cart service: Tacoma offers commingled cart service that is very similar to the service offered to residential customers. The materials collected are identical to the residential program and a majority of the carts are collected through the residential commingled curbside collection routes.

- Cardboard service. This service collects cardboard from front load boxes. Box sizes range from two to eight cubic yards.

- Commercial source separated collection. A portion of a commercial source separated route is still performed. This service is provided with a semi-automated side loader using 60 and 90 gallon carts. The materials collected include glass (separated by color), aluminum and tin cans and newspaper.

- Produce Pilot. In what may be the longest running pilot program in history, Tacoma collects pre consumer produce waste and waste vegetative material from florists. This pilot has been running since the early 90's, and collects approximately 600 tons per year of organic matter for recycling. (Commingled caster/fork boxes).

New charge for service: As Tacoma's commercial recycling programs evolved, the services were offered at no extra charge to the customer. As the programs have increased in popularity, it has become more and more difficult to sustain this practice. Starting in the 2001-2002 budget cycle, Tacoma began charging for the cardboard collection service.

In the ordinance that became effective on January 1, 2005, the City Council delegated the authority to set rates for the Tacoma operated recycling programs to the Public Works Director. The reason for delegating the authority was to adjust the potential changes in market conditions related to recycling, and the need for periodic adjustments based on those fluctuations.

In January of 2006 rates were developed and set for commingled cart service, source separated glass and paper service, and commingled front load and caster box service. At the end of 2006, letters will be sent to all existing commercial

recycling customers and the new rates will be applied to those existing customers at the beginning of 2007.

Commingled recycling programs:

- Cart Service: The only major difference for the commercial commingled cart service is that a fee will be charged for the service. All other aspects of the service from materials collected and service delivery methods will remain the same.

- Front Load and Caster Box Service: Except for a few individual customers served to evaluate the feasibility of the program in Tacoma's system, this will be an entirely new program. It is anticipated that this program will be built slowly over time. Containers are available immediately, but additional capacity in both collection vehicles and route drivers is needed.

Food waste programs:

Commercial food waste is one of the last remaining areas where a large volume of material can be diverted from the disposal stream. The City of Tacoma is evaluating specific aspects of a commercial food waste recycling service and it is likely that such a service will be offered during the 2007-2008 budget cycle.

One of the major issues will be capacity to compost or process the material. Tacoma will be evaluating different options related to processing. Tacoma's current contract for yard waste and other organics is with Land Recovery Inc. which processes Tacoma's organic materials at the LRI Compost Factory.

Another potential option is the Tacoma Central Treatment Plant, which has excess digester capacity. The excess digester capacity could be used to anaerobically digest the collected food waste to produce methane and Tagro products. Tacoma could then use the methane gas to power micro turbines and produce energy to power plant operations. This option will be studied further to determine if it is both technically and financially feasible.

Increasing the recycling rate:

When the decision was made to close the Tacoma Steam Plant, Solid Waste Management received firm guidance from the City Council that recycling was to be emphasized by Tacoma. Commercial Recycling will be one of the key elements that need to be implemented to follow that guidance by the Council. Adding and enhancing services to increase commercial recycling will be a point of emphasis for the Division.

Drafted: 11/06

Tacoma Residential Collection Programs

Tacoma garbage collection programs: The City of Tacoma has the exclusive right to collect garbage from customers within the City's corporate limits. In the residential sector, garbage services is mandatory, and Tacoma offers can sizes from 20 to 90 gallons for its customers for once a week collection.

Yard waste collection programs: Tacoma has collected yard waste at the curb since 1990. In the early years, the pickup was completely manual and the material was dumped from either plastic bags or customer owned cans. In the first three years of the program, yearly tonnages were around 7,000 tons per year.

In the last five years, significant changes have been made to the program. One of the major changes was to discontinue the use of customer owned containers. The City will now provide up to two 90 gallon containers for collection of yard waste at no additional charge to the customer. If additional carts are needed, the customer will be charged a nominal fee per month for each additional cart. The current fee for an additional cart is $3.00 per month. Tacoma is also changing the collection method from a combination of semi-automated and manual collection to a completely automated system. The change to automated collection is nearly complete, and it is significantly improving the efficiency of the program. The Tacoma curbside yard waste collection tonnage averages about 20,000 tons per year.

Commingled recycling programs: Tacoma has collected recyclable materials at the curb since 1990. At that time, the pickup was source separated at the curb by the Tacoma driver. In the early years of the program, yearly tonnages were around 2,000 tons per year. In 1997 Tacoma went to commingled recycling and added additional materials. The commingled system uses a large cart for paper, plastic, and metals, and a separate smaller bin for glass. The 1997 changes drastically increased the amount of material diverted by the program, and the yearly tonnages are now approximately 18,000 tons per year. The current system of collection is semi automated collection.

Recycling and yard waste collection schedules: While garbage is collected weekly, recycling and yard waste services is provided every other week for residential customers. Historically, Tacoma has collected yard waste and recycling on the same week for each customer. This means that one week all three services are provided and the next week only garbage service is provided.

Tacoma performance evaluation: In 2005, Tacoma hired a consultant to review the performance of the City's Solid Waste operations. This review was a comprehensive review of the Utility's operation, management, and financial functions. Many improvements were recommended, and Tacoma Solid Waste has developed an implementation plan to ensure that the recommendations are implemented.

Some of the recommendations involved potentially large changes to the collection infrastructure. A summary of some of the recommendations with implications for solid waste collection follows:

- One Side of the Street Collection: Because of the potential collection efficiencies and fuel savings, requiring all customer containers to be placed on one side of the street or alley merits additional review. The Solid Waste Management Division will review this concept and provide recommendations to the stakeholders on whether to implement the change.

- Alternative Recycling and Yard Waste Collection Weeks: Due to the geography and space constraints in Tacoma's neighborhoods, it is often difficult for many solid waste customers to locate their garbage, recycling and yard waste containers 4 feet apart from one another. When the spacing issue is combined with additional obstacles found along many routes, it is difficult for SW Collector Drivers to pick up the containers. Solid Waste Management has determined this is an improvement for both the customer and the Utility, and plans to implement this change in 2007.

- Elimination of Alley Services: Providing collection service in alleys can be difficult and more time consuming. In consideration of the potential of increased efficiency by eliminating alley collection service, it was determined that this concept warranted additional review. The Solid Waste Management Division will review this concept and provide a recommendation to the stakeholders.

- Eliminate Glass Collection: The provision of separate manual glass collection reduces collection efficiency, as a fully automated system cannot be implemented. The Solid Waste Management Division will review the potential savings from eliminating glass collection service and also review the potential savings if other single stream type collection programs could be implemented. A recommendation on whether to proceed will be made to the stakeholders when the review is complete.

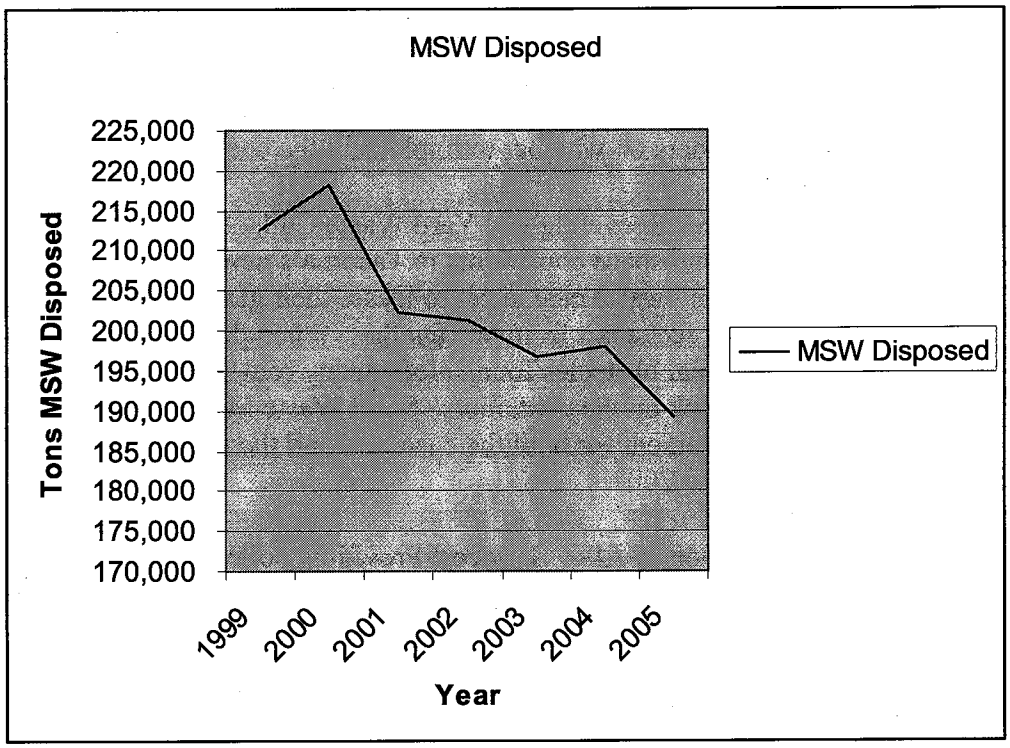
Other potential efficiencies: The Solid Waste Management Division is constantly reviewing strategies to become more efficient. Other strategies not described in the Performance Audit may also be evaluated and potentially implemented. One such strategy is the use of the automated collection vehicles capable of collecting on both sides of the vehicle. This has the potential of achieving some of the same efficiencies as one side of the street collection without impacting the customer.

Drafted: 11/06

Tacoma MSW Disposal

Tacoma disposal:

The City of Tacoma is responsible for the disposal of MSW from its collection and transfer operations. Historically Tacoma has used a variety of means to dispose of garbage, including disposal at the Tacoma Landfill, Waste-to-Energy, rail haul and long haul disposal options. In the last few years, the City has seen a slight decreasing trend in tons of MSW disposed (See chart below).



While this trend is encouraging, there are many factors at work in the trend. First, Tacoma's population grew a total of approximately 3% from 1999 to 2005, so the growth seen in other jurisdictions is not present. One component of this downward trend is the increase in recycling. From 1999 to 2005, the tons recycled by Tacoma operations alone increased by over 20,000 tons per year. The other factor in this apparent downward trend is the loss of some major industrial operations in the Tacoma service area. Major waste generators such as Nalley's Fine Foods, Pioneer ChlorAlkali and Kaiser Aluminum all ceased or greatly curtailed their operations, reducing the amount of commercial and industrial wastes disposed.

Steam Plant closure:

From 1991 to 2001, the Tacoma Steam Plant accepted a portion of the City of Tacoma's MSW waste stream in the form of Refuse Derived Fuel, typically ranging from 20,000 tons per year up to a high of 60,000 tons per year. In

November of 2005, the Tacoma City Council decided to discontinue Public Works' efforts to operate the Tacoma Steam Plant. All of the major permits have been allowed to expire, including the Solid Waste Handling and Incineration permit and the Air Operating permit (Title V).

Current operations: Currently, Tacoma hauls all of its garbage to the LRI landfill at 304th and Meridian. After collection, Tacoma compacts its MSW into 54 foot transfer trailers. Using City owned trailers, tractors and drivers, the MSW is then hauled to the LRI landfill from Monday through Saturday. During the week, 30 to 40 loads per day are typically hauled to the landfill from the Tacoma site.

Tacoma Landfill situation: The Tacoma Landfill currently has one remaining lined cell that is permitted and available for use. If all of Tacoma's garbage was landfilled at the site there is about one year of capacity remaining. The current policy of the City of Tacoma is to preserve the remaining capacity for emergency purposes and for use during the construction of its new transfer station.

The Tacoma Landfill is a State and Federal Superfund site. Part of the cleanup consent decree signed and filed in 1989 specifies the closure date of the landfill. The original closure date was 1999, but the consent decree allowed 3 – five year extensions. Tacoma was granted the second extension in 2004, but it is possible the agencies will be reluctant to allow a third extension in 2009.

Contract disposal capacity: The main disposal option for the City of Tacoma is procured through its contract with Land Recovery Inc. Through this contract, the City of Tacoma's garbage is sent to the LRI Landfill as described above. The contract has a term of 20 years starting from February of 2000. There are provisions to extend the contract.

One of the current uncertainties with this contract is the limitations on Tacoma waste allowed at the LRI Landfill. The Conditional Use Permit (CUP) and Solid Waste Permit restrict the tonnage disposed from Tacoma to 2,000,000 tons over the twenty year period. The primary purpose for this requirement is to preserve the 20 year disposal capacity for the LRI Landfill. Tacoma will reach the 2,000,000 ton limit sometime in 2011, with nine years remaining on the contract with LRI.

Both the CUP and Solid Waste Permit limitations have provisions to remove the 2,000,000 ton cap.

Tacoma Landfill improvements: The City of Tacoma is constantly evaluating methods to extend the life and increase capacity of its existing cell. The current language of the SWMP states "*Continued landfill improvements at the City of Tacoma Landfill are recommended. The City should continue to evaluate all available options to obtain additional landfill space.*" The City will continue to evaluate and pursue all viable options to obtain additional landfill space at the Tacoma Landfill, including design, operational and regulatory avenues.

Tacoma Processing and Transfer Facilities

Changes in Tacoma's solid waste programs: Solid waste handling in Tacoma has evolved rapidly over the last fifteen years. Tacoma's solid waste handling facilities have not always evolved as quickly as the programs, and many of Tacoma's facilities are outdated, inefficient and undersized. Some of the changes include:

• Permanent closing of the Tacoma Steam Plant. This change has impacted both the Steam Plant and the Resource Recovery Facility at the Tacoma Landfill. With the closing of the Steam Plant, the Resource Recovery Facility is now no longer needed in its current form.

• Commingled curbside recycling has replaced source separated recycling for residential customers. This change has altered the use and need of Tacoma's Recycling Facility.

• Safety issues at Tacoma's Transfer Station. As the operations of the Tacoma Transfer Station evolved, it was clear that the tipping area for small loads could not be used as designed. The fall protection issues for both customers and employees were severe enough that direct dumping from the truck tailgate to the transfer station could not be allowed. This has made the transfer station area meant for small loads inefficient.

• Increase in yard waste and related organic materials. The organics program has gone from a few thousand tons per year to well over 25,000 tons per year with a continuing increasing trend. If commercial food waste collection is started, the volume will increase even more rapidly.

Outside processing and disposal contracts: Two specific materials are processed through outside contracts. Tacoma's commingled recyclables are transported directly from route trucks to a local processor, JMK Recycling. This processor sorts and markets the material for Tacoma. Tacoma pays a per ton sorting fee and receives value for the recycled materials that are marketed.

Organic material is processed at the Compost Factory owned and operated by Pierce County Recycling, Composting and Disposal. Both self haul and route truck yard waste is tipped at Tacoma's transfer station and hauled to the Compost Factory where it is processed into compost material.

Tacoma anticipates that both of these services will be handled through outside contracts for the foreseeable future. Because of the expertise and specialized

facilities involved, it is more efficient to use the available resources for these waste streams.

Tacoma's solid waste processing and handling needs: As a result of the changes described above and an ongoing review of operations, Tacoma has identified many potential improvements for its facilities. Some of these improvements and changes include:

- Improved transfer, process, and handling of self haul MSW loads.

- Additional capacity for transfer and processing of MSW, redundant systems for tipping and transfer of large commercial self haul, residential routes and Solid Waste Management commercial collection route waste.

- Improved odor and dust control.

- Improved traffic flow in and out of the various facilities.

- Ability to divert and remove recyclables from disposal stream.

- Ability to tip and transfer commingled recyclables, improved ability to tip and transfer organic wastes, including food waste.

Transfer Station improvements: To address as many of the issues identified as possible, Tacoma has begun working on upgrading its transfer facilities. Because of limited funds, it may not be possible to accomplish all of the objectives. However, it expected that the new or renovated facilities will accomplish a majority of the objectives identified above.

The process now underway is evaluating the needs of the facility, and the next steps will be to design and construct the facility. Funding for many of the improvements has been allocated from a recent bond sale.

Tacoma Waste Processing – Steam Plant

Steam Plant history: The City of Tacoma's Steam Plant 2 is located on an 18-acre site in the Tacoma tide flats near the intersection of Taylor Way and East 11th Street, bordering the Hylebos Waterway. The plant was originally designed to produce electric power using coal as the primary fuel, then expanded and converted to operate on bunker C fuel oil at a later date. In 1991, after a major retrofitting, the plant was permitted to use Refuse Derived Fuel, woodwaste and coal to power the turbines. In 1999, the Tacoma Public Works Department leased the plant from Tacoma Public Utilities and began implementation of the changes that would allow the use of other materials as fuels. Those fuels include roofing tear offs, waste oil, and other industrial waste fuels.

"Temporary" plant closure: The plant was closed in what was thought to be a temporary shut down in late 2001. The closure occurred for a variety of reasons, but some of the primary reasons were delays in permitting, a change in a regulatory interpretation of the site's air permit, and financial viability. In the interim period between September 2001 and 2005, the plant was kept in a "mothballed" state so the plant could begin operations again when needed.

Final closure – 2006: In November of 2005, the Tacoma City Council decided to discontinue Public Works' efforts to operate the plant. Shortly after, Tacoma Public Works returned the plant to Tacoma Public Utilities (TPU). TPU decided in early 2006 that the plant would no longer be used for its intended purpose and has since decided to decommission the plant. All of the major permits have been allowed to expire, including the Solid Waste Handling and Incineration permit and the Air Operating permit (Title V).

Tacoma waste disposal: The closure of the Steam Plant means that Tacoma will not divert from landfill disposal any MSW collected in Tacoma. All MSW requiring disposal will be landfilled, and this has had impacts on the hauling, disposal contracts, and Tacoma handling facilities.

Tacoma Resource Recovery Facility: Tacoma's Resource Recovery Facility's permit objective was to produce fuel for the Tacoma Steam Plant. The closure of the Steam Plant eliminates the need for the extra handling and processing that occurs at the Resource Recovery Facility. In the short term, the Resource Recovery facility will be used in its current form to handle the overflow that cannot be handled by Tacoma's lone compactor facility, the South Compactor. It will also provide temporary backup capability to

handle Tacoma's MSW in the event the South Compactor is compromised or in need of maintenance.

In the longer term, much of the processing and separating equipment will be removed from the Resource Recovery Facility, and the facility will be retrofitted or replaced with modern transfer facilities for MSW. In the best case scenario, the facility is replaced with a facility that will provide redundancy to the South Compactor's function, improve the self haul tipping area, reduce odors and environmental; issues and provide additional transfer capability for new programs such as commercial food waste recycling.

Drafted: 11/06

Tacoma Waste Reduction Programs

Increase in Tacoma programs: In the last six years, Tacoma has increased its efforts related to waste reduction programs and public education. Many of those efforts are partnerships with other entities such as Pierce County and King County, and have evolved into permanent fixtures in Tacoma.

Reuse Programs – Goodwill: The City of Tacoma has entered into a partnership with Tacoma Goodwill Industries to locate an attended donation station at the City's Recycling Center. This was the second agreement of this type in the state, and has been a successful partnership for both parties, as hundreds of tons of material are diverted every year through this partnership. For Goodwill, the site offers many advantages over most of its other drop off sites, such as a covered working area, after hours security, and restroom facilities at no charge to the organization.

Reuse Program – 2Good2Toss 2Good2Toss is an online exchange that is part of a statewide effort to save landfill space and encourage reuse practices. The local version of 2Good2Toss.com is sponsored by the City of Tacoma Solid Waste Management, Pierce County Solid Waste Division, the Washington State Department of Ecology, and I-WasteNot Systems. The exchange is a free online resource to give away or sell (up to $99) your reusable household items and building materials.

The City of Tacoma and Pierce County were among the original jurisdictions in Washington along with the Washington Department of Ecology who were the first users of this commercially developed exchange. It has been a hugely successful tool for waste reduction, as over approximately 300,000 pounds of goods have been exchanged. A large percentage of those materials would have been disposed. Of all of the initial participants, the Tacoma/Pierce County exchange is generally the busiest and most active of the group.

Waste reduction – Waste Free Holidays: Waste Free Holidays is a program developed by King County Solid Waste. Tacoma SWM participated in cooperation with King County, the City of Seattle, and Pierce County. In the Waste Free Holidays program, participating businesses and organizations offer discounts of 15 to 50 percent on music, plays, sporting events, museums, restaurant meals, massages, and much more. The idea is to give experiences instead of gifts that require packaging or wrapping. The Waste Free Holidays program rewards the public for reducing waste, and supports local businesses. The 2005 version of Waste Free Holidays had approximately 75 experience providers participating in Tacoma and over 650 events or experiences were purchased. The value of the experiences totaled over $17,000.

Outreach – Resource Conservation Stewards: Since 2002, Tacoma Solid Waste, in conjunction with other City divisions and departments, has sponsored environmental training for interested persons. The Resource Conservation Stewards program offers 40 hours of free resource conservation training to volunteers from the general public, and in exchange those volunteers will train other citizens on the topics learned. Some of the topics covered include waste prevention and recycling, home composting, natural lawn care and improving water quality. After receiving their training, the volunteers help to staff education booths at various fairs, and special events; teach why they have learned to other interested persons; or help or develop neighborhood events that benefit the environment.

Sustainability – EnviroHouse: Opened in the fall of 2006 at the Tacoma Landfill, the City of Tacoma EnviroHouse is a hands-on showcase of green building and landscape ideas, materials, and techniques to create a healthy home and planet. Featuring the latest advances in green building design and construction, the EnviroHouse will champion the benefits of sustainable living and building practices to homeowners, builders, suppliers, landscapers, real estate agents, and the general public, highlighting readily available products for new and existing homes and yards.

The shell of the house was recycled from Pierce County's GreenHouse exhibit. Visitors will be able to see and touch everything from recycled building materials and furniture, non-toxic building materials, and ways to conserve water and energy both inside and outside the home.

Sustainability –Product Stewardship: Tacoma Solid Waste Management is a member of the steering committee for the Northwest Product Stewardship Council, which is a group of governments who have a common goal of promoting and encouraging product stewardship and producer responsibility. Tacoma has focused on electronic and beverage waste issues, and has actively participated in the efforts to increase the recycling and reduce the environmental impacts of these waste streams when at the end of the product life. Tacoma has also assisted with funding the efforts to address the issue of paint waste disposal.

Sustainability – Global warming leadership: Staff from Public Works and Solid Waste Management have taken leadership roles in Tacoma's effort to address global warming. The Tacoma City Council has passed a resolution that requires City staff to evaluate emissions and identify measures that the City can take to reduce greenhouse gas emissions. Because of past work on the issue, Tacoma Solid Waste Management is responsible for performing the emissions inventories and evaluating potential response measures.

This effort has lead to the formation of two high level commissions to address global warming in the community. The commissions will be formed in 2006 or early 2007, and will be tasked to develop strategies for Tacoma by the end of 2008.

Future programs: Tacoma will continue to evaluate and implement new programs with a goal of reducing waste disposed. Future programs may include neighborhood training on natural yard care, additional outreach programs, and increased recycling.

Drafted: 11/06

Pierce County
Waste Trends & Disposal Projections

I. Municipal Solid Waste (MSW)[1] – Disposal and Recycling

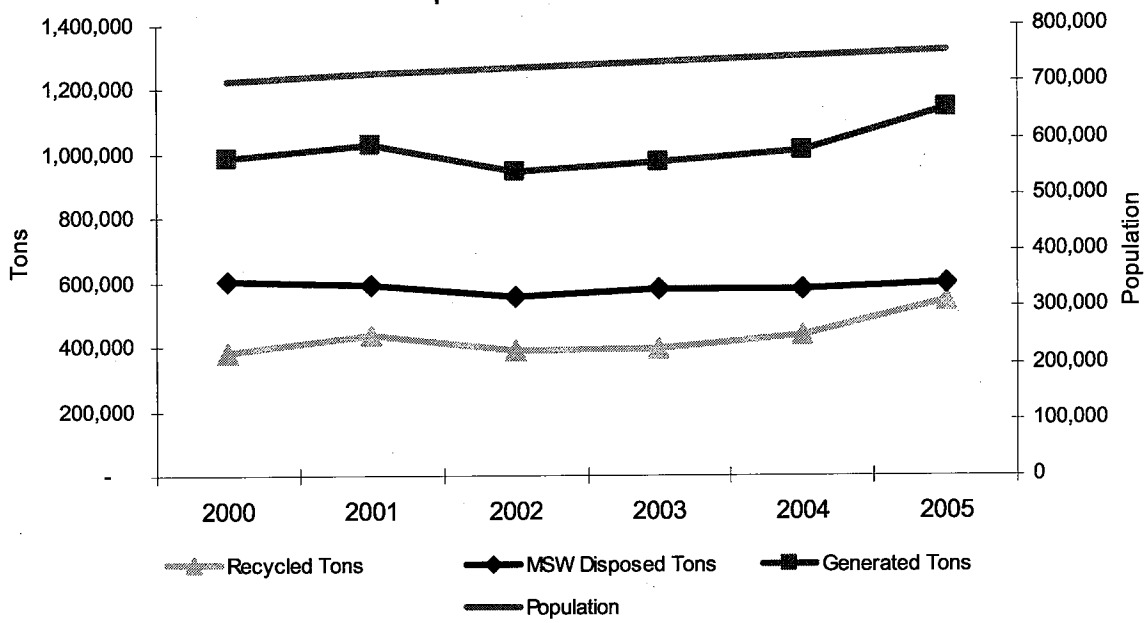
Flat-rate for disposal; increased recycling:

Over the last five years, the amount of MSW tons disposed in Pierce County remained the same each year while recycling tonnage increased. This steady level for disposed tonnage, at or slightly above 600,000 tons[2] per year, was maintained even though population grew by 10.3%. At the same time, the yearly amount of tons recycled increased by 41.3%, from 384,642 tons in 2000 to 543,661 tons in 2005. Disposal and recycling trends are illustrated in Chart 1.[3]

Generally, such a population growth coupled with the strong economy the County has experienced would increase the amount of waste disposed. But in Pierce County the increase in the generated amount was offset by a larger increase in recycled tonnage. Pierce County's recycling rate in 2005 was 47.52% which is nearly 4% above the 2005 state average.

Chart 1. PIERCE COUNTY TRENDS

Unincorporated areas & all cities and towns



[1] MSW – Municipal Solid Waste includes unsegregated garbage, refuse, and similar solid waste material discarded from residential, commercial, institutional and industrial sources. It is collected from the source by solid waste collection companies and it includes the waste self-hauled to transfer stations. All MSW waste is disposed at in-county landfills or exported under contract to out-of-county MSW landfills.

[2] The MSW tons do not reflect all the tons disposed in MSW landfills. MSW landfills also accept other waste such inert debris, petroleum contaminated soils, and other non-dangerous industrial waste.

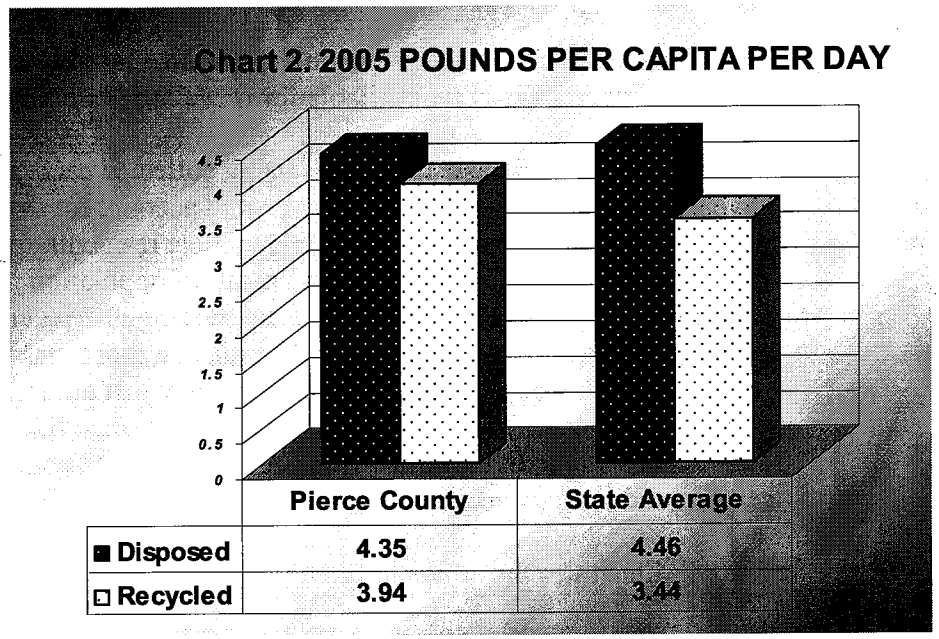
[3] All disposal and recycling data is from the Department of Ecology's annual recycling survey. Population data is from Washington's Office of Financial Management.

Pounds Per Capita Per Day:

It wasn't just recycling that helped to maintain the flat rate of disposal in Pierce County; residents and businesses also decreased the amount of waste they disposed. This is measured by the change in the amount of waste disposed per person per day expressed as "per capita pounds."

Countywide[4], the per capita disposal rate decreased from 4.72 pounds per day in 2000 to 4.35 pounds per day in 2005. Pierce County's 2005 per capita disposal rate is below the EPA national average of 4.5 pounds and the statewide average of 4.46 pounds per person per day. The differences in the rates may seem small but they add up.

The countywide per capita recycling rate in 2005 was 3.94 pounds per day which was more than the statewide average of 3.44 pounds. This is illustrated in Chart 2.



The amount of contracted MSW waste for the Pierce County waste management system increased but the per capita disposed rate remains below the countywide and state rates. This is illustrated below.

Pierce County Contracted MSW	2000	2001	2002	2003	2004	2005
Disposed Tons	317,245	330,685	340,370	362,831	384,645	394,708
Pounds Per Capita Per Day	3.43	3.50	3.52	3.70	3.86	3.88

[4] The per capita rates are based on disposed and recycled tonnage from the entire County, including waste from the Tacoma/Ruston waste management system; all cities and towns and unincorporated areas on the County's waste system; and the military bases.

Yardwaste, paper, cardboard & metals: Four materials made up the largest amount of the increased recycling tonnage – yardwaste, paper (newspaper and mixed), cardboard, and metals (ferrous and non ferrous). Tonnages began to increase in 2003 and mirrored similar statewide increases. Some of this increase was due to improved materials markets for paper, cardboard, and metals. Both foreign and domestic markets created higher prices for these commodities which resulted in recycling increases throughout the state.

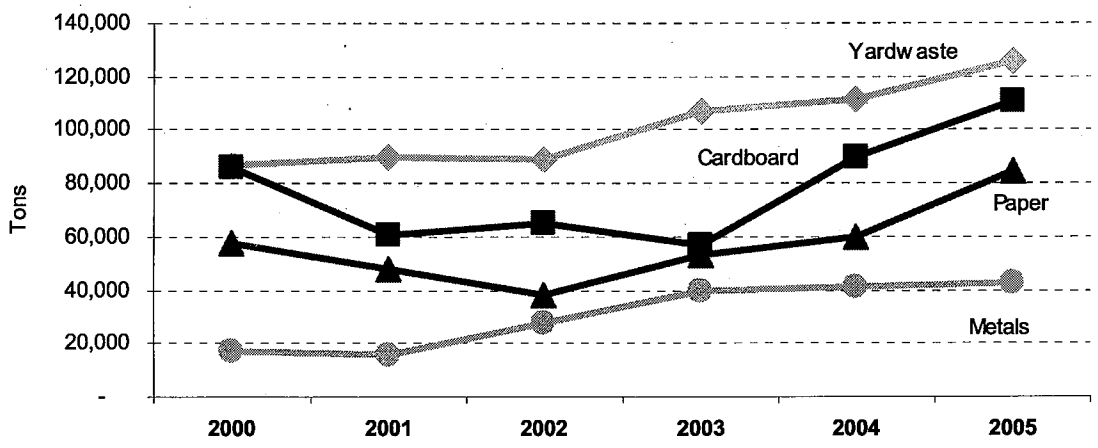
In Pierce County, two of the materials, paper and cardboard, were particularly targeted for collection by the new Single-Cart Residential Curbside Program. This may account for the substantial jump in 2005. The new residential program was only fully in place for the last six months of 2005 but, after a full year of implementation from June 2005 to June 2006, residential households increased their recycling of all kinds of paper by 82%. This trend will likely show up in the State's survey for 2006.

Without an audit of the waste stream there is no way to identify how much more paper commodities may be available for recycling or composting.

More and more yardwaste tonnage is being collected each year. No new programs have been added in Pierce County that could account for this growth. Curbside yardwaste collection has been available to most residents since the early '90's. Part of the increase may simply be the result of population growth occurring in once-rural areas where more residents are moving into recently-built suburban-style housing. Cultural trends seem to be placing more emphasis on landscaping and yard maintenance. These new residents may just automatically sign up for yardwaste collection, accepting it as a part of suburban life. However, a lot of the increase is also the likely result of the recent moderate winters with long growing seasons and more vegetative growth.

Chart 3. illustrates the trends in these four materials from 2000 to 2005.

Chart 3. RECYCLABLES TONNAGE
Yardwaste, Cardboard, Paper, & Metals



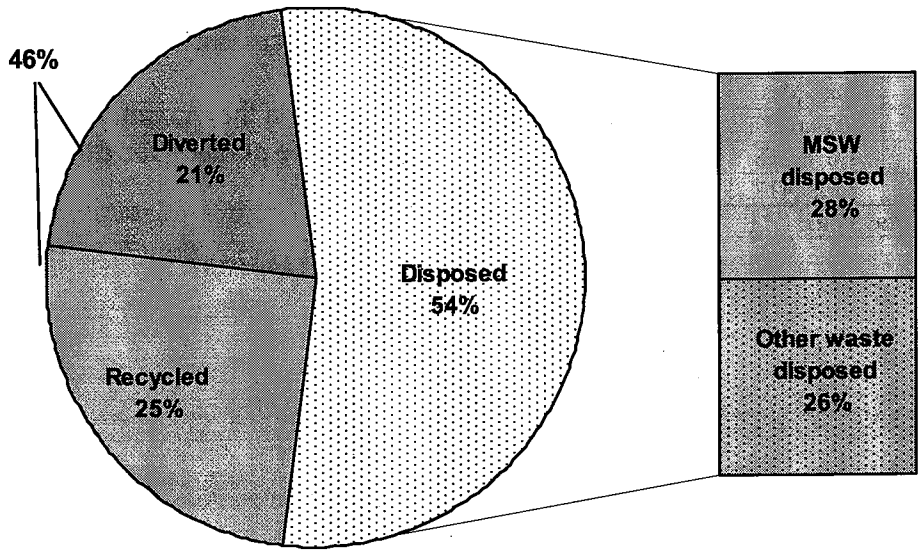
II. Diversion rates and other disposed waste

Diversion of other materials: Pierce County industries divert a substantial amount of materials that aren't counted in the traditional "recycling" rate. These materials include such things as asphalt, concrete, other construction, demolition and land clearing debris, and similar types of waste. Most of this material is recycled, reused, or burned for energy recovery. In 2005, industries diverted 459,012 tons. Pierce County's diversion rate in 2005 was 46.2%.[5]

The Washington Department of Ecology began tracking this non-traditional waste in 1999 when there was a growth in industries which recycle asphalt, concrete, and other construction and demolition debris. At the same, counties and cities began putting more efforts into diverting these waste streams which were outside the traditional municipal solid waste stream. Ecology's annual report indicates that some of the materials "require minimal or no processing for reuse, resale, or land application (in the case of organic materials.)" but the sector has not been well characterized or historically tracked so it can't be included within the recycling rate.

Chart 4. depicts the total generated waste stream for Pierce County and the 46.2% diversion rate for 2005.

Chart 4. 2005 PIERCE COUNTY DIVERSION RATE



[5] This percentage is based on including all waste recycled, diverted or burned for energy recovery and all types of collected and disposed waste in Pierce County, including MSW waste and 'non-MSW' waste from inert and demolition landfills. It also includes all industrial-type waste disposed in the MSW landfills.

III. Disposal Projections

Capacity needs: For the purposes of projecting long-term capacity needs for MSW[6], Pierce County maintains a 20-year forecast for the entire County, including the military and the Tacoma waste management systems. It is updated each year and checked against official population increases and actual disposed MSW and non-MSW tonnages, such as dredge spoils, contaminated soils, and other WDA materials.

Chart 5. Maximum Needed MSW Tonnage Capacity

Year	Population	MSW Tons (4.5-lbs)
2008	805,520	661,533
2009	820,826	674,103
2010	836,688	687,130
2011	849,082	697,309
2012	862,209	708,089
2013	874,889	718,503
2014	887,277	728,676
2015	899,190	738,460
2016	908,249	745,899
2017	918,396	754,233
2018	928,403	762.451
2019	938,254	770,541
2020	947,923	778,482
2021	958,909	787,504
2022	969,156	795,919
2023	979,364	804,303
2024	989,531	812,652
2025	999,657	820,968
2026	1,010,268	829,683
2027	1,020,417	838,017
Total Tons:		**15,114,456**

The forecast is based on using historical waste disposal data and population projections.[7] It represents long-term trends but does not include projections of short-term or seasonal patterns.

Chart 5 is the No Action Scenario. It represents the tonnage needed if the County and the cities do not reduce the amount of waste generated or increase the recycling rate beyond the existing 50% rate. Projections use a conservative assumption of a constant per capita MSW disposal rate of 4.5 pounds per day. This is the same as the national EPA disposal rate and is slightly higher than the current 2006 Pierce County and State disposal rates. This conservative approach ensures that sufficient capacity has been planned in case the population grows faster or if the disposal rate increases.

Chart 5. projects the maximum MSW disposal capacity that needs to be planned for from 2008 to 2027.

Drafted: 10/12/06
Revised 12/12/07

[6] The projections are solely for contracted municipal solid waste (MSW). A substantial amount of non-MSW waste is disposed at the LRI Landfill. This data chart replaces Table 8-2 of the Solid Waste Management Plan.
[7] The population projections are based on adopted Washington's Office of Financial Management (OFM) projections used for the purposes of land use planning by Pierce County and all cities and towns.

Residential Waste Trends

Unincorporated areas & all cities and towns, except Tacoma and Ruston

Disposed pounds per household:

In 2005, as residents increased their recycling rate with the new Single-Cart Recycling Program, they began disposing less in their garbage cans. The impact of the new program is illustrated in Chart 1 where households went from disposing 185 pounds per month during 2004 to 165 pounds per month in the first months of 2005. During the first two full years of implementation they are disposing about 149 pounds per month. Chart 2 is from the One Year Analysis of the Single-Cart Program and illustrates the trend downward during the first full year.

Chart 1. DISPOSED POUNDS PER MONTH PER HOUSEHOLD

Unincorporated areas and cities and towns, minus Tacoma and Ruston

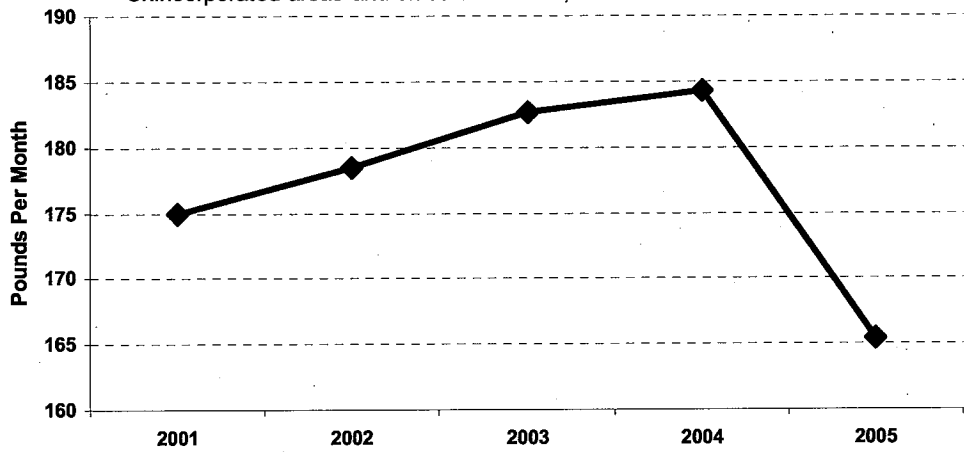
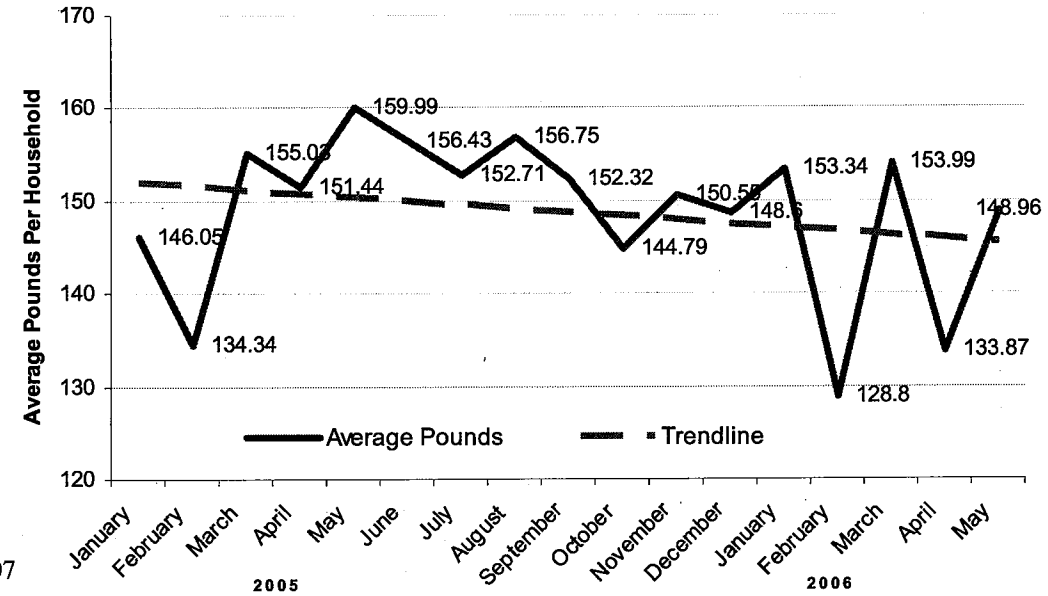


Chart 2. DISPOSED POUNDS: Average Pounds Per Month

(Garbage from recycling and non-recycling households)



Revised: 9/24/07

Resource Efficiency, Climate Change, and Landfill Gas [8]

Summary: The U.S. Environmental Protection Agency (EPA), which determines the regulations for controlling emissions from landfills, advocates the beneficial re-use of landfill gas for energy production. EPA has identified landfills as the largest source of human-related green-house gas emissions in the U.S. and estimates that a landfill gas project will capture 60-90% of the methane emitted from a landfill. Washington's landfill design, permitting, and operating requirements incorporate the EPA standards. Under these regulations, new gas management technologies must demonstrate they meet or exceed emission standards before they can be determined to be Best Available Control Technologies (BACT) for controlling odor and air emissions.

Energy recovery and conservation is also a priority of the State's Solid Waste Management regulations, RCW 70.95, and has been a long-term overall goal of the *Tacoma-Pierce County Solid Waste Management Plan* since it was first adopted in 1989. For an energy conservation project to be added to the existing gas management system at the LRI Landfill, operators of the landfill would need to submit a specific proposal that demonstrated it met emission standards and get approval from the Tacoma-Pierce County Health Department (TPCHD). They would also need to meet the land use permitting requirements of the recently adopted *Graham Community Plan.*

I. Landfill Gas

Decomposition: Landfill gas - primarily a mixture of about 50% methane and 50% carbon dioxide and water vapor- is produced when refuse decomposes anaerobically (in the absence of oxygen) within the landfill. Small amounts of nitrogen, oxygen, hydrogen, non-methane organic compounds (NMOC), and trace amounts of inorganic compounds are also found in landfill gas. Some of these trace compounds, such as hydrogen sulfide, contribute to the pungent odors that many people associate with landfills. NMOC contains volatile organic compounds (VOC), which contribute to smog and hazardous air pollutants (HAP), which can impact human health. Methane can be explosive if not properly controlled.

Treatment: Thermal treatment of methane and NMOC through flaring or combustion in an engine, turbine, boiler or other device greatly reduces the emissions of these compounds. Another benefit of combustion is that it converts the organic mercury

[8] Source documents for this briefing paper are from the methane recovery and climate change web pages of the Office of Solid Waste of the U.S. Environmental Protection Agency (www.epa.gov/osw/); the 1989 Final Environmental Impact Statement (FEIS) to the *Tacoma-Pierce County Solid Waste Management Plan*; the 2006 FEIS to the *Graham Community Plan; The Law of Solid Waste Pollution, Prevention, and Recycling* (2006 edition, Thomson/West publishers); or from the web pages of the Solid Waste Association of North America (www.SWANA.org).

compounds to less toxic, less hazardous inorganic mercury compounds. (Sources of mercury in MSW landfills can include batteries, fluorescent light bulbs, electrical switches, thermometers, paints, and electronic products.)

EPA regulations: The U.S. Environmental Protection Agency regulates emissions from landfills under the authority of the Clean Air Act for the purposes of public health and safety, pollution prevention/air emissions, and odor control. The Act requires that EPA regulations be based on standards of performance, rather than to specify types of technologies. This allows for flexibility over time as new, more efficient technologies or equipment are developed which meet and improve upon the performance standards. When a new technology is proposed for a specific site, it must "demonstrate" that it meets or exceeds the emission performance standards.

These are the rules under which the Washington Department of Ecology and the Puget Sound Clean Air Agency receive much of their authority. Washington's rules for landfill design and permitting incorporate the EPA criteria under WAC 173-351 Criteria for Municipal Solid Waste Landfills.

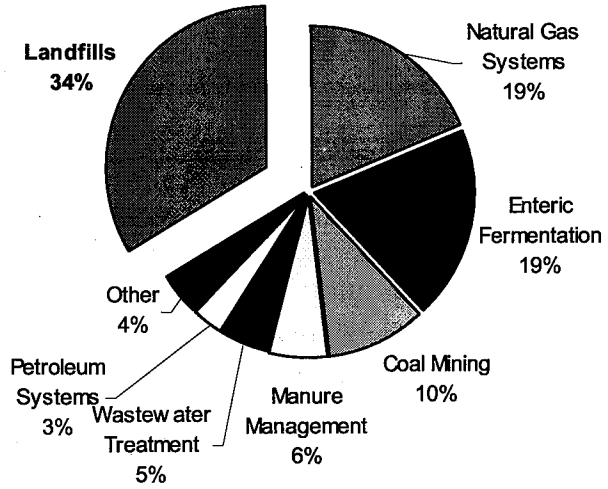
Standard landfill gas control methods: To control gas migration and reduce emissions, all landfills are required: to be lined; to install gas collection systems; and to combust the gas. In addition, the regulations require monthly monitoring at each collection well, and monitoring of surface methane emissions to ensure the collection system is operating properly. The standard method that landfills have used to meet these regulations is by using flares or energy recovery devices, including reciprocating engines, gas turbines, and boilers.[9]

II. Climate Change

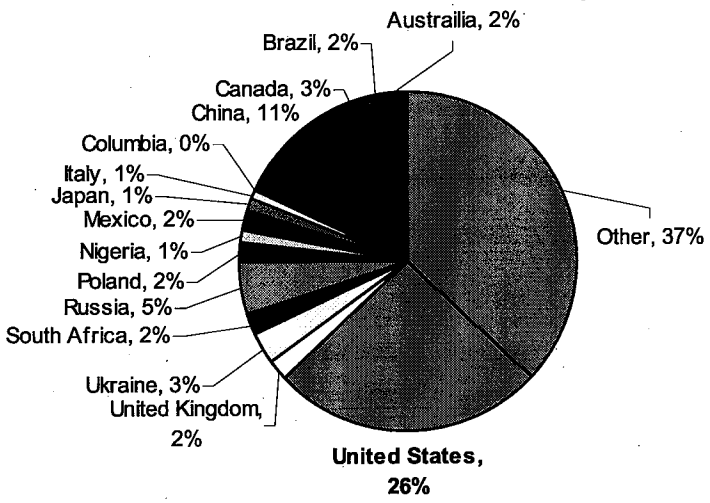
Landfill methane: According to EPA, "municipal solid waste landfills are the largest source of human-related methane emissions in the United States, accounting for about 25% of the emissions in 2004." Emissions from all types of landfills in the U.S. account for 34%. U.S. landfills accounted for 26% of the global landfill methane emissions measured in 2000. These percentages are illustrated in the following EPA charts.

[9] According to the 1989 FEIS to the *Tacoma-Pierce County Solid Waste Management Plan,* page 14, the regulations "require the installation of gas collection systems" and " these systems must be designed to prevent the accumulation of explosive landfill gases at the site and to prevent the migration of these gases off-site. Collected gas must either be purified for sale or burned on-site (flared.)". This is also reiterated in Chapter 8 Landfilling in the *Tacoma-Pierce County Solid Waste Management Plan*, page 8-4.

U.S. 2001 Methane Emissions by Source
U.S. Environmental Protection Agency



Global Landfill Methane Emissions in 2000
U.S. Environmental Protection Agency



What is the concern?

Methane (CH_4) is a greenhouse gas that remains in the atmosphere for approximately 9-15 years. Methane is over 20 times more effective in trapping heat in the atmosphere than carbon dioxide (CO_2) over a 100-year period. Once in the atmosphere, methane absorbs terrestrial infrared radiation that would otherwise escape to space. The major human-influenced sources include landfills, natural gas and petroleum systems, agricultural activities, coal mining, stationary and mobile combustion, wastewater treatment, and certain industrial processes.

Both the second and third assessment reports of the Intergovernmental Panel of Climate Change (IPCC) to the United Nations (for its *Framework Convention on Climate Change*) identify impacts of methane on global warming and that "methane's potency" and "relatively shortened lifetime" make it a candidate "for mitigating global warming." [10]

Energy source and economic value:

Methane has value as a prime constituent of natural gas and as an important energy source. According to EPA, efforts to utilize methane emissions can produce significant energy, economic, and environmental benefits. Many companies are working with EPA on voluntary efforts to reduce methane emissions and convert it to energy under the umbrella of EPA's membership in the international Methane to Markets Partnership. The Partnership's major focus "is on cost-effective, methane recovery from four major methane sources: **landfills**, underground coal mines, natural gas and oil systems, and animal waste management." *[Emphasis added.]*

[10] Source: Methane discussion on the U.S. Environmental Protection Agency Office of Solid Waste website: www.epa.gov/outreach/lmop/index.htm

III. Resource Efficiency

Landfill Methane Outreach Program:

Although EPA still considers flaring as an approved method of meeting emission requirements, the agency revised the guidance it provides to regulators, operators, and the public in the mid-1990's. It created the Landfill Methane Outreach Program (LMOP) in 1994 though which it advocates the beneficial re-use of landfill gas for energy production. The program helps participants to develop or participate in landfill gas energy projects (LFG) by providing information, software tools, marketing assistance, and access to technical experts.

Both EPA and the Solid Waste Association of North America (SWANA) credit modern methods of waste management (including waste prevention, recycling, alternative fuels for waste vehicles, and landfill gas management) with dramatically dropping greenhouse gas emissions from MSW activities. According to SWANA, methane being produced from municipal waste activities is 54% lower than in 1970, even though MSW disposal volumes doubled from 1970 - 2003. EPA also documents waste management successes in reducing greenhouse gases.[11]

Meeting performance standards:

EPA estimates that an "LFG project will capture 60-90% of the methane emitted from a landfill, depending on system design and effectiveness. The captured methane is destroyed (converted to water and the much-less potent CO_2) when the gas is burned to product electricity." EPA has a LFGE Benefits Calculator on its website which can be used to estimate greenhouse gas reductions from different types of LFG projects.[12]

EPA estimates that "in 2004, more than 375 operational LFG energy projects in 38 states supplied:

- 9 million kilowatt hours of electricity, and
- 74 billion cubic feet of LFG to end users."[13]

The agency has identified 590 more operating and closed landfills that would be suitable for LFG energy projects. Not all types of landfills are suitable for retrofit energy-generating or gas conversion technology.

LFG technologies:

The projects supported by the EPA are for electricity generation, direct-use, co-generation, and alternate fuels. There are a variety of types of technical equipment used. No one type of technology is suitable for every landfill. Each project must be designed for the particular local circumstances, location, and how a landfill was first designed and built.

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[11] U.S. Emissions Inventory 2005: Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2003, EPA.
[12] Landfill Methane Outreach Program (LMOP), www.epa.gov/outreach/lmop/index.htm.
[13] EPA brochure: "Green Power from Landfill Gas."

For electrical energy generation, equipment may include internal combustion engines, turbines, micro turbines, external combustion engines, or fuel cells. The vast majority of the projects use internal combustion (reciprocating) engines or turbines, with micro turbines technology being used at small landfills. (Micro turbines, however, can be linked together for larger projects.)

Direct use of LFG to offset the use of other fuels occurs in about one-third of the projects. Technology equipment can be a boiler, dryer, kiln, greenhouse, or other thermal applications.

Co-generation projects generate both electricity and thermal energy, usually in the form of steam or hot water. Several projects use both engines and turbines.

Alternative fuels – Landfill gas has been converted to vehicle fuel in the form of compressed natural gas (CNG), or liquefied natural gas (LNG) has been delivered to a natural gas pipeline. Most of these applications require equipment to "scrub" or clean the gas from impurities, pipes, and storage tanks.

Federal and State energy policy incentives: The Renewable Electricity Production Credit is a federal tax credit for electricity generated by qualified energy resources, including landfill gas. The credit has been extended and renewed a number of times since its inception in 1992. It is currently set to expire in 2008. SWANA is actively supporting extension of the credit and other incentives for renewable resources, citing "significant reductions" in greenhouse gas emissions "from modern solid waste management systems." [14]

Landfill gas management projects are listed as renewable energy projects in a number of bills passed by the Washington Legislature in 2007 to encourage the use of cleaner energy.

IV. LRI Landfill and Legislative and Solid Waste Plan priorities

LRI Landfill: The gas management system at the LRI Landfill is the standard BACT method most frequently used by landfills in the U.S. to meet the emission standards. The flare maintains 98% destruction of emissions and surface monitoring of emissions shows the site to be in compliance with emissions requirements. This system is described in the FEIS to the *Graham Community Plan:*

> "Currently the LRI Landfill captures landfill gas with a series of gas extraction wells. The gas is transported via network of headers (pipes) to a flare system at the landfill and the flare destroys the gas through combustion. This system is authorized by the Conditional Use Permit issued by Pierce County for the landfill (CP 8-89) as well as by the Solid

[14] Letter to Chairman John D. Dingell, Committee on Energy and Commerce, U.S. House of Representatives (March 19, 2007).

Waste Handling Permit issued by the Tacoma-Pierce County Health Department."

.....

"The Solid Waste Permit issued by TPCHD requires the LRI Landfill to "utilize the best available control technologies (BACT) as proposed in the approved Plan of Operation and as may be defined in the future by the Department, Ecology, and Puget Sound Clean Air Agency (PSCAA)....."

.....

"The Tacoma-Pierce County Health Department has consulted with the Puget Sound Clean Air Agency, the Department of Ecology, and the Environmental Protection Agency and concurs, that, in general, energy production from landfill gas is a best available control technology. Final determination regarding BACT can be made only upon review of a specific proposal by the landfill operator." [15]

LRI is exploring the next step in control technologies which includes possible conversion of landfill gas into compressed natural gas or liquid natural gas for use as a vehicle fuel.

The *Graham Community Plan* allows new uses for generation of electricity or conversion of landfill gas to a useable fuel product if the Health Department "determines this method as a Best Available Control Technology for the control of odor and air emissions from...."[16]

Closed landfills: Flare systems were installed at both the closed Purdy and Hidden Valley Landfills. Methane production at the Purdy Landfill has substantially dropped and the flare is only operated intermittently. No studies have been done to evaluate the potential for LGF projects at Purdy. An electrical generating system was installed at the Hidden Valley Landfill.

Most of the older landfills in Pierce County were closed before gas management and other design and operating standards were required so it is unlikely that gas management projects could be installed. The Tacoma-Pierce County Health Department monitors these sites.[17]

Legislative priorities and Solid Waste Plan Goals: When the Legislature adopted the "Waste Not Washington Act" (now codified as RCW 70.95) it included the need to address energy shortages and made energy recovery a priority of solid waste regulations following only waste reduction and recycling and prior to incineration and landfilling.[18] Energy conservation has always been a major overall goal of the *Tacoma-Pierce County Solid Waste*

[15] FEIS, Graham-Community Plan (September 2006), pages 27 and 28.
[16] FEIS, Graham Community Plan (September 2006), page 25.
[17] Chapter 8 Landfilling, page 8-10
[18] Legislative Findings, Solid Waste Management Regulations, RCW 70.95.010

Management Plan since it was first adopted in 1989.[19] In addition, the Plan contains a number of goals supporting actions that "provide for the maximum protection of human health and the environment" in Chapters 1, 6, and 8.

Drafted: 4/11/07
Revised: 12/31/07

[19] Chapter 1 Introduction, *Tacoma-Pierce County Solid Waste Management Plan*, page 1-8.

Landfill Status and Disposal Alternatives

Municipal Solid Waste (MSW) generated within Pierce County

Summary: During the last five years, decisions by the three waste management systems in Pierce County – City of Tacoma, the military bases, and Pierce County – have stabilized the ways municipal solid waste is disposed and ensured long-term disposal capacity for the residents and businesses of Pierce County. At the same time, other disposal options previously evaluated are more limited because of changes in state law and increasing costs.

I. Capacity projections and facility status

Capacity needs: Pierce County has sufficient in-county disposal capacity for the next 20-23 years to handle municipal solid waste (MSW) from the County, Tacoma, and the military's waste management systems, contingent upon the landfill facility building out to its permitted site design and size and only limited use of the landfill for the disposal of non-MSW waste streams.

Waste from all three waste management systems in Pierce County is disposed in the privately-owned LRI Landfill.[20] Each system operates under separate contracting authorities. Fort Lewis chose to landfill the Fort's and McChord Air Force Base's waste rather than to continue pursuing waste-to-energy as a disposal option. Tacoma discontinued use of the Steam Plant.

Projected needed MSW capacity for the twenty-year period from 2008 through 2027 is 15,114,456 tons.[21] The following table projects needed tonnage for three important decision time periods including: the amount from 2008 to 2011 when Pierce County's current contract expires; to 2016 when the landfill's 10 year Solid Waste Permit will need to be re-evaluated; and the total for the end of the 20-year planning period in 2027.

Chart 1. Projected MSW Capacity Needs For Three Waste Management Systems	
2008 – 2011	2,720,075 tons
2008 – 2016	6,359,702 tons
2008 – 2027	15,114,456 tons

[20] The landfill is owned by Pierce County Composting, Recycling, and Disposal LLC, dba LRI (dba means "doing business as" LRI).

[21] Needed capacity projections are based on population projections from the Washington Office of Financial Management (OFM) and on a conservative constant per capita disposal rate of 4.5 pounds per day for municipal solid waste. The projections are solely for contracted municipal solid waste (MSW). A substantial amount of non-MSW is disposed at the LRI Landfill.

Essential services: The County and the cities and towns are required to ensure there is sufficient MSW disposal capacity for 20 years for whatever population exists and are also required to provide for back-up disposal capacity. The LRI Landfill is identified in the County's Comprehensive Land Use Plan, Capital Facility Plan, and Solid Waste Plan, as providing the necessary required capacity and, along with the transfer stations, as providing essential services for waste management in the County. The landfill is recognized with an Essential Public Facility Overlay in the Graham Community Plan.

Contract: Pierce County contracts with LRI to provide MSW waste handling and disposal services to residents and businesses of unincorporated Pierce County as well as to the residents and businesses of the cities and towns who have signed interlocal agreements with the County to participate in the Pierce County disposal system. The contract extends to 2011 and allows for some waste export out-of-county.

Pierce County decided in 1991 to select in-county landfilling as the disposal option combined with continuing aggressive development of waste reduction and recycling programs and the development of a County-owned yardwaste facility (Ordinance #91-126). This disposal decision was made after an extensive evaluation of a number of alternatives, including waste-to-energy, waste export, composting of municipal solid waste, and other alternative processing technologies. [22]

LRI Landfill status: In March 2006, the Tacoma-Pierce County Health Department re-issued the LRI Landfill's Solid Waste Permit, extending it ten years to February 2016.

The landfill, located at 304th and Meridian, is projected to have an operating life extending to 2028.[23] In 2005, the Washington Department of Ecology identified the LRI landfill as providing 11% of Washington's landfill disposal capacity.[24] At full build-out the landfill has a total ultimate capacity over its entire life of 26.9 million tons. [25]

The landfill is on a 320-acre site with 66.8 acres currently developed for waste disposal. There are approximately 80 acres set aside for wetland mitigation. The wetland mitigation plan for the landfill includes one, three, five, and ten-year performance standards which are monitored by a third-party consulting firm. The most recent monitoring reports are available from the Health Department. Mitigation and buffering areas are reserved and restricted from waste disposal.

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[22] For more detailed information about all the studies, reports and RFP processes, please refer to Chapter 1, the front section of Chapter 8, and Appendix E of the Year 2000 *Tacoma-Pierce County Solid Waste Management Plan.*
[23] Tacoma-Pierce County Health Department, LRI Landfill Solid Waste Permit Re-Issuance Application, pg. 9.
[24] Fourteenth Annual Status Report, Solid Waste In Washington State, Washington Department of Ecology, pg. 113.
[25] 2006 Solid Waste Permit, Tacoma-Pierce County Health Department. The capacity is estimated "air space" and is based on a number of factors such as compaction density or on how leachate is collected and used. For more detail and information about how capacity is estimated, contact the Tacoma-Pierce County Health Department.

The Solid Waste Permit authorizes a total of 168 acres for disposal cells (landfilling), contingent upon the relocation of Woodbrook Road. According to the Health Department, the southern area "was included in the original proposal and approvals," and development of cells in this area would "not represent an expansion." No modification of the solid waste permit would be required if LRI succeeds in obtaining rights to relocate the road and complete development of the southern portion of the site.[26] There are no plans to expand the facility beyond the boundaries and height approved in its Solid Waste and land use permits. The land use Conditional Use Permit (CUP) also approves the use of the southern portion of the site for additional cells.

The LRI Landfill is identified as an essential public facility in the Pierce County Comprehensive Plan and the Capital Facility Plan. It is recognized in the Graham Community Plan with an Essential Public Facility – Solid Waste Overlay.

Limitations: Two limitations within the facility's Solid Waste Permit help to preserve long-term disposal capacity: 1) a 'cap' limiting the disposal of waste generated within the City of Tacoma and 2) a prohibition on out-of-county waste.

The cap limits the landfill to accepting a total of 2 million tons from the City of Tacoma over the initial 20 years the facility is in operation. It was written to ensure sufficient capacity for MSW waste from the Pierce County waste management system if Woodbrook Road was not moved and the ultimate capacity was limited. If the road is relocated, the need to limit the amount of Tacoma waste is unnecessary. The cap can be lifted if the Solid Waste Management Plan "is amended to expressly allow additional, or unlimited, waste disposal by the City of Tacoma."[27]

Both the Solid Waste Permit and the land use permit restrict the LRI Landfill from accepting waste from outside the county. Both permits must be amended before this restriction could be changed. The Plan requires that impacts to the system must be addressed during the public amendment processes for these permits and must be reported to the County Council. Besides environmental and land use issues, capacity would be an important impact to evaluate.

Monitoring of capacity: The Health Department, Pierce County, the City of Tacoma, and LRI work together to monitor capacity and evaluate needed future capacity based on population growth and each year's disposed amounts. As part of its permit requirements, LRI provides the Health Department and the Solid Waste Division with an Annual Report which identifies the quantities of different types of waste received. Tacoma works with the Health Department to identify annual amounts

[26] Tacoma-Pierce County Health Department, LRI Landfill Solid Waste Permit Re-Issuance, pgs. 9 & 39.
[27] LRI Landfill Solid Waste Permit Re-Issuance Application, pg. 38.

of MSW waste delivered to the facility.[28] Both the Health Department and the Solid Waste Division staff frequently are on-site to monitor operations.

For non-traditional waste, the Health Department has established a waste screening process to prevent "dangerous" waste or hazardous waste going into the landfill. Other wastes, such as petroleum contaminated soils, industrial sludge, certain types of ash and similar materials, are required to have a Waste Disposal Authorization (WDA). The Health Department, Pierce County Solid Waste Division and LRI coordinate on a review process which identifies from which waste management system the waste comes. This helps to monitor long-term capacity and ensures no waste comes from out-of-county. *[For additional information about this process, please review the briefing paper on WDAs.]*

II. Alternatives – new limitations

Siting criteria and increasing costs: Two changes substantially impact disposal alternatives previously evaluated in past planning studies. One is a change to state law which substantially limits the possibility of siting any new MSW landfill in Pierce County. The other is the increasing costs and fluctuating conditions of rail transport.

Siting a new landfill or long-hauling by rail or trucks to a facility in another part of the state or out-of-state are the major remaining disposal alternatives previously studied and discussed in the Plan.[29] Costs and the lack of flow control were the main negatives.

Sole-source aquifer: When added to other siting criteria in state regulations,[30] legislation restricting development of any new landfill from being located over a sole source aquifer eliminates nearly all potential landfill sites in Pierce County. Three of the five potential sites identified in the now out-of-date *Pierce County Landfill Siting Study* were located within the Central Pierce County Aquifer System designated by the U.S. Environmental Protection Agency (EPA) as a 'sole source aquifer.'[31]

The legislation adopted in 1999 restricts "each landfill facility whose area at its design capacity will exceed one hundred acres and whose horizontal height at design capacity will average one hundred feet or more above existing site elevations...." from being located over a sole source aquifer (RCW 70.95.060). Washington courts determined this restriction does not apply to the LRI Landfill.

It would not be economically efficient to build any new MSW landfill smaller than 100 acres which eliminates any practical consideration for new facilities.

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[28] For more information about the reporting requirements and the annual amounts from Tacoma, please refer to the LRI Landfill Solid Waste Permit Re-Issuance Application, pg. 55.

[29] *Tacoma-Pierce County Solid Waste Management Plan*, Chapter 8, pages. 8-7, 8-10, 8-19 through 8-22.

[30] WAC 173-351 Criteria for Municipal Solid Waste Landfills.

[31] Please refer to the briefing paper on the Central Pierce County Aquifer System for more information about the sole source aquifer. Information can also be found in Chapter 2 of the Solid Waste Plan, beginning on pg 2-3.

Other aspects of the County's landfill siting study are also out-of-date regarding allowed land uses and the availability of individual sites.

Long-haul by rail: Many of the previously studied issues related to the positive aspects of long-hauling by rail to another in-state or out-of-state MSW landfill remain the same but infrastructure capacity limitations and the rail industry's priorities are driving up the cost.

Many of the counties and cities in western Washington are now long-hauling and strains to the system are showing up as needs are beginning to surpass infrastructure and rail traffic continues to grow. The railroad industry's priorities are focused on moving more profitable cargo instead of garbage and there is no planning focus on providing more rail line infrastructure, either from the Federal government or the rail industry.

Garbage, unlike other cargo, needs a steady, reliable transport system. It can't just sit in containers for long periods waiting for other trains to pass and free up the rail lines. The reliability of rail transport fluctuates. Some counties are experiencing problems with trains not showing up or passing through and not stopping. Thurston and Snohomish County have had particular problems with lack of containers and the railroad's priorities to get the containers back to Seattle. The rule-of-thumb for the amount of containers needed use to be that three containers were needed per unit volume in order to ensure sufficient container capacity at the time it was needed. Some counties now think that 4-6 containers are needed per unit of volume. Both the crowded rail lines and the cost for more containers are making such a system more expensive.

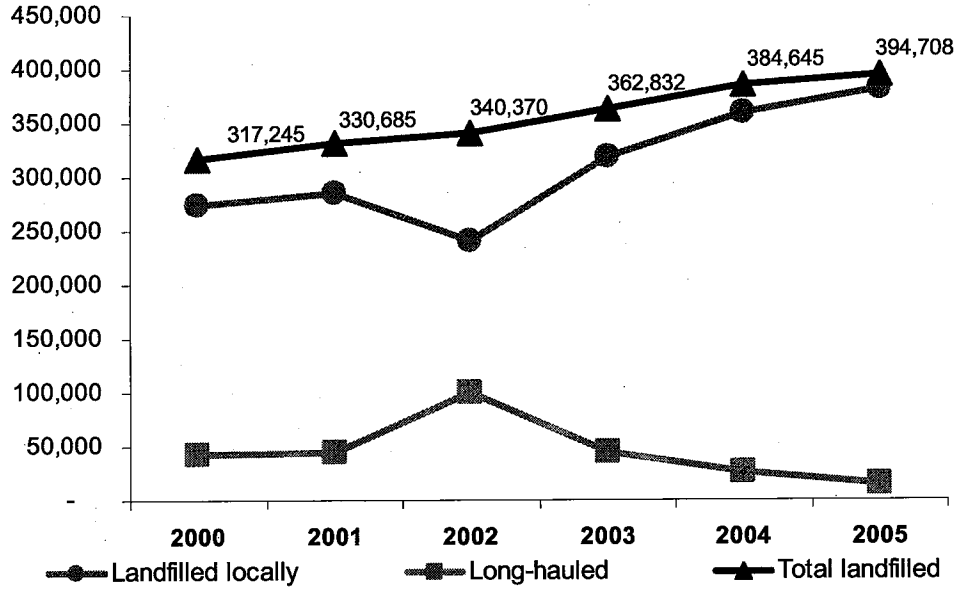
Long-haul by truck: Truck haul still remains a viable option however the rising costs of energy are driving up the cost of this option as well. Any new study of long-haul alternatives needs to take into account the rising costs of rail and truck haul; capacity limitations; back-up needs in case of emergency situations; and the availability of other landfills.

The Roosevelt Regional Landfill in Klickitat County provides 79% of the State's long-term capacity according to the Department of Ecology. It and three other landfills in Oregon provide potential for long-haul disposal. Pierce County's contract allows for long-haul to the Roosevelt Regional Landfill. In 2005, about 3.5%, 13,919 tons, of the waste disposed under contract by Pierce County was exported to Roosevelt. Chart 1 illustrates export tonnage on the following page.

Emergency backup issues: One of the problems with rail haul is that alternate transportation or routes are necessary when heavy rains, snow, flooding, or other factors interrupt transport. Sometimes a single event could incapacitate both the primary and backup methods, leading to the need for short-term storage at transfer stations and/or

long-haul vehicles, or for disposal at backup landfills (locally, or at other regional landfills which are not affected by the transportation disruptions.)

Chart 1. CONTRACTED MSW TONNAGE
Pierce County Waste Management System



There are only three landfills in western Washington with more than one but less than 10 years capacity. The publicly-owned Cedar Hills Landfill in King County provides for 5% of the State capacity but is scheduled to close within a decade. The City of Tacoma's landfill has a year's worth of capacity for Tacoma's disposal needs if the City chooses to use it.

Flow control:

Flow control remains a problem for any county wanting to change to a long-haul alternative, particularly for a county such as Pierce County with a legally permitted and operating landfill with sufficient long-term disposal capacity. A lack of flow control may result in higher overall rates to users if fixed costs or contractual obligations cannot be met.

Flow control refers to the ability of local governments to control the delivery of waste generated within a given geographic area to a specific facility, thereby providing the ability to guarantee delivery of wastes. The United States Supreme Court in a 1994 decision limited local government's ability to control the flow of waste.[32]

[32] For more detail about flow control issues and the Supreme Court's decision, please refer to Appendix F of the Year 2000 *Tacoma-Pierce County Solid Waste Management Plan.*

III. Inert and Limited Purpose Landfills

Definitions and permitting: With the adoption of new Solid Waste Handling Regulations, WAC 173-350, there have been some changes to definitions which, for permitting purposes, consolidate types of landfill facilities into inert landfills, limited purpose landfills, and ash landfills.

Because of this consolidation, the Pierce County zoning regulations are out-of-date. Many different types of landfills that were permitted under older solid waste regulations are allowed in a variety of zones. To reduce conflicts between zoning and the solid waste permit processes and to coordinate solid waste siting criteria with land use siting criteria, amendments to the zoning code definitions were proposed to the County Council in September 2007.

Any waste that is inert and meets the criteria in WAC 173-350-990 may go in an inert waste landfill. This would include any demolition-type materials that "have not been tainted, through exposure from chemical, physical, biological, or radiological substances, such that it presents a threat to human health or the environment....." [33] This might include such materials as: cured concrete, asphaltic materials used for structural and construction purposes; brick and masonry; ceramic materials produced from fired clay or porcelain; glass, such as window glass or glass containers; stainless steel or aluminum. Not presumed to be inert are waste roofing materials and glass containing significant concentrations of lead, mercury, or other toxic substances.

All other construction debris materials that don't meet the inert criteria must go into a limited purpose landfill, and MSW landfill, or to a recycling facility. Limited purpose landfills are limited by type and source. They receive waste that has been segregated from industrial solid waste, construction, demolition, and landclearing debris, wood waste and ash (other than special incinerator ash), and dredged materials. Limited purpose landfills do not accept MSW.

Disposal of incinerator ash is regulated under Washington State Special Incinerator Regulations (WAC 17-306) and must go into a specialized ash landfill. There is only one such facility in Washington. Incinerator ash is tested and must meet certain criteria in order not to be labeled as special incinerator ash.

Limited purpose landfills have substantial design, operation, siting criteria, and closure requirements, including gas monitoring and collection and which allows for energy recovery facilities, if needed.[34]

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[33] WAC 173-350-990 Criteria for inert waste.

[34] Limited purpose landfills, WAC 173-35-400; Inert waste landfills, WAC 173-350-410.

Capacity: There is no requirement for municipal governments to provide capacity for inert or limited purpose landfills. Pierce County has two private and one military inert landfills and no limited purpose landfills. Waste that must be disposed in a limited purpose landfill is either disposed in-county at the LRI Landfill, or shipped to other landfills out-of-county.

The preferred option is to have these materials reused, recycled, or combusted for energy recovery. The county has a number of recycling processing facilities which handle these wastes and prepare it for some sort of reuse.

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Revised: 12/31/07

Sole Source Aquifer: Criteria for siting landfills

A complex systems of aquifers and surface water bodies

Designation: In 1993, the U.S. Environmental Protection Agency (EPA) designated the Central Pierce County Aquifer System as a 'sole source aquifer' based on the fact that the groundwater and surface water systems supply 60% of the drinking water used within the area. The purpose for EPA's designation of a sole source aquifer is to ensure that "projects that are to receive federal financial assistance and which have the potential to contaminate the aquifer....are subject to EPA review and approval...."[35]

Aquifer systems: According to the support documents: "For convenience, all EPA designated principal source aquifers or aquifer systems are often referred to simply as "sole source aquifers." This means that a system of aquifers (plural) will be identified with one name just as if the system was a single aquifer.

In the case of Pierce County, EPA found that the area for the Central Pierce County Aquifer System to be a complex system of aquifers and surface water bodies. EPA expanded the originally proposed boundaries to encompass most of central Pierce County. The boundaries include Puget Sound on the west and the Puyallup River on the north and east as far south as the community of Electron and continuing into the river's old Ohop Channel. The Nisqually River is the southern boundary.

This designation does not mean that all residents living within the area get their drinking water from one, sole aquifer. There are many aquifers within the area at different depths. Some are inter-connected and others are confined by surrounding clay soils which limit the directions in which they can flow or inter-connect with groundwater and surface water systems.

State landfill siting criteria: For the purposes of landfill siting under Washington solid waste regulations, a sole source aquifer is one of the list of location restrictions where the applicant must demonstrate the proposed landfill can meet certain performance criteria in state laws (*WAC 173-351 Criteria for Municipal Solid Waste Landfills.*).

RCW 70.95: In addition, the State amended RCW 70.95.060 in 1999 to restrict "any landfill whose area at its design capacity will exceed one hundred acres and whose horizontal height at design capacity will average one hundred feet or more above existing site elevations..." from being located over a sole source aquifer.

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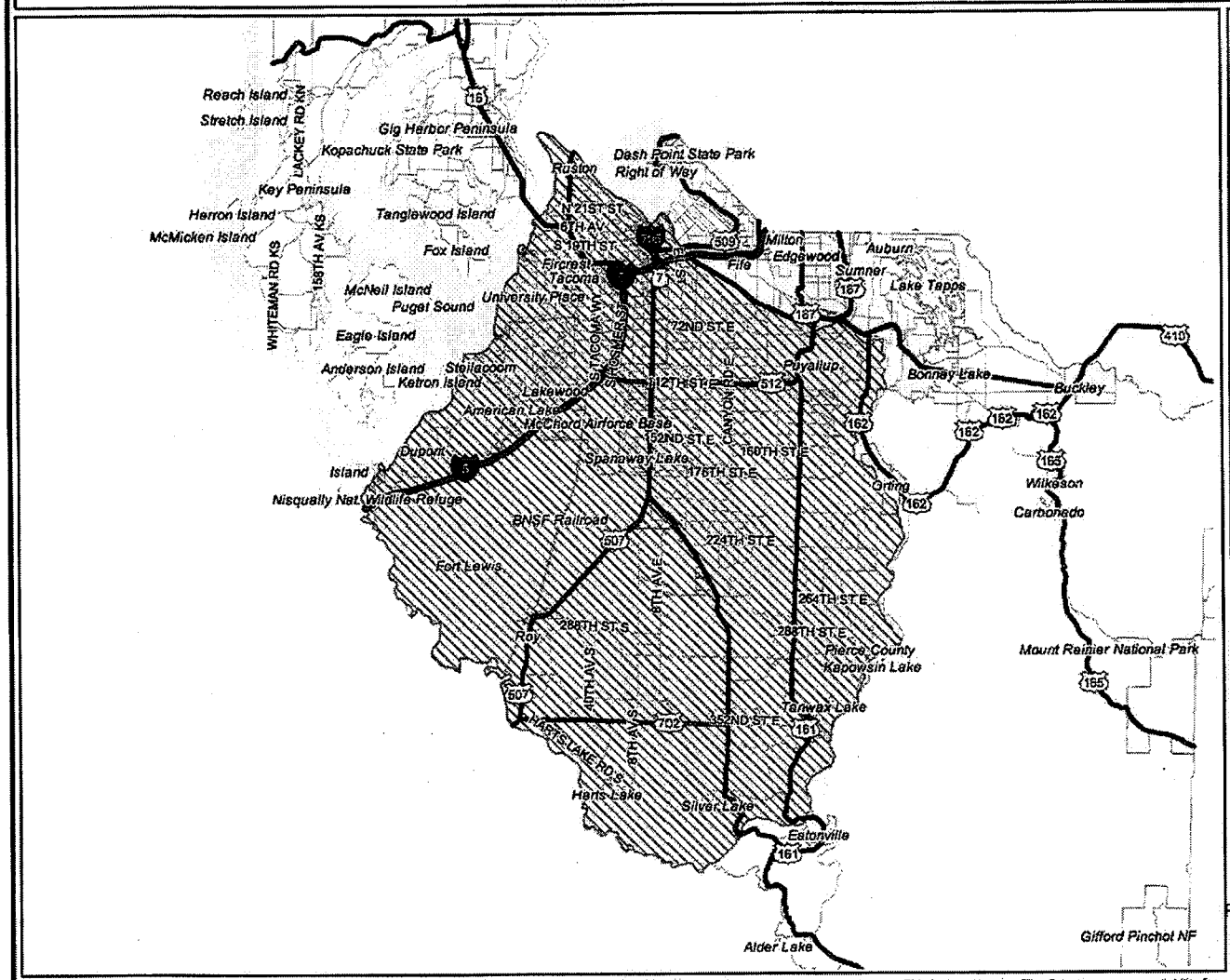
Revised: 9/11/07

[35] Support Document for Sole Source Aquifer Designation of the Central Pierce County Aquifer System, U.S. Environmental Protection Agency, Region 10, February 1993

Central Pierce County Aquifer System

1



Map Legend

Major Roads

- Interstate
- Limited Access State Routes
- Other State Routes
- Ramps
- Major Arterial
- Collector
- Aquifer - EPA Sole Source Aquifer

Pierce County Basemap

- Unincorporated County
- Tacoma
- Lakewood, Edgewood, Bonney Lake, Buckley, South Prairie
- Steilacoom, Fircrest, Fife, Gig Harbor, Orting,

Scale 1:426,617

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Pierce County Solid Waste Division

Pierce County Geographic Information Services

Waste Disposal Authorizations – WDAs

Processes to characterize and track non-traditional waste

Review policy established:

In 2003, the Pierce County Solid Waste Division established a policy and a coordinated process to review Waste Disposal Authorizations (WDAs) issued by the Tacoma-Pierce County Health Department (TPCHD) for waste designated for disposal. The WDAs are for non-traditional wastes such as petroleum contaminated soils, industrial sludge, certain types of ash, and similar materials to be disposed at the LRI Landfill.

The Division's policy was created to ensure that all such non-traditional waste was generated within the boundaries of Pierce County according to the policies of the Solid Waste Plan and to track the amounts of material coming from Tacoma, the military, or from within the County's waste management system, including unincorporated areas and all cities and towns.

Purpose of WDAs:

The WDA permit was created by TPCHD, in cooperation of local solid waste facilities, in order to characterize a waste prior to final disposal. The Health Department staff reviews materials that, while not hazardous in a chemical or environmental sense, may pose physical hazards to the public, environment, or facility employees. Most other counties have similar waste screening procedures.

As the regulator of the handling and disposal of waste in Pierce County, TPCHD requires anyone who wants to dispose of non-traditional waste to apply for authorization. The applicant must submit sample test reports, estimated amounts to be disposed and other information. The WDAs are assigned a number authorizing the waste and the amount of the waste to be disposed and the authorization is tracked by LRI.

The intent of the WDA process is to ensure the material meets the definition of "solid waste" and is acceptable for disposal at a local facility. It can not be a waste that is labeled "dangerous waste" or "hazardous waste" as defined by Washington regulations. Such waste must be disposed only in a permitted hazardous waste landfill.

Review practice:

Under the Solid Waste Division's policy, the Health Department forwards copies of all WDA requests to the Division which identifies in a memorandum which jurisdiction the waste comes from; and then works with the Health Department and LRI to track annual tonnages.

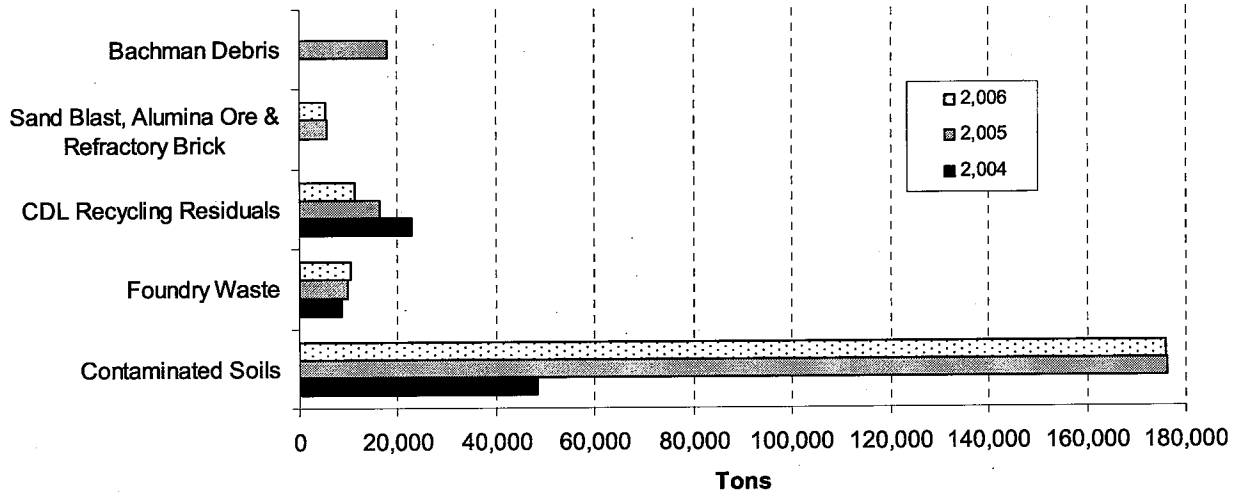
Any proposed waste stream that is not from within one of the three solid waste systems would trigger a notification to all parties that the provisions of Policy Recommendations #8-6 and #8-8 of the Solid Waste Plan would apply. Prior to authorizing disposal, the required public processes would need to be followed.

Results: Since implementation of this review process no applications have been made for WDAs for waste coming from outside of the County so no additional public review processes have been required. No out-of-county wastes were accepted for disposal via the WDA mechanism prior to implementation of this review process.

For the last three years, contaminated soils and sediments are the largest amounts approved through the WDA process. The "contaminated soils" are "soils that have very low levels of contamination, far below the threshold to be classified as dangerous or hazardous waste."[36]

Chart 1 depicts some, not all, of the waste approved through the WDA process for 2004, 2005, and 2006. Some types, like ash or sludge, are in such small amounts of tons that they do not show up well on a chart so they are not shown. For a complete record of the tonnage for each type of materials, contact the Health Department.

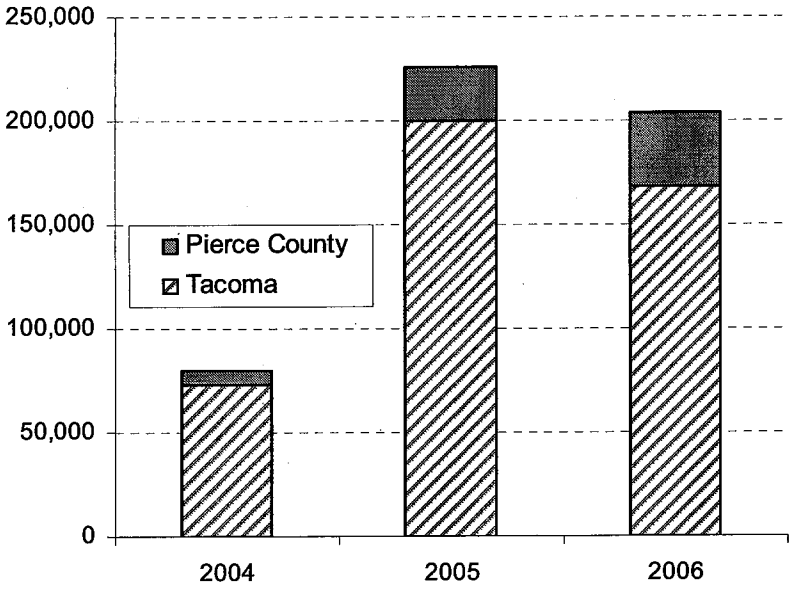
Chart 1. WDA Waste
Approved for LRI Landfill



[36] Tacoma-Pierce County Health Department, LRI Landfill Solid Waste Permit ReIssuance Application, pg. 59.

Chart 2. depicts the total amounts coming from the City of Tacoma and from the rest of Pierce County for the same years.

Chart 2. WDA WASTE TONNAGE



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Revised: 9/11/07

Household Hazardous Waste

Facilities and services in Pierce County

Facilities open to all residents: Residents may take their household hazardous waste free-of-charge to three facilities when a third facility is opened in 2008. These facilities are strategically located to make easy access available to most residents in Pierce County. The facilities are located at the City of Tacoma Landfill/Transfer Station and the Hidden Valley Transfer Station, and the third will be built at the Purdy Transfer Station in 2008.

The three main facilities are supported by drop-off sites for used oil or antifreeze at 36 or more private business locations, such as automotive supply or repair businesses, and at sites sponsored by the County and the Tacoma-Pierce County Health Department (TPCHD) at other transfer stations and Thun Field Airport.

Types of waste: Waste accepted at the three main facilities includes: oil or solvent-based paints, used motor oil, antifreeze, pesticides, herbicides, car and household batteries, dyes, flammable liquids, household cleaners, pool chemicals, solvents, and tars. Other types of hazardous wastes are also accepted but residents are advised to contact the facility first before bringing in the waste to find out the best way to transport it.

Information on disposal and recycling opportunities can be attained from the Health Department's hazardous waste information phone line at (253) 798-5271. A full list of the drop-off sites and private recyclers, their addresses, phone numbers, and the household hazardous waste materials they take can be found on the Disposal and Recycling Resource Guide on the County's website: wwww.piercecountywa.org/Recycle.

The material is packaged for shipment to recycling facilities or appropriate disposal facilities located out-of-county.

Coordinated planning: The Health Department works with the City of Tacoma and Pierce County to implement various household hazardous waste programs. Under authority of the *Tacoma-Pierce County Local Hazardous Waste Management Plan* the Health Department acts as lead or primary coordinating agency on both household and small quantity hazardous waste programs within Pierce County. The *Tacoma-Pierce County Local Hazardous Waste Management Plan* delegates responsibility for specific programs to various agencies. The Pierce County Solid Waste Division has responsibility for household hazardous waste collection within the Pierce County solid waste disposal service area.

Household hazardous waste is categorically exempt from Washington's Dangerous Waste regulations. For the purposes of handling and management, these exempt wastes are considered to be solid waste. Counties, in coordination with cities and towns and local health departments, are required to adopt local plans for management of hazardous waste from households and from small businesses. The plan was first adopted by the County and all cities and towns in 1990.

The Health Department is in the process of updating the local hazardous waste plan. The updated document will incorporate some of the ideas and program approach of Washington's *Beyond Waste Plan.*

Programs: Activities and programs for residents include: collection facilities, satellite collection events, a Hazardous Waste Hotline, technical assistance, public outreach through advertising, websites, and information booths at various community events. Information about the hazardous waste activities is included in each of the County's and Tacoma's newsletters which are mailed to all residents two or more times a year. Both the County's website and a number of brochures are available to assist residents in managing or reducing the amount of their hazardous waste. Satellite collection events in outlying rural areas are implemented when grant monies are available. In the last five years over 20,000 Pierce County residents have taken advantage of the County's various collection programs.

Financing: Pierce County, Tacoma and the Health Department work together to pursue funding from the State's Coordinated Prevention Grant (CPG) program. A portion of the County's administrative fee from the tipping fee charged at the transfer stations is used to help fund the collection, disposal, and outreach programs. In 2006, Pierce County spent $438,000 to dispose of the household hazardous wastes generated by residents. Of this total, the Department of Ecology provided reimbursement of approximately $133,000.

EnviroStars & small businesses: In Pierce County, the Health Department provides recognition for small businesses through the *EnviroStars* program which certifies those businesses working to reduce, recycle, and properly manage their hazardous waste. The program has certified more than 115 businesses, ranging from automotive businesses to dental offices and dry cleaners to marinas. The program rates businesses from 2 to 5 stars according to their environmentally responsible practices. The higher the star rating, the more proactive the business has been in reducing waste and building environmentally friendly systems into their operations.

The Health Department has an outreach program which focuses on small businesses by providing technical assistance and shop audits, and working through trade associations to assist small businesses.

Businesses that generate small quantities of hazardous waste (generally < 200 pounds per month or batch) are considered 'small quantity generators' if and only if they handle their hazardous wastes properly which means they are exempt from many of the regulatory requirements for larger businesses.

Large industries & State regulation:

Hazardous waste collection and disposal is regulated by Washington's Dangerous Waste Regulations (WAC 173-303). For the most part, federal and state regulations take a "cradle to grave" approach through the use of permitting systems for individual industrial or commercial businesses producing and transporting these wastes. The state has reserved the right to determine the location and siting of all hazardous waste disposal facilities and has a permitting process which includes public hearings in the affected community. There are no landfills permitted as hazardous waste landfills in Pierce County or Washington State.

There are some businesses in the County which specialize in collecting and recycling hazardous or dangerous waste from large industries and preparing it for transport to disposal facilities. These businesses are regulated by the Department of Ecology.

Drafted: 10/18/06
Revised: 9/11/07

Pierce County Responds Program

Public Nuisance Vehicles, Chapter 8.10, Pierce County Code

What is Pierce County Responds?

The Pierce County Responds (PCR) Program is an aggressive and comprehensive response to the problem of illegal dumping of wastes and nuisance vehicles. PCR acts as a central clearing house for receiving and investigating citizen's complaints about illegal dumping, abandoned or inoperable vehicles, and illegal wrecking or disposal operations.

Why was it developed:

The development was necessary due to the inadequacy of how illegal dumping and junk vehicle issues were handled. Over time state and county laws had resulted in a complex system for enforcement with different departments, agencies, or municipalities responsible for different types of illegal dumping problems dependent upon the type of waste and whether or not it occurred on public or private property, or inside city limits. This resulted in a duplication of effort and little carry through for prosecution or abatement.

The Solid Waste Advisory Committee (SWAC) addressed these issues in the 2000 Solid Waste Management Plan and the SWAC report (dated July 18, 2001) to the Council. It was reviewed and approved by the Council and supported by the Executive and implemented through the creation of the PCR program. To further implement the program the Council adopted the Public Nuisance Vehicle Ordinance, Chapter 8.10, of the Pierce County Code.

Who does it serve:

The PCR program serves the public in unincorporated Pierce County. Although, it does process complaints for the Tacoma-Pierce County Health Department in incorporated cities and is informative to the public in incorporated cities.

Who does program delivery:

The Public Works and Utilities Solid Waste Division oversees the PCR Program. PCR coordinates enforcement action, assistance and site cleanups through the following agencies: Public Works and Utilities Solid Waste Division and Road Maintenance, Planning and Land Services, Prosecuting Attorney's Office, Community Services Housing Programs, Sheriff's Department and Tacoma-Pierce County Health Department.

To improve the communication and coordinated effort between agencies the PCR Partners group was established and a Charter written with goals and objectives that the Partners deemed was important for the growth of the Program. Through this Charter, staff worked on communication between the agencies, safety issues for the field personnel and coordination of abatement of large sites.

Public nuisance vehicle enforcement: The public nuisance vehicle enforcement procedures are outlined in Chapter 8.10 of the Pierce County Code and are followed through with when it is determined a vehicle(s) meets the definition of a public nuisance vehicle.

Dirty Dozen: On Earth Day 2002, County Executive John Ladenburg announced the twelve worst illegal dumpsites in Pierce County. The twelve properties earned their way onto the list, called the Dirty Dozen, by the severity of illegal dumping on a property, the length of time enforcement agencies had been pursuing the property owner(s), and by the extent of illegal activity alleged to have occurred on-site.

Performing the abatement of the Dirty Dozen sites demonstrated PCR's ability to coordinate multiple County personnel and resources on behalf of Departments' having enforcement interests in numerous regulatory arenas. It also helped launch the PCR program and improved the quality of life in Pierce County.

As of July 2005, PCR staff from multiple agencies and County Departments have completed cleanup activities at twelve (12) of the fifteen (15) identified Dirty Dozen sites.

Community Assistance and Public Education: With the completion of the Dirty Dozen sites, the Community Assistance and Public Education (CAPE) Program was created to focus on prevention to keep other sites from becoming Dirty Dozen like sites. CAPE is a "sub-program" of PCR concentrating PCR staff and resources, and assistance programs within a specific community on a pre-planned day.

Prior to a CAPE day, a public meeting is held with PCR staff to discuss the day's activities and those services being made available. In addition, staff will answer questions about waste disposal, storage and recycling, provide handouts, and discuss County rules and regulations related to land use and pubic nuisance vehicles.

If a community is selected for a CAPE Project, PCR staff will work with the community representatives to arrange a date they will be in the neighborhood offering any of the below mentioned assistance programs.

Assistance programs: In an effort to help the public either reach compliance or take care of issues before there is a complaint filed against their property, PCR offers the following assistance programs:

- **Cooperative Abatement** - PCR will pay half the cost to remove vehicles of an approved applicant who has twenty (20) or less public nuisance vehicles.

- **Junk Vehicle Affidavit** (JVA) – PCR can provide you with a JVA that can be used in place of a title to have a junk vehicle removed.

- **Litter Credits** – This will allow you to dispose of $100.00 (approximately one ton) worth of solid waste free of charge at an authorized transfer station.

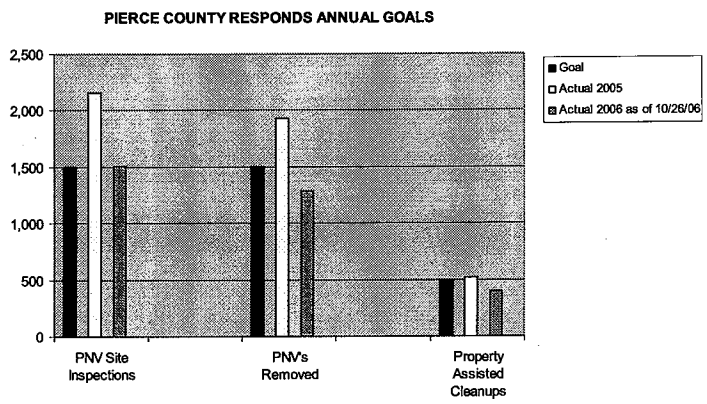
- **Dumpsters** – Dumpsters are provided to community groups that want to cleanup public lands. Also, Housing Programs provides eligible clients with dumpsters.

Who has supported Pierce County Responds: The PCR program would not be in existence if it were not for the recommendations from the SWAC and the support of those recommendations by the Executive's Office and the Council. Also, the public, media, and other jurisdictions have been very supportive of the program.

Statistics/ yearly goals: The following statistics demonstrate that the PCR program is producing results:

- Annually the hotline receives more that 7,000 telephone calls either reporting problems or requesting assistance.
- The average amount of road-side litter removed yearly is 487,970 pounds.
- The public nuisance vehicle first inspection response time has gone from being six (6) months in 2003 to presently being performed within fifteen (15) days.
- The goal of performing twelve (12) public outreach events is exceeded every year.

The following chart shows the comparison between annual goals and actual performance.



Awards: The Pierce County Responds Program has received the following:

- SWANA's – Excellence in Solid Waste Management – Public Education Excellence Gold Award.
- The National Association of Counties Achievement Award.
- Rotary Tacoma #8 Preserve Planet Earth Award.
- County Court House Award – The Executive won this award based on the Pierce County Responds Program.
- The American Public Works Association designated it with "model program" status, a best management practice recommended for implementation in public works departments nationwide.

What's needed in the future: With all that PCR has accomplished it could be said that the Program has been a success, but as with any new program it has faced its share of limitations during its evolution. Following are some ideas that would keep PCR functioning and growing:

- Create a similar process as the public nuisance vehicle abatement for improperly stored wastes.
- Implement the final phase of the Public Nuisance Vehicle Ordinance (PNV).
- Ensure that there is a coordinated approach by all enforcement agencies to resolve illegal dumping problems and to remove regulatory barriers that prevent clean-up.
- Pursue enforcement action against illegal dumpers.
- Explore inter-agency agreements with the smaller cities to provide the service of issuing JVA's on private property.
- Ensure the continuance of outreach programs such as CAPE; explore the inclusion of multi-family complexes.
- Amend the PNV Ordinance to include the ability to require proof of legal disposal of the vehicle(s), and if it is found to have been disposed of illegally on private property, the ability to pursue enforcement action to include prosecution.

Drafted: 11/10/06
Revised: 9/12/07

Single-Cart Curbside Recycling

Minimum Service Levels, Chapter 8.29, Pierce County Code

Service levels revised: The Pierce County Council adopted new minimum service levels for residential curbside recycling services in September 2004 which directed the collection companies to provide single-family household customers with a 96-gallon cart in which recyclables are commingled. Cities and towns negotiated similar contracts. After approval of their Company Recycling Plans by the Washington Utilities and Transportation Commission (WUTC), the collection companies began delivery of the carts in February 2005 and completed the extensive change-over in May.

The new single-cart system replaced the three-bins-and-a-paper-sack system first begun in 1990 when Pierce County was the first county to implement curbside collection county-wide.

Yardwaste: Curbside yardwaste collection has been available to most single-family households since 1992. Also, yardwaste can be dropped off at transfer stations for a reduced fee.

Multi-family residential: Some cities, Fircrest, Lakewood, University Place and Steilacoom, also converted their multi-family residences and most businesses to single-cart recycling. One hauling company converted most multi-family residences in DuPont, Eatonville, Roy and portions of southern Pierce County to a single-cart system, where feasible. In the rest of the County, however, multi-family residences are served by the recycling system first adopted in 1991 which provides for a mix of container collection options depending upon the size of the complex, the hauling company serving the area, and city or town requirements.

Services & materials: Single-cart collection is available to all single-family households countywide, including all cities and towns and unincorporated areas; even in more remote rural areas of the foothills of Mt. Rainier. Collection companies provide single-family customers with a 96-gallon, wheeled, covered container which is picked-up every-other-week. Recyclables commingled in the cart include: newspaper, steel and aluminum metal cans, cardboard, plastic bottles (PET #1 and HDPE #2), milk-type paper cartons, and all other mixed paper, including magazines, phone books, envelopes, paper bags, and chipboard, such as cereal and shoe boxes.

Glass is collected at drop-sites provided by the collection companies which are scattered around the county and at transfer stations or private buy-back centers.

Alternatives: Customers may request a smaller-sized container if they feel they don't generate much recyclable material; the single-cart is too unwieldy for them to move

because of steep driveways; they have restricted outside storage space; or they have special needs which require reasonable accommodation. Some residents with steep driveways worked with their hauling company to continue to use the three stacking bins system.

Incentive rates: The adopted service levels retain the same incentive rates, pioneered by Pierce County, in which garbage service coupled with recycling service is always cheaper than garbage service alone. In practice, the haulers offer a wide variety of garbage with recycling services. Residents can tailor the system to fit their needs. Collection companies serving the unincorporated areas offer: recycling-only service; every-other-week recycling collection with a one, two, three or more garbage cans or a mini-can; garbage service alone; and in some cases, every-other-week or once-a-month garbage collection with every-other-week recycling.

The haulers offer other services in their cities based on what the cities perceive as needs for their citizens.

SWAC participation: The revision of the curbside program was accomplished through an extensive review by the Solid Waste Advisory Committee (SWAC), residents, and cities and towns. Residents were surveyed by phone and in follow-up focus groups to pinpoint their desires and attitudes toward alternative collection systems. The SWAC reviewed alternatives; held four public meetings around the County to gather public comment; and then recommended the program with modifications to the County Council and cities and towns. Throughout the process, the 2000 Solid Waste Plan's policy direction "to keep participation rates high and make recycling easy" was kept in mind. Adding plastic bottles and paper-type milk cartons, changing the bin, and retaining incentive rates were all the result of the Plan's recommended strategies.

In order to keep costs low and reduce contamination, glass was removed from curbside collection. Glass is the single, largest contaminant in a commingled system and it damages paper mill screens and reduces the valuable of other recyclables. Glass only has market value if it is color-sorted and the revenue does not cover the cost of collection in a separate bin.

Waste collection companies placed glass drop-sites at convenient locations around the County as an alternative to continue a low-cost method of collecting color-sorted glass.

Other recyclable materials could be added to the single-cart by the haulers or through the SWAC recommending the County Council amend the Minimum Service Levels Ordinance, Pierce County Code, Chapter 8.29. Cities and towns may also add recyclables by amending their contracts and then directing their collection company to collect the material.

Public outreach program: Pierce County supported, and continues to support, the single-cart program with extensive public outreach efforts. Initial efforts included: newsletters sent to each household which described the draft program and invited residents to attend public meetings, and website information about the program's status, how to prepare materials when the cart arrived and answers to frequently asked questions. A large, attractive brochure was prepared and distributed with each cart which graphically demonstrates the materials that should or shouldn't go in the cart.

Staff prepared informational packets for city and county staff to assist them during the change-over period. A cart was displayed with a stand-alone exhibit at special events and fairs so that residents could have an opportunity to try moving a loaded cart. As a consequence, most residents were satisfied with the size of the cart. Very few of the haulers' customers opted for a smaller size.

Newsletters continue to follow-up on the program by keeping residents informed of successes and reminding them how to prepare materials and to keep contaminating items out of the cart. The website is revised regularly to report the latest data or to expand on the frequently asked questions section.

Highlights: During the first full year of implementation of the single-cart program, residents set-out **70% more recyclables** at the curb. More than **94 %** of the haulers' customers are participating.

In the first full year, glass drop-sites captured approximately **63%** of the glass that was previously collected when the three-bin system was in place. Glass collected at transfer stations increased 40% in tonnage.

The single-cart system exceeded all start-up goals: contamination is a low **2%** and recycling households raised their average pounds set-out per month **48.64 pounds** in 2007 as compared to the based year of around 29-32 pounds. Residents began to dispose of less in their garbage with the average amount of garbage disposed per household dropping from 163.54 pounds to **149 pounds** per month.

Paper products, the main targeted commodity, **increased by 82%.** More than 91% of what is picked up at the curb is paper – newspaper, cardboard, or mixed waste paper. In the second full year of implementation, from July 2006 through June 2007, tonnage increased 12.81% over the first full implementation year.

For this program, Pierce County Solid Waste Division won an Achievement Award from the National Association of Counties recognizing efforts to promote responsible, responsive and effective government.

Charts: The following charts highlight the impact on curbside recycling with the new Single-Cart Program.

Chart 1 demonstrates the impact of the single-cart recycling program by comparing the first nine months of full-implementation with the same nine months under the previous system.

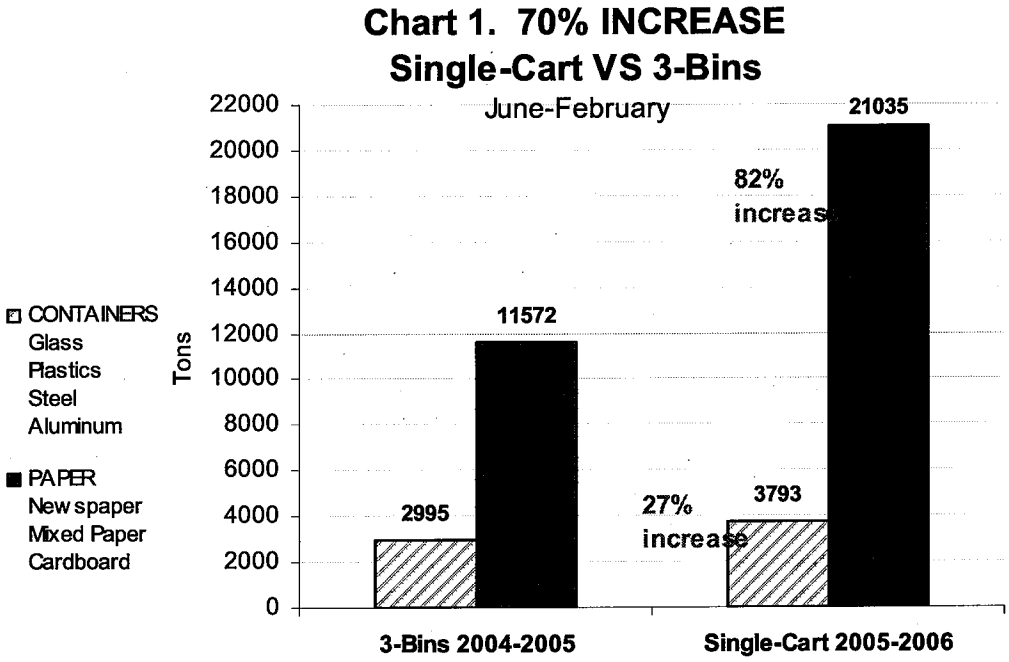


Chart 2 shows the increase in the average pounds set-out each month per household and how this continues to increase in the first six months of 2007.

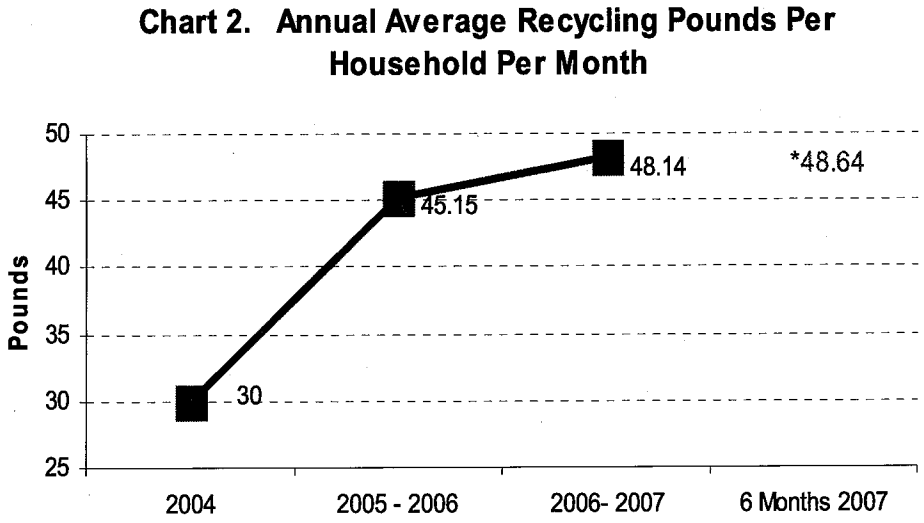


Chart 3 compares the average pounds per household month by month for the first two years of implementation, July through June for 2005 – 2006 and 2006 – 2007. **Table 4** illustrates the tonnage for the two full-implementation years.

Chart 3. Average Recycling Pounds Per Household Per Month

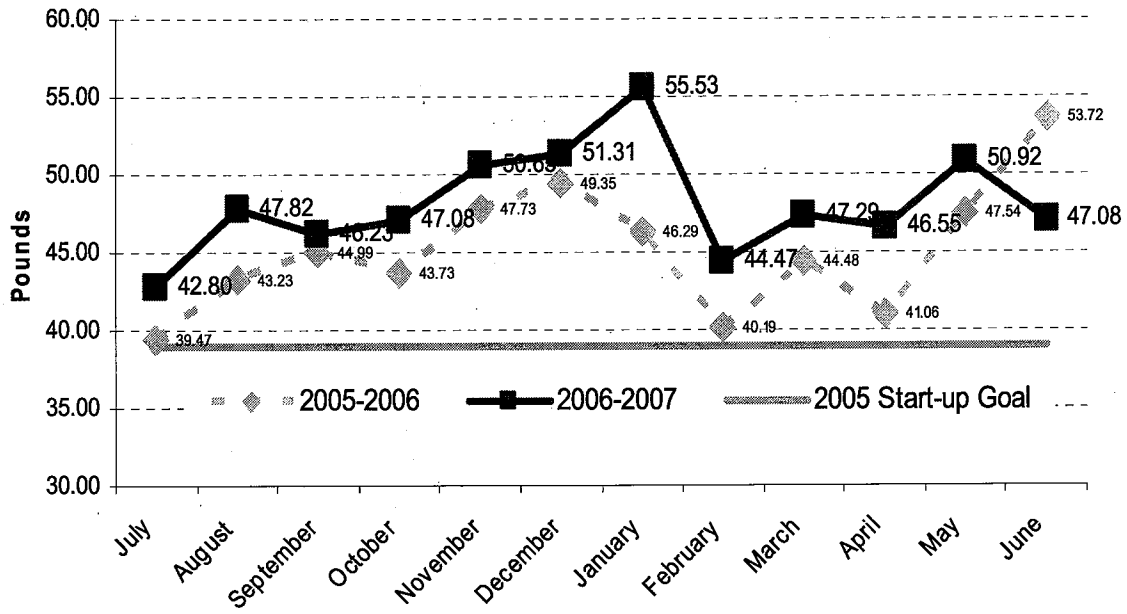


Table 4.	Recyclables Tonnage	
	2005 - 2006	**2006 - 2007**
Newspaper	8,530	10,550
Mixed Paper	17,536	18,528
Cardboard	5,220	6,444
Aluminum	652	740
Tin/Steel Cans	1,047	1,022
Plastics	1,330	1,431
Curbside Total	34,315	38,714
	Increase: 12.81%	
Glass Drop-Off	2,652	2,250
Recyclables Total	36,967	40,964
Drop-off and curbside increase: 10.81%		

Drafted: 10/18/06
Revised: 9/24/07

Education Program for Pierce County

School interactive presentations and adult outreach activities

Program description: Pierce County Public Works and Utilities, Solid Waste Division, has promoted responsible resource management and water protection through school-based interactive presentations and adult workshops starting in 1988. The school program is available to any public, private, or home school students outside the Tacoma School District, as well as to local youth-oriented groups (cub scouts, girl scouts, after-school programs and summer camps). The education program satisfies RCW 70.95.090 which states counties must have "programs to educate and promote the concepts of waste reduction and recycling."

Goals and objectives: The education staff sets yearly activity goals for the education team, and identifies a lead educator for each particular goal. The 2006 education program goals are:

1. Reach new audiences.
2. Design kid-friendly handouts and brochures.
3. Work with the planning team on the new education center.
4. Program Evaluation- peer evaluations, relevancy to classroom curriculum, and effectiveness in delivering message.
5. "Eco Friendly Home" classes - Develop classes to be held through Pierce County Parks and Recreation Department.
6. Teacher Training - Help set up in-service teacher trainings and Project WET classes.
7. Adult Water Education – coordination with Water Programs.
8. School Recycling - Assist schools in setting up school recycling.
9. County "Green" Purchasing - Help the County increase its "green" purchasing.
10. Summer Mini camps - Work with Parks and Recreation to hold environmental education mini-camps in the summer.
11. Professional Development - Take classes to increase staff's professional development.

Schools programs: The schools program has always offered several presentations that focus on solid waste and water issues. Within the past six years the Division's education staff have re-tooled and marketed the presentations as a "series," in which the individual programs are designed to flow from one to the other. This series approach allowed the education program to further develop curricula that integrated and incorporated the various education and outreach messages of the entire Pierce County Public Works and Utilities Department, including but not limited to the Solid Waste Division, Water Programs, and the Sewer Utility. The two main presentations concerning waste and responsible resource management are *No Time to Waste*, and *Compost Critters*. *No Time to Waste* focuses on where our garbage goes after being picked up from residences and businesses, the elements of a modern landfill, and practical techniques for

reducing the amount of garbage that is landfilled (i.e., reduce, reuse, and recycling) are discussed. Teachers are provided with additional information as to where recyclables go to get remanufactured, the amount of energy saved using recycled materials, and employment and economic information. The *Compost Critters* presentation focuses on worm composting of food scraps and the resulting vermi-compost. Students identify the critters that aid in composting and what food scraps are appropriate to place in a worm bin.

Over the last five years, education staff has expanded the number of classroom presentations about waste reduction, by creating new and adapting existing presentations. One new presentation is called *Beyond Recycling*, and is centered on the idea of an "Ecological Footprint: the amount of land needed to sustain the resources used for a particular way of life. Other presentations that have been adapted in recent years include *Hazards in the Home*, which covers information on proper use of potentially hazardous chemicals and ideas for safe alternatives, and *Bite of the Finite*, where students look for beads hidden in the classroom representing those natural resources that are mined from the earth. The culminating observation is that many of the products made with these finite materials end up in landfills.

The second part of the environmental education series focuses on water conservation and water quality protection lessons with additional options for field studies in water quality monitoring. The first lesson in this four part series, *Water In, Water Out*, teaches students about where our drinking water comes from and what happens to that water after we use it. Water conservation is also discussed. In this hands-on lesson, students create dirty wastewater and then follow its path through the wastewater treatment process.

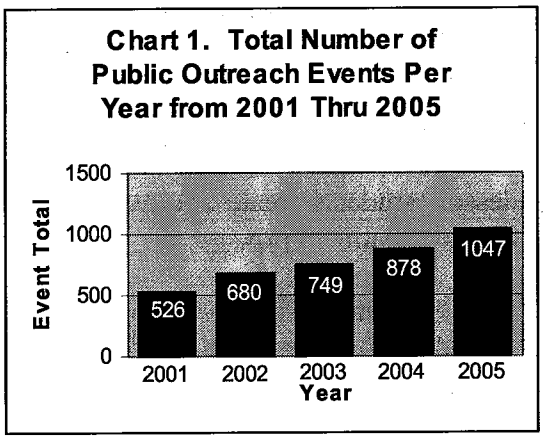
The second lesson in the water series, *Watersheds and You,* introduces the watershed concept and through the creation of mini-models, students learn about the watershed dynamics within the watershed they live in with emphasis on the entire Puget Sound basin. The *Watersheds and You* lesson sets the foundation for surface-water issues which are then introduced in the third lesson in the water series *Water We Doing*. During the *Water We Doing* lesson, the students learn about non-point pollution and its effects on salmon and other wildlife in local streams, rivers, lakes and the Puget Sound. Students brainstorm simple things they can do to protect water resources for drinking, recreation and wildlife. The final lesson in the water series focuses on measuring water quality through chemical testing and biological monitoring. Many classes take advantage of our field trip option to conduct in-the-field water quality assessments. Whether it's in the classroom or at a local stream, we provide all the equipment necessary to conduct chemical tests of and/or examine the aquatic insects living within a local water body.

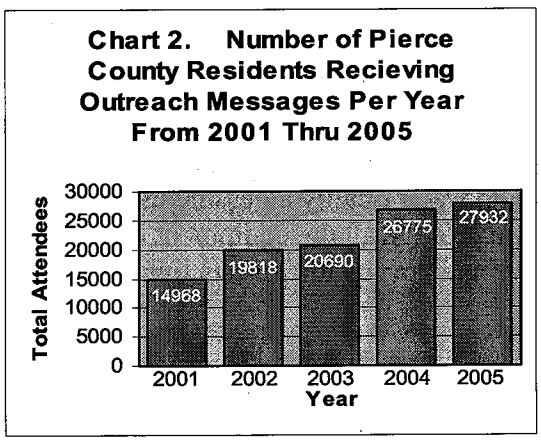
Adult education: The Solid Waste Division began offering adult worm composting workshops following the 1995 Comprehensive Waste Audit finding that 21% of residential

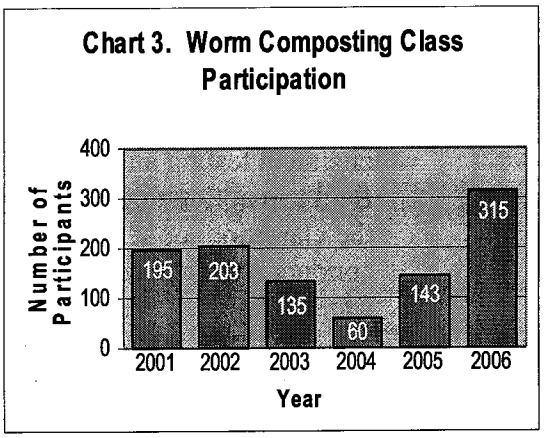
garbage is food waste. Originally the worm composting workshops were offered through local community colleges. In 2005 the workshops began being offered directly through the Solid Waste Division and advertised in the division's *EarthMatters'* newsletter and internet website. The two hour workshop includes instruction on worm bin set-up, maintenance and compost usage. Participants who pay the tuition also receive all the materials, including worms, needed to begin composting.

Education program data:

The education program over the past five years, as shown in Chart 1, Chart 2, and Chart 3 has shown a steady increase in both the number of public outreach events and number of Pierce County residents who have received outreach messages. Chart 3, which tracks participation for worm compost classes, shows a sharp reduction in class enrollment between late 2003 and early 2005. This data corresponds to a shift in program promotion, registration, and facility utilization from the local community colleges to strictly Solid Waste Division staff and resources. 2006 was the first complete year in which all worm composting class administration, registration and instruction duties were handled by Division staff.







What the program is today:

The environmental education program, as delivered by The Solid Waste Division's environmental education staff with combined environmental education experience of 28 years, continues to increase outreach opportunities through its partnerships and collaboration with other agencies. In an effort to integrate regional environmental education messages, the education staff has helped pioneer additional environmental education formats. Examples of these include:

- **The Tacoma-Pierce County Children's Water Festival**
  This annual event which started in 2002 as a partnership between the Tacoma-Pierce County Health Department, City of Tacoma, and Pierce County Public Works, reaches over 1,000 fifth grade students from around Pierce County each year.

- **NatureFEST**
  This annual community event furthers environmental education and outreach with an average of 800 visitors each year and is made possible through partnerships with the Washington Department of Fish and Wildlife, Tacoma-Pierce County Health Department, Tahoma Audubon, and the City of Tacoma and many others.

- **The Pierce County Livable Communities Fair**
  The Education Staff has been involved in the development and staffing of this biannual event since it's creation in 2000. This event hosts a strong environmental education component and is regularly attended by between 5,000 and 10,000 county residents.

- **Promoting Sustainable Practices for Individuals and Institutions**
  The education staff is increasing to focus on how its classroom presentations and adult education can have lasting impacts in Pierce County by initiating behavioral changes that support environmental education and a more sustainable community. Current efforts spotlight initiating, supporting and promoting institutional recycling, like school wide recycling programs in addition to Pierce County government-wide environmentally preferable purchasing practices.

- **E3 Washington**
  The education staff is working to develop better ties between schools, local government, the business community, and not-for-profit organizations, with an eye on enhancing the quantity and quality of environmental education received by Pierce County residents through participation in the E3 Washington initiative. The goal of E3 Washington is to provide a foundation for the inclusive process of developing a comprehensive statewide

environmental education plan that optimizes environmental education for every Washington State resident.

Program modification: Curricula are developed by Solid Waste staff to conform to the goals and objectives outlined in the Solid Waste Plan. Most recently, with the vacancy of one education staff member, the current education program staff has utilized this opportunity to evaluate the current programs offered in an effort to readjust education program objectives and plan for the optimal utilization of increases in staff support.

Drafted: 11/01/06

PUBLIC OUTREACH

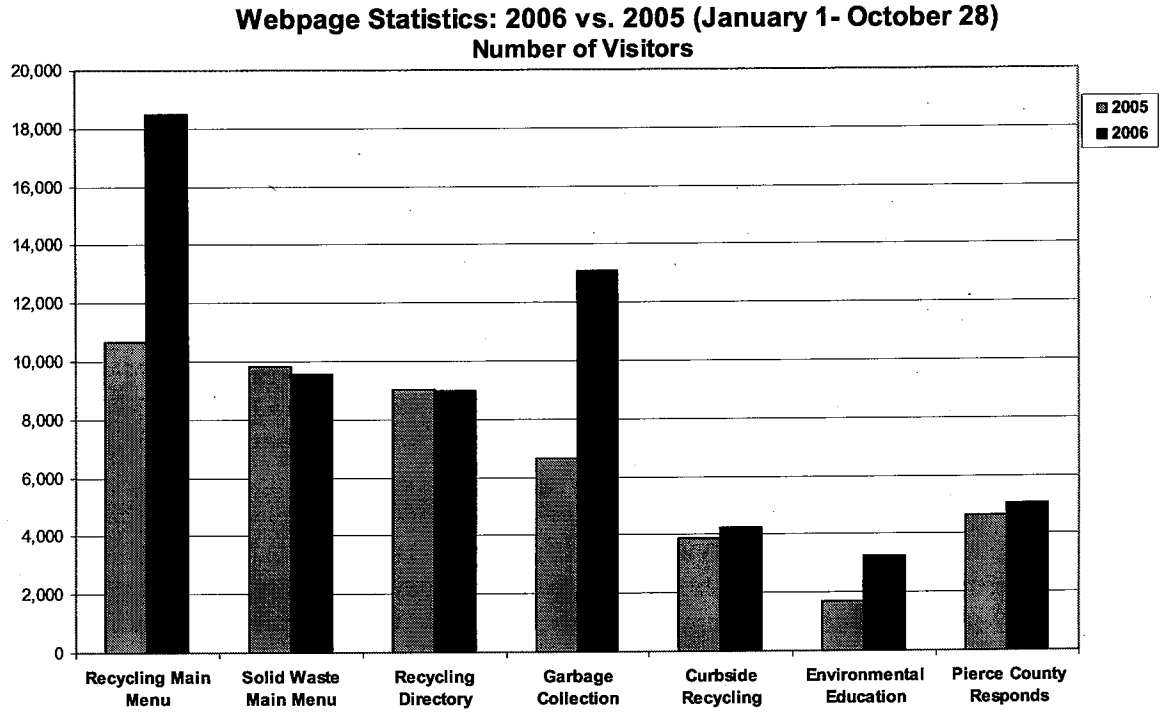
Countywide programs for all citizens in Pierce County

The following is a short listing of the Public Outreach activities the Pierce County Solid Waste Division has done in the last few years and continues to do.

Newsletters: Each *Earth Matters* newsletter is sent to approximately 195,000 Pierce County single-family homes (not the cities of Tacoma and Ruston or the military bases) two to three times each year. The newsletters describe and invite residents to participate in our various programs. They are filled with a variety of program *how, what, when, where and why* information and tips.

Websites & shortcuts:

www.piercecountywa.org/recycle
www.piercecountywa.org/solidwaste
www.piercecountywa.org/swplan
www.piercecountywa.org/swac
www.piercecountywa.org/recycling (single-cart recycling)
www.piercecountywa.org/hhw
www.piercecountywa.org/enviroed
www.piercecountywa.org/ewaste
www.piercecountywa.org/composting
www.piercecountywa.org/treecycle
www.piercecountywa.org/wfh (Waste Free Holidays 2005)
www.WasteFreeGifts.com (Coming December 2006)



Events: Approximately 240,000 people visit our Environmental Education Exhibits each year. Ten to fifteen staffed exhibits are held at a variety of venues throughout Pierce County. Shows/Fairs include:

- Tacoma Home & Garden Show (February)
- Livable Communities Fair (April)
- Puyallup Spring Fair (April)
- Key Peninsula Livable Communities Fair (May)
- Meeker Days (June)
- Pierce County Fair (August)
- University Place Fest (August)
- Milton Festival (August)
- Puyallup Fall Fair (September)
- Tacoma Dome Food & Gift Festival (October)
- Victorian Country Christmas (December)

Environmental Education Exhibit's size and topics vary. Most often outreach displays are located in a 10'x10' space. During the last 15 years, the Division staff have had the pleasure of meeting and discussing programs with thousands of Pierce County residents in real-life styled environmental exhibits. Exhibit size ranged from 7,500 sq. ft. (Tacoma Dome & Puyallup Spring Fair) to the 800 sq. ft. modular home "The GreenHouse" exhibit (Puyallup Fair). Topics covered a multitude of environmental issues – reuse, recycling, buying recycled products, hazardous wastes, water issues, composting, and much more. Visitors saw, touched, set in, walked on, and were excited to learn about the latest products on the market. Recycled content products (plastic lumber, carpet, glass tiles), non-toxic (paints, cleaners), compost units (yard and food waste), hybrid vehicles (including solar), energy efficient appliances and much more. Of course, they were also reminded of the many tried and true products and methods. The large exhibits are always a public/private partnership. Businesses display their latest products and government agencies educate residents on a wide variety of environmental issues.

Outreach programs: The Division communicates with residents through a variety of media: *Earth Matters* Newsletters; brochures and posters; counter cards and displays; newspaper ads; billboards; 8'x10' table top displays (used at various government offices, libraries, fairs and shows); government access TV; press releases; websites; and in-person visits with city and town personnel.

www.WasteFreeGifts.com: This Pierce County website encourages individuals to celebrate life by giving earth-friendly gifts and experiences all year long. For example, give a donation in the name of a loved one or create a treasured gift that reflects your own talents. The web includes "buy-recycled" product listings, "reuse" craft examples, "no wrap needed" tips, party and seasonal ideas for eco-friendly celebrations. A great resource for earth-friendly ideas.

Take-it-Back Network: (Pierce County/City of Tacoma program which began November 15, 2006 (America Recycles Day). Electronic devices such as computer monitors and TV's contain hazardous materials that must be managed properly. The Take-it-Back Network is a group of retailers, repair shops recyclers and nonprofit organizations that will accept electronic equipment from the public, providing residents and small businesses with reuse and recycling options for their used computer equipment. Received electronic materials must be recycled and/or disposed in an environmentally sound manner. (Coordinated effort with City of Tacoma Solid Waste Management, Tacoma-Pierce County Health Department, State Department of Ecology, and King and Snohomish County.)

Single Cart Recycling Program: The Solid Waste Division designs and pays for the outreach to support this private recycling collection. The Division continues to work with the haulers to maintain recycling messages and reduce contamination. More than 135,000 households transitioned from the fourteen-year old "3 bins and a paper sack" program to a modern single-stream collection system. Within the first six months, participation rates climbed to 93 percent and residents increased their recycling 64 percent.

The Division has received requests, and supplied both in- and out-of-state counties and cities, for the use of promotional materials. They have requested, and have used, program and lid graphics, text, general tips and public outreach suggestions (City of Port Angeles, Thurston County, Grays County, and a request from Dade County, Florida).

This program received the National Association of Counties 2006 Achievement Award.

Pierce County Responds: Pierce County Responds is designed to stop illegal dumping. Staff receives and investigates complaints related to solid waste and public nuisance vehicles, recommend cases for prosecution, effects site cleanups, and educate citizens on proper disposal and recycling practices.

Pierce County Responds brings together staff and resources from Pierce County's departments of Public Works & Utilities (Solid Waste and Roads Maintenance), Planning & Land Services, Community Services, Sheriff, Prosecuting Attorney, and the Tacoma-Pierce County Health Department.

Pierce County Responds won the 2003 Solid Waste Association of North America's (SWANA) Public Education Award.

www.2good2toss.com: Pierce County residents have a quick and easy way to move usable, but unwanted items. 2good2toss.com is a free, user-friendly web site designed to give people an opportunity to list or look for reusable large household items and building materials.

Types of items accepted on this site include: Large household items such as appliances, furniture, gardening items, electronic equipment, automotive parts, and recreational equipment. Construction materials such as wood, brick and roofing materials; and demolition/deconstruction materials such as doors, windows, kitchen cabinets, siding, big beams, fixtures.

2good2toss statistics for 2006: 963 exchange members, 3,697 total number of listings and 1,342 successful exchanges that were reported to us. (www.2good2toss.com is brought to you by the Washington State Department of Ecology and participating local governments, including Pierce County.)

Waste Free Holidays: A program to help reduce holiday waste. Upon visiting the website - www.wastefreeholidays.com - visitors were encouraged to purchase discounted tickets and gift certificates instead of stuff. Over 100 participating businesses offered discounts for those wanting to give an experience gift (dinner, theater, lesson, etc.) that didn't require gift wrap. The program's message: Reduce waste during the winter holidays. (Pierce County 2005 participant.)

GreenHouse: An 800 sq. ft. modular house (environmental education exhibit) was built of recycled materials, from the carpet made of recycled soda bottles to the yard art constructed from cast off gardening tools. The wallboards contained post-consumer recycled gypsum, and many of the construction materials were recycled and recyclable composites that reduce the use of virgin timber.

The exhibit encouraged people to think about buying recycled goods. It exemplified a low-toxicity, energy-wise environment. On display were appliances that exceeded US Department of Energy guidelines for energy efficiency. Four examples of solar power were featured including *Sola-tube* skylights that brightened the rooms naturally. The bedroom area featured low-impact organic cotton bedding. Recycled glass tiles provided translucent decoration in the kitchen and bathroom. The recycled plastic carpet in the living room showed no signs of wear after a million visitors' foot-traffic. Other flooring examples included cork (renewable bark from cork oak trees) and natural origin linoleum (linseed oil, wood flour, cork flour). Natural fiber wall coverings made from hemp, jute, and sisal lent appealing texture to the rooms. There was a sense of beauty and whimsy in everyday objects, from clocks to dishes, all made from reused items. The landscape focused on composting, using native plants and additional "closing the loop" products. An environmental exhibit in a real-life setting. Available to visitors was the *GreenHouse Suppliers Guide*, which listed product resources.

The Pierce County Solid Waste Division was presented with the 1994 Public Education Award for the *GreenHouse Exhibit* by the National Recycling Coalition.

The *GreenHouse* was exhibited from Puyallup to Portland from 1993 to 2003. The exhibit was transferred to the City of Tacoma in 2005. The *GreenHouse*, which has been totally updated by the City, is now the *EnviroHouse*. Its new location is at the entrance of the City of Tacoma's landfill. Reuse at its best!

Drafted: 11/01/06

Electronics Recycling

State and local efforts to recycle electronic waste

Summary: Rapid advances in technology make many aspects of our lives easier, but pose interesting solid waste management challenges. Cell phones, televisions, and computers, have an increasingly short "shelf-life" and must be recycled or disposed properly. Whether because of the "two-year agreement" common to cell phone providers, the transition from analog to digital high-definition television, or the need to have the most fastest processor just to be able to view the local news on the web, households and small businesses are constantly acquiring the "latest and greatest" in technology. Because of slowly developing infrastructure, much of our last-generation technology is sitting in basements, garages, and attics. In Washington State, the private sector, charitable organizations, civic and business advocacy groups, and state and local governments are working together to kick start that infrastructure to make electronics recycling as pervasive as the analog cell phones, tube TVs, and pre-Pentium PCs gathering dust in the closet.

I. The Problem with Electronics

National and local problem: The National Recycling Coalition estimates that between 1997 and 2007, nearly 500 million personal computers will become obsolete in the United States.[37] Closer to home, the Department of Ecology estimates that between 2003 and 2010 over 4.5 million computer processing units, 3.5 million cathode ray tube monitors, and 1.5 million flat panel monitors will become obsolete in Washington.[38]

Environmental impact: Common household and business electronics contain materials that, if landfilled, may pose a threat to the environment or at least require careful attention and management. Cathode Ray Tubes (CRTs) found in most computer monitors and pre-flat screen televisions contain, on average, four pounds of lead.[39] Computer and television circuit boards are mostly made from plastics and copper, but can have small amounts of chromium, lead solder, nickel and zinc. Older electronics may have mercury switches. Nickel-Cadmium batteries are in many laptop computers. And that old television console that graced the living room may have capacitors containing PCBs.

It's important to note: while CRTs may be the second leading contributor of lead to municipal solid waste landfills[40], a household's televisions, computers, and cell

[37] National Recycling Coalition http://www.nrc-recycle.org/resources/electronics/managing.htm

[38] Final Bill Report, ESSB 6428, http://www.leg.wa.gov/pub/billinfo/2005-06/Pdf/Bill%20Reports/Senate%20Final/6428-S.FBR.pdf

[39] US EPA http://www.epa.gov/ecycling/index.htm For information about specific contaminants of concern and the "pathways" they take that could potentially cause harm, please see: http://www.epa.gov/ecycling/faq.htm .

[40] Northwest Product Stewardship Council http://www.productstewardship.net/productsElectronics.html

phones are not considered hazardous waste. Current regulations allow residents to dispose these items in Washington State's landfills.

Wastes generated by Pierce County residents and businesses are disposed in one of three lined, contained, landfills. There has not been a specific calculation of how much electronic waste is entering our landfills, but a recent EPA estimate pegged the national rate at one to four percent of annual disposal tonnage.[41] For Pierce County, that would work out to between 6,000 and 24,000 tons of electronics entering the landfills each year. The European Union estimates that electronic waste disposal is increasing three times faster than the rate of growth in the remainder of the waste stream.[42]

Why not landfill?:

As noted above, even though it is allowable to dispose electronics in the household waste stream, that's not the best solution for a number of reasons:

1) landfilling fails to recapture the many recyclable components and elements present in electronic waste;
2) a concerted electronics recycling effort will slow the use of scarce, local, landfill capacity; and
3) the cost-per-unit for landfilling electronics is high causing many to explore less reputable methods for disposal (e.g. dropping an old computer off at the local charity box or throwing an old television in a ditch) which themselves create significant societal costs to charities, government costs for litter collection, and environmental impacts from – as an example – CRT-lead getting into creeks.

II. Current Programs

Take It Back Network:

Pierce County is a member of the regional "Take It Back Network," a group of retailers, repair shops, non-profit organizations, waste haulers, recyclers, and local governments that offer convenient options for recycling some electronic products. According to its website, "the Network was developed to provide consumers with safe and convenient reuse and recycling options for products that contain toxic or hazardous materials. By reusing and recycling these products properly, we can save resources and reduce the amount of harmful contaminants that enter the environment."[43]

In Pierce County, six businesses have joined the Take It Back Network and agree to handle all materials domestically or in developed countries, and they will also provide customers with documentation (upon request) about how and where their materials were recycled. In most cases, the Network participants will charge customers a fee to recycle e-waste.

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[41] US EPA http://www.epa.gov/ecycling/faq.htm
[42] US EPA http://www.epa.gov/ecycling/faq.htm
[43] Take It Back Network http://www.takeitbacknetwork.org/

Disposal site recycling: For nearly two years, the County's transfer station and disposal site contractor, LRI, has provided electronics recycling opportunities at the Hidden Valley, Purdy, and Prairie Ridge Transfer Stations. LRI charges $12.50 to recycle a television, $7.00 to recycle a computer tower unit, and $7.50 to recycle a computer monitor (CRT). LRI will also accept other electronics including VCRs and cell phones at the rate of $5.00 per twenty pounds. Pierce County's waste handling agreement with LRI does not require, or regulate, this service.

III. Problems with the Current Generation of Programs

Fees: Fees! The most common complaint received by the Solid Waste Division concerning e-waste recycling is about the associated fee. A frequent complaint is, ". . . but you take household hazardous waste for free." That's true. But there are many differences between HHW and e-waste.

Household Hazardous Wastes have a strong potential to cause great harm when mixed in a waste collection vehicle or crushed by a landfill compactor. It is imperative that these materials be diverted from collection and landfilling and delivered by the generator to one of the County's HHW collection centers. Because of that significant need and expectation, the County provides free HHW acceptance.

E-waste is different. For one thing, it's pervasive, and a generally unavoidable part of daily life. There's more of it out there, making it much more expensive to collect. Four years ago, a one weekend e-waste recycling event cost as much to run as six months of HHW collection.

Prison labor: In many parts of the United States, corrections centers have established e-waste recycling centers as a prison industry. These centers dismantle the computers to recapture recyclable components, but there have been recent media reports questioning the safety of the prisoners who work in these facilities.[44] Many of our customers tell us they will not recycle electronics if it means the materials will wind-up in "prison sweatshops."

Identity theft: Partially related to the above, but mostly concerning any loss of personal control over old computers and cell phones, customers are concerned that disreputable recyclers could mine their old electronics for personal information.

Overseas: Over the past two years, media outlets have frequently reported disturbing stories about the impact of electronics recycling on residents of other countries.[45] Some of the concern is similar to the concerns about working conditions in prison

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[44] Prison Recycling Programs Called Unsafe, *Austin American-Statesman,* 10/18/06, http://www.statesman.com/news/content/news/stories/local/10/18/18prison.html

[45] CNET news http://news.com.com/When+PCs+pollute/2100-1041_3-5837134.html

recycling facilities. Other concerns, however, focus on the development of unlined, open-pit, e-waste "landfills" adjacent to residential communities.

IV. Washington's Electronic Product Recycling Law

As part of the 2006 Legislative Session, the Washington Legislature passed a law relating to providing electronic product recycling through manufacturer financed opportunities. Please see related two-page summary.

Covered items: The new law will provide a manufacturer-funded recycling system for the following products: 4-inch or greater (diagonal) monitors; desktop computers; laptop or portable computers; and 4-inch or greater video display devices. Individual residents, small businesses, and small governments will not have to pay a fee to recycle covered electronics. The manufacturers will reimburse costs incurred by legitimate, registered, and regulated collectors and transporters.

Partial veto: Governor Gregoire signed the bill into law on March 24, 2006. Expressing concerns that it is not within the powers of a State to regulate private sector international commerce, the Governor vetoed sections of the bill banning the export of electronics waste.

Rulemaking: The Department of Ecology is now writing the rules to implement the law. Manufacturer-financed e-waste recycling will commence statewide in 2009.

V. More information on Product Stewardship

Collecting and recycling electronics is not the entire solution. We all have a role to play to make smart choices in our purchasing habits, to not make decisions "on the cheap", and encourage manufacturing practices that are more resource efficient and environmentally conscious. Please refer to attached report from the Northwest Product Stewardship Council.

Drafted: 12/06/06

Organics and Facility Capacity

Reduction of the waste stream through composting and recycling

Summary: Aggressive yardwaste collection and composting programs and expanded private facility capacity to handle landclearing and wood debris has resulted in large amounts of organic materials diverted from the disposed waste stream in Pierce County. However, public and private composting facility capacity is over-extended and new capacity is needed just to meet the existing demand and any growth in collected yardwaste. Any new programs to divert other organics from the municipal solid waste stream, such as foodwaste, would need additional composting or other types of facility capacity.

I. Organic components of the municipal waste stream

First, a few definitions: Generally, what is meant when the term **"organics"** is applied to the municipal waste stream is that fraction of the disposed waste stream that is bio-degradable and which could be composted or otherwise recycled. This includes materials such as yard debris, foodwaste, paper, textiles, and untreated wood. Sometimes disposable diapers and certain types of compostable plastic are included.

For many years in the solid waste industry, the best management practices have been to divert these materials through collection programs which either recycle or compost the material. Since 1988 Washington regulations have specifically focused on removing paper and yardwaste through curbside residential collection and encouraging commercial collection programs and facilities.

The terminology that is now in vogue is **"bio-mass"** which includes a broader category of organic materials not generally found in the municipal waste stream. It includes any matter that can be processed into energy, heat, liquid fuels or power generation. Sources of biomass include wood, plants, agricultural residues, animal waste, plastics, paper, grease and oils, petroleum-based products, and any other organic components of municipal and industrial wastes.

This last definition is becoming more important because its use signals a new approach within the waste industry and elsewhere. Public and private entities are beginning to focus on more than just composting or recycling, turning towards technologies which produce energy, fuels, or other products that have little residue left for disposal. *[These are discussed in more detail in the briefing paper on Conversion Technologies.]*

National and State averages:

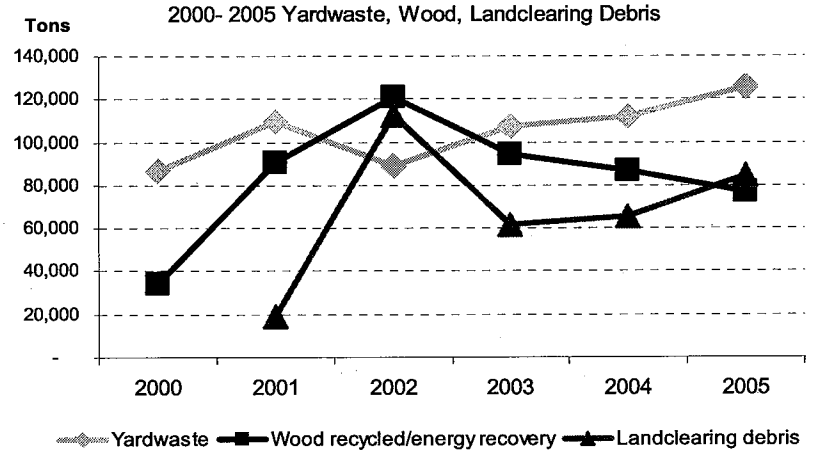
About 30 - 35% of what is generated in the municipal waste stream consists of organic materials other than paper, according to EPA. Of this percentage, foodwaste is estimated to be 12% and yard debris about 13%. Although paper is organic, it is always listed as a separate category because it makes up so much of what is generated – another 34%.

Even after the many years of governments focusing their efforts on diverting yard debris and paper, the Washington Department of Ecology estimates that about 30% of the waste being disposed is still organic materials other than paper. One of the major initiatives in the *Beyond Waste Plan* is to increase the recycling of these materials. Ecology has completed a biomass inventory that estimates that "15% of the available biomass is in the form of more readily biodegradable and concentrated waste streams coming from the municipal solid, animal manure and food processing wastes."[46]

Increased diversion:

We don't know how much of Pierce County's landfilled waste stream is organic. The 1995 waste audit is out-of-date because of the County and cities' successful efforts to recover paper and yardwaste. In addition, a growing number of businesses have developed substantial in-county capacity for recycling or diverting wood and landclearing debris to other products, for land application as mulch, or for energy recovery as hog fuel. All of these actions have probably significantly changed the percentage of organic materials disposed.

Chart 1. PIERCE COUNTY ORGANICS RECOVERY
2000- 2005 Yardwaste, Wood, Landclearing Debris



What we do know is that the amount of organic material reported as coming from Pierce County has dramatically increased. Trends for recycled and diverted tonnages for the three major organic materials are illustrated in Chart 1.[47]

In the 1995 Waste Audit, 26.6% of the County's disposed waste was food and yard waste, textiles, and disposable diapers. Another 9-11% was treated or untreated / painted lumber, and 27% was paper. *(Chapter 3, Solid Waste Plan, Table 3-15)*

The increase in Pierce County mirrors the State's recovery of organic materials which has also grown rapidly. Statewide, the recovery of just yard debris has grown from almost nothing in 1988 to about 643,000 tons in 2005.[48] More than a million tons of landclearing debris and wood was recycled or diverted to other uses and energy recovery in the State last year.

Reported trends in State data must be viewed with caution. Some of the increase may be the result of better reporting methods or may reflect the reporting of materials that were never in the municipal waste stream in the first place.

[46] *Biomass Inventory and Bioenergy Assessment*, December 2005, Publication No. 05-07-047.
[47] Washington Department of Ecology, Summaries of Recyclable Materials for Pierce County, 2000 – 2006.
[48] *Beyond Waste Plan* and Washington's 2005 Annual Report of Recyclable Materials.

Nevertheless, the 20+ years of public and private efforts in Pierce County to reduce the disposed waste stream have been effective in recovering large amounts of the two largest components, particularly yard debris. For comparison, consider that the Pierce County 1991 Compostable Waste Diversion Report estimated that there was 73,300 tons of yardwaste being disposed that could be composted, yet in 2005 nearly one-fifth of all the yardwaste reported as recycled in the State came from Pierce County and its cities - 126,000 tons.

II. Status of management systems in Pierce County

Yardwaste collection and composting: Pierce County began an aggressive approach towards reducing the disposed waste stream in 1991 with the decision by government leaders to begin recycling and yardwaste collection programs and to build the Purdy Yardwaste Composting Facility. These decisions were made after the County completed the Compostable Waste Diversion Report to identify how much and what type of materials in the waste stream was available for composting. Pierce County was the first in the State to adopt Minimum Levels of Service for both residential recycling and yardwaste collection and the first to implement the programs countywide in all cities and towns and the unincorporated areas. Tacoma too has had an active yardwaste curbside pickup program in place since 1996 and residents can drop-off yardwaste at the landfill / transfer station site.

Today's yard debris system includes: drop-off sites at transfer stations and privately-owned facilities; residential curbside collection in all urban areas and cities and large portions of unincorporated areas; the County-owned Yardwaste Composting Facility; and the County contract with LRI for composting all residential yard and drop-off debris at the LRI Compost Factory, which is located at the Hidden Valley Transfer Station. The drop-off system at transfer stations is subsidized. The first cubic yard is free and subsequent yardage is charged reduced rates. *[More detailed descriptions can be found in Chapters 4 and 6 of the Solid Waste Plan.]*

Each and every year, there have been substantial increases in yardwaste tonnage diverted from landfilling. The early success of the program was evident in the1995 waste audit which showed a significant reduction of yardwaste in the disposed waste stream from an estimated 20-22% in 1989 to only 4.4% in 1995.

Paper: More recently, the County has focused on recovering paper. A major objective of the single-cart curbside program is to capture this largest waste stream component in all its forms. In the first full year of single-cart pickup the paper tonnage collected at the curb increased 88%. Paper products – newspaper, mixed, cardboard and paper cartons – make up 91% of all the material collected. The curbside program recovered 31,642 tons of paper commodities in the first full year and 35,522 tons in its second year.

While this is a substantial improvement, the County does not know how much more paper remains in the waste stream that could be recycled, composted, or otherwise diverted for energy uses. It might be possible that more paper could be recovered through expanded or revised recycling programs for multi-family residences or from the commercial sector.

Landclearing debris and wood: While the County, cities, and hauling companies focused their efforts on managing residential and self-hauled yardwaste, a strong business infrastructure developed to recover untreated wood, landclearing and other construction debris.[49] Pierce County has one of the largest businesses in the State diverting these materials to new or reused products, landscape mulch, or for energy recovery as hog fuel. Residuals from the processes are approved for use as landfill cover.

Not counting transfer stations, Pierce County has 13 different businesses with solid waste permits (or which are permit-exempt) reporting to the Health Department that they are handling yardwaste, landclearing, or wood debris.

About 84,125 tons of landclearing debris and 77,150 tons of wood were reported from Pierce County as recycled or diverted for other uses in 2005.

Not all of the businesses take organic material from other businesses or serve as drop-off sites for residential yard or landclearing debris. Some only handle landclearing debris as part of their own construction activities and others only take in limited types of materials, such as pallets and undamaged wood for the pallet recycling and specialty woodworking companies.

Private capacity policy support: The Solid Waste Plan supports the development of private capacity to handle these wastes. The Plan also includes policies towards ensuring that permitting systems are in place and adequately funded so that "wastes are managed in a manner ...that promotes and maintains a high level of public health and safety; and protects the environment." There are policies calling for more source-separation opportunities for wood waste and construction debris at transfer stations.

III. Foodwaste

The "hot" topic in the solid waste industry is foodwaste. Solid waste agencies in many parts of the United States are now moving towards recovery of this next largest component of the municipal waste stream. The County's 1995 waste audit identified it as the largest single type of material (next to paper) at 15.3%.

[49] Untreated wood is any wood material that is unpainted or has not been treated with chemicals.

Up until recently, the recommended best management practice for handling foodwaste has been considered to be composting which may still be the most economically efficient and technically simple method to handle foodwaste.

Collection costs: Governments have been reluctant to tackle collection programs for foodwaste because collection adds considerable expense to the system and because of the need for expanded capacity to compost. The cost of collection increases because foodwaste's quick decay means it can arrive at a compost facility already causing odor problems. That then usually means that any new collection system has to be weekly instead of bi-weekly. In addition, separating foodwaste from garbage either means another container must be used or foodwaste must be mixed in with yard debris. Mixing foodwaste with yard debris can cause problems if the existing composting facilities cannot handle needed processing changes for odor control. This means old facilities need to be retrofitted or new ones built.

Some governments, such as Tacoma, are experimenting with first collecting foodwaste from the commercial sector, such as from restaurants and grocery stores, and diverting it to other types of facilities. Tacoma is experimenting with diverting the material to the anaerobic digester at the wastewater treatment plant. Some governments are expanding their use of composting facilities while others are experimenting with hybrid systems which mix composting with what is referred to as other "conversion technologies." *[This topic is discussed in more detail in the Conversion Technologies briefing paper.]*

Policy direction: Pierce County has not yet tackled the diversion of foodwaste on a broad scale although the Solid Waste Plan contains a policy about evaluating "a county-wide program to increase diversion and recycling of foodwaste and compostable organics." *[Chapter 4, page 4-58]*

Foodwaste, as the next largest component of the waste stream, would be the logical choice for the next material to attempt to recover. Plan policies require that any new program efforts consider the "maximum diversion potential" as well as "ease of participation, consideration of waste stream contribution....." *[Chapter 4, page 4-3.]*

Home composting and waste generation: On a smaller scale than collection programs, the County's educational efforts have been towards promoting home composting of yard debris and foodwaste as well as using other waste prevention practices such as mulching mowers. Worm composting classes for foodwaste are popular with residents. In general, it has been estimated that up to 2% of the waste stream can be removed from the disposed waste stream through home composting programs.

Reducing the generation of foodwaste by residents is a Best Management Practice that is also receiving more attention. The most recent, and probably the most

definitive study of how Americans handle food, indicates that almost 14% of the food that is purchased by households is ending up as garbage and that most of this was edible or was trashed simply because households misjudged their purchases in the first place. There are many in the waste industry who advocate the need to increase food awareness through long-term education. *[See attached article from Dr. Timothy Jones.]*

IV. Composting capacity issues

Two composting facilities:

Like other governments, Pierce County and Tacoma chose to rely upon composting to manage yard debris. Two facilities provide all of the composting capacity contracted by governments in Pierce County:

- the County-owned Purdy Yardwaste Composting Facility, built in 1992, and
- the Compost Factory owned by LRI and built in 1999.

Both facilities have been operating beyond their design capacity for some time and, for the most part, reached their design capacity shortly after they were built. Last year, the Compost Factory was handling an average of 186 tons per day and the Purdy facility was averaging 85 tons, although it has handled up to 120 tons for some periods. The Compost Factory has the ability to push through 200 tons per day at peak capacity but this is a stretch. It has the design capacity to handle foodwaste. Last year, these two facilities received 20,000 tons more from the system than could be composted. The material was ground and chipped for use as mulch.

To put it simply, the County does not have the capacity to compost any more organic materials. New capacity is needed to just handle the existing demand for yardwaste, much less any projected growth.

"If you build it..."

In some ways, the system in Pierce County has experienced a sort of "if you build it, they will come" impact. Growth in the number of housing developments has resulted in more customers signing up for yard debris collection. Also, residents seem to be steadily increasing the amounts of yard debris set at the curb. Perhaps, it has become the "in" thing to prune and keep up the yard. Maybe residents have realized that it is cheaper to sign-up for yardwaste collection than to dispose of the yard debris in their garbage cans. Increasing amounts might also be because of decreased burning (an old common practice) as a result of the burn bans in the urban areas instituted by the Puget Sound Clean Air Agency. The subsidized drop-off system may also encourage more recycling.

Whatever the reason for growth in the amount collected, projecting future capacity needs is difficult. Population growth, resident's habits, burn bans and the reduced cost of collection are not the only factors to consider when it comes to yard debris. Western Washington's generally mild weather creates a long-growing

season. Some years are warmer than others and, lately, it seems that there just is more yard debris generated because of the vegetative growth.

In addition, recent winter storms have generated more debris than can be handled. It is likely that all of the debris from the December, 2006 storms will be disposed, not composted.

V. Highlights and policy recommendations

Important points to remember:

- Since 1991, Pierce County has made a strong effort to remove the largest components of the waste stream – paper and yardwaste – as part of its overall approach to reduce the amount of waste disposed.

- Public and private efforts in Pierce County have been successful: large amounts of material have been diverted and there has been a growth in private capacity to handle landclearing and wood debris.

- Success in collection programs and outreach messages has led to a lack of capacity for composting. Facilities are over-extended just in managing current demand for yardwaste, much less for handling organics from any new programs.

- It is unknown how much of the disposed waste stream is now organic.

- Pierce County needs more facility capacity – composting or other types of organic management facilities.

- Foodwaste is the next largest component of the waste stream next to paper and yardwaste and other governments are looking toward diversion of foodwaste. Americans waste a lot of food and there is a growing support for expanded foodwaste education. There are difficulties in collecting foodwaste which can lead to increased costs.

Policy recommendations:

- Investigate the role of subsidies in the organic management system and in providing capacity. Consider if there would be as much organics to manage if the subsidies were removed.

- Survey the full array of organic management practices currently in use.

- Determine what percent of the Pierce County population still burns organic debris and the impact on organics management of the Puget Sound Clean Air Agency's bans on outdoor burning.

- Develop a foodwaste education program and work with school districts to create model foodwaste diversion programs.

- Determine how much of Pierce County's waste stream is organic and determine what percentage of the organics is contributed by the different sectors – residential, commercial, and institutional.

Drafted: 1/10/07
Revised: 9/24/07

Conversion Technologies

Emerging management systems for biomass or source-separated organics

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Summary: Conversion technologies (CTs) offer the potential for a fresh approach towards reducing the amount of waste disposed in landfills when applied to handling pre-processed mixed waste or source-separated organics. New versions of CTs are designed to produce energy and other byproducts, with little left over for disposal. They are seen as offering a number of environmental benefits by capturing methane and carbon for reuse. For those governments which rely heavily on source-separation programs, like those in Washington, a combination of biological CTs, such as anaerobic digesters and composting facilities, may offer the most efficient and cost-effective system to manage organics and other compostable material remaining in the disposed waste stream. The Washington Department of Ecology has inventoried the amount of bio-mass in the state, projected the potential for creating renewable energy through use of these technologies, and promotes their use with policies in the *Beyond Waste Plan.*

I. Using waste resources for energy, bio-fuels, and other products

What are they? Commonly referred to as CTs, conversion technologies are a wide array of processes which are capable of converting the carbon-based portion of the solid waste stream into high-value useful products, including electricity, renewable or "green" fuels, marketable chemicals, or soil amendments.

CTs can be categorized into three types of technological groups – thermal-chemical, biological-chemical, and physio-chemical. Some of the new, emerging facility-types are actually combinations of these processes.

Thermal CTs: Thermal conversion processes can accept nearly all organic material (bio-mass and petroleum-based products such as plastics) and includes processes such as combustion, pyrolysis, and gasification. These technologies utilize high temperatures and have higher conversion-to-energy rates when compared to other conversion technologies. They are best suited for low-moisture materials.

Pyrolysis and gasification are not new, having been used for coal since the early 20th Century. Combustion CTs, a subset, are more like the older mass-burn incinerators and, when unprocessed mixed municipal solid waste is the feedstock, have larger amounts of residuals than most of the other, newer CTs.

In general, agencies or governments that need to produce energy or whose systems already include substantial pre-processing facilities are more likely to be interested in the use of thermal facilities.

Biological: Biological processes can convert only biodegradable materials, such as food wastes, paper, cardboard, manure, bio-solids, and wood waste and includes such technologies as anaerobic digestion, composting, and hydrolysis / fermentation. In general, these processes occur at low temperatures and have lower conversion rates than thermal processes and are better suited for high moisture materials.

Agencies, governments, or private entities with relatively small amounts of organic wastes to manage or with waste management systems that are heavily based on source-separation as a first step, as in Washington, are using or studying ways to increase the use of biological CTs. Washington is an example of a state system which emphasizes source-separation. The State's regulations have led to a diverse public and private waste management system with many different types of facilities handling many different types of waste. Generally, most material recovery facilities in Washington process commingled source-separated recyclables as opposed to the MRF's[50] in some other states which process garbage to extract recyclables and organics.

Physio-chemical:

Physio-chemical conversion processes, such as "trans-esterfication," are used to convert oils, fats, greases and animal tallow to make bio-diesel. There are no facilities using this process to manage mixed waste and research on using mixed waste as a feedstock is only in the early stages.

II. Requirements common to all CTs

Pre-processing:

One thing to remember about most CTs is that they need a feedstock that is consistent day-to-day which means that heterogeneous municipal solid waste must be pre-processed. The resulting mixed waste feedstock that comes from processing through a "dirty" MRF may be organics and paper, or may include other petroleum-based products. In some cases, this pre-processed mixed waste may then be added to other source-separated organics.[51] Some CTs require additional grinding and pulping of the organic waste.

Source-separated organics: Another important point to remember about biological CTs is that they are designed to operate for a specific organic waste stream and when new types of organic waste are introduced they may need to be reconfigured or new equipment added. Organic collection systems need to be matched to the CTs' needs and the CTs need to be matched with the type and amount of organics available.

It's not just a simple decision to determine that all organics will be collected in a one-size-fits-all collection system. Not all sectors – residential, commercial,

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[50] Material resource recovery facilities which take in garbage to remove recyclable materials are commonly referred to as "dirty" MRF's.

[51] Source-separated organics (SSO's) are those organic materials that are collected at the source before they enter the mixed municipal waste stream, such as yardwaste collected at the curb or at the drop-off sites.

industrial – produce the same type of organic materials. Most organics collection systems need to be also tailored to the needs of the individual sector generating the waste. It is for this reason that most governments that are looking at these systems to manage some organic component of the waste stream are starting off with small, model programs or are focusing on organics coming from only one sector, rather than trying to capture all of the organics mixed into the municipal waste stream.

III. How do today's CTs differ from how they were used in the past?

Old processes, new names: The technologies may have new names but are not all new processes. Most of them are based on old methods that have been around for many years and which are in use in a variety of industries. Some of the thermal-type processes have been used in waste-to-energy facilities.[52] The newer-style thermal facilities are substantially different from the older versions of waste-to-energy facilities that were mostly mass burn incinerators where the major intent was to reduce the municipal waste stream for disposal with energy (steam or heat) as a by-product. The major intent of using newer CTs is to produce energy and marketable products with little residue needing disposal. They are also designed to meet more stringent air emission requirements.

The biological processes are either aerobic composting (bio-degradation with oxygen); anaerobic digestion (bio-degradation without oxygen), or are using some form of fermentation or hydrolysis to produce ethanol or other bio-fuels like bio-gas or bio-diesel. Some facility types combine anaerobic digestion with back-end composting.

Most of these technologies are just new, improved more-efficient facility types or they are hybrids combining a thermal process followed up by a biological or chemical process; or biological hybrids.

What is new? The change that has occurred within the last few years has been in how CTs are used in other countries and how more counties and cities in the U.S. and Canada are studying them for wider use in managing mixed waste, source-separated organics (SSO's), or other bio-mass materials. The major drivers behind the decisions by governments to use or study the use of these facilities are:

- the lack of, and the need to prolong, landfill capacity;
- the rising cost of disposal coupled with more strict environmental performance requirements;
- the need for energy and a recognition that CTs are a source of renewable energy,
- the public's expressed desire to reduce pollution and manage mixed waste in a more environmentally sustainable way with waste materials being viewed as a true resource rather than as waste;

[52] Summary descriptions of some types are in Chapter 6 of the *Solid Waste Plan* and found in more detail in the 1989 Environmental Impact Statement and 1990 Report on Alternative Solid Waste Processing Technologies.

• new innovative technology designs which focus on producing energy and useful products, not just on reducing the amount of waste to be disposed;
• government directives to increase recycling and diversion of other materials, and
• adoption of waste management strategies to reduce greenhouse gases that contribute to global warming.

IV. Who is using CTs ?

In the U.S.: As of July 2005, there were no commercial-scale versions of the newer CTs operating in the U.S. that use mixed waste as the feedstock. There are older waste-to-energy facilities incinerating mixed municipal waste and about 14 rotary-style digesters. Most of the compost from these digesters managing mixed waste can only be used in limited ways since it contains a high level of contaminates, such as plastic, metal, or glass.

A number of CT projects in the development stage, particularly in California, will use a feedstock mix of the organic fraction of municipal waste, paper, and, in some cases, petroleum-based products. Most of these materials would come from material resource recovery facilities after the materials are separated from other trash or recyclables. As one writer states: "Many of these facilities, however, will not go through because of the development risks that apply to any new venture. Counties and cities are risk adverse, in the sense that they don't want to be the first on the block with using a CT to manage MSW: they would rather wait until a few systems are operating."[53]

Other projects that are under development and already in use are smaller facilities that only use source-separated organics or other selected biomass materials as feedstocks. Most of the facilities in use and under development are anaerobic digesters, composting facilities, or hybrids of the two.

Europe and Asia[54]: While the application of these technologies to managing mixed solid waste is new and emerging in California, thermal and biological CTs are well-developed in Europe and Japan. There are over 50 thermo-chemical facilities and over 85 anaerobic digestion facilities that use pre-processed mixed waste as a feedstock in Germany, the United Kingdom, and Japan. Canada is also using and studying the economics of a wider use of certain facilities, primarily anaerobic digesters coupled with existing composting systems. It is unknown how many anaerobic digestion facilities are in use in private businesses managing specific organics which never reach the municipal waste streams of these countries.

Thermal conversion CTs: Europe classifies all thermal conversion systems as "incineration." European countries have set strict environmental performance standards and thermal

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[53] Dan Predpall, *The Time Has Come for Conversion Technologies*, MSW Management Magazine, May/June 2006.
[54] Most of the information in the following paragraphs is distilled from reports on the website of the California Integrated Waste Management Board; Los Angeles County Integrated Waste Management Task Force's *Conversion Technology Report*; The BioTown, USA *Sourcebook of Biomass Energy*; and EPA's Office of Solid Waste.

conversion is a significant component of European strategies to both reduce landfill disposal and to reduce green house gas emissions. Several thermal CTs experienced technical or financial problems when they were first developed in Germany. Most of the problems were because of the inherent difficulty in processing heterogeneous and highly variable feedstocks such as MSW and the need for many CTs to have a waste feedstock of consistent composition. Because of these problems Europe's regulations emphasize the importance of feedstock preparation and pre-processing of the waste before it goes into a thermal CT. Pre-processing in this context means that countries require source-separation of organics (SSO's) before they are mixed into the waste stream or continued processing of the mixed waste through resource recovery facilities to separate the materials from trash. The result is that many of the European mixed waste feedstocks contain only organics, paper, and petroleum-based products.

Japan, where landfill space and resources are limited, is currently the leader in the use of pyrolysis and gasification for mixed waste. Much of the Japanese capacity has been installed in the last five years. Japan's system is considered to have "matured" in terms of efficiency, reliability and environmental performance. Like Europe, Japan places a strong emphasis on pre-processing and source-separation.

Waste composition differences: It is important to note that the composition of mixed municipal waste in Japan and in Europe is quite different from the mixed municipal waste found in the U.S. The disposed waste stream in many of these countries contains fewer amounts of organic wastes, such as yard debris or foodwaste.

Anaerobic digesters: Anaerobic digestion is an old technology which has been used to handle municipal biosolids for over 100 years in the U.S. Biodegradable material is converted by bacterial breakdown in the absence of oxygen to produce methane and $C0_2$ in the digester. Most of the digesters operating in Europe to manage the organic component of the waste stream have been operating from five to ten years. They are converting over 12% of all municipal waste in Europe to biogas.[55]

These facilities are becoming more popular for use in handling manures and other source-separated organics in the U.S. and Canada. They are easier to site than larger plants because they have small space requirements, produce little or no odor, and greatly reduce the amount of ammonia and volatile organic compounds (VOC's) which are normally released from aerobic composting. In many cases these are just small digester tanks added to an existing organic management facility, such as a compost facility or manure management system.[56]

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[55] *California Municipal Utility Looks to Biomass for Renewable Energy,* by Ruth MacDougall, Producing Power with Anaerobic Digestion (Manual), Biocycle Journal, page 47.

[56] Chapter 6 of the Solid Waste Plan and the 1989 EIS contain descriptions of anaerobic digestion. When the County considered waste-to-energy facilities to handle MSW in one facility, anaerobic composting facilities was one technology reviewed.

Bio-resource inventory: When Washington Department of Ecology completed an inventory with Washington State University of Washington's bio-resources, the report used anaerobic digestion facilities to estimate renewable energy potential. The report estimated that there is "over 16.9 million tons of underutilized dry equivalent biomass in Washington which is capable of producing the equivalent of 50% of Washington's annual residential electrical consumption."[57] Ecology's inventory was seen "as an essential first step to implement the State's *Beyond Waste* strategy for reduction of organic residuals in solid waste" and as "a first step toward a sustainable energy policy..." *(Abstract from inventory.)*

Digesters are not incinerators: Anaerobic digestion facilities are not considered as waste-to-energy facilities in the U.S. Some are being added to landfills as part of the energy-recovery equipment systems to meet Best Available Control Technologies for managing landfill gas.

Washington's Solid Waste Handling Regulations (WAC 173-350) specifically point out that the energy recovery and incineration regulations do not apply to solid waste digesters, 173-350-240 (1) (b). At one time in Washington, anaerobic digesters were considered to be a form of composting but the definition for composting was changed to refer only to aerobic composting.

It is now unclear how these facilities are to be permitted under state and local waste or zoning regulations. Most existing digesters in Washington are considered as accessory equipment to wastewater treatment plants or for large, food processing operations and not, in and of themselves, as separate facilities.

California is considering altering some of its recycling definitions in state law so that digesters are considered to be recycling facilities so that materials diverted to them from the municipal waste stream can be considered in computing the recycling rates that are mandated in California.

V. Benefits of using CTs

Environmental Sustainability: In general, the overall benefit of CTs is that of increased environmental sustainability. Most agencies see the following key benefits:

- **Increased recycling** – Many of the residuals still left in the municipal waste stream are recyclable. More can be recovered in the pre-processing systems required for CTs.

[57] Biomass Inventory and Bioenergy Assessment, December 2005, Department of Ecology and Washington State University, Publication #05-07-047.

• **Renewable energy** – Processing of some components of the municipal waste stream to generate energy or green fuels qualifies in most states as a source of renewable energy and there are new state and federal credits that might be available to assist in financing these facilities.

• **Green fuels for the waste management system** – Because CTs can generate electricity or produce green fuels, they can supply some of the energy needs for other components of the waste management system which may help to reduce system costs.

• **Lower air emissions** – The use of CTs can result in reductions in emissions of VOC's and particulates.

• **Reduced carbon emissions** – Carbon emissions contribute to the greenhouse effect and result from the combustion of fossil fuels and the degradation of organics. CTs can capture methane and sequester carbon for reuse.

VI. Highlights and recommended policies

Important points:

• CTs require pre-processing of mixed waste or the feedstocks need to be source-separate organics (SSO's).

• New thermal CTs are not the same as old mass-burn incinerators. The focus of the newer versions is on producing energy and useful by-products with little left to dispose.

• CTs are being considered as ways to prolong landfill capacity or as alternatives to disposal options which provide other environmentally sustainable benefits.

• Washington Department of Ecology used anaerobic digesters to project renewable energy potential from bio-mass which included municipal solid waste.

• Anaerobic digesters are not considered incinerators under Washington regulations. Anaerobic digestion use to be considered as a form of composting but composting is now defined only as aerobic activity. It is unclear how digesters that are used for managing of organics, other than biosolids, would be permitted under state and local regulations.

Policy recommendations:

• Consider implementing all policy recommendations in the Organics and Facility Capacity briefing paper.

• Study and evaluate potential ways to divert more organics from the waste stream for use as a CT feedstock to produce energy and other products.

- Identify existing potential facility capacity for handling foodwaste.

- Evaluate financial options created by state and federal credits for renewable energy resources. Develop an understanding of the financial support available for businesses to produce bio-fuels such as ethanol, syngas, bio-diesel, or liquefied natural gas.

- Consider encouraging, or participating in, partnerships with private businesses and public utility agencies to develop new facilities to manage organic wastes or to divert some organics, such as foodwaste, to existing facilities.

- Establish an understanding of state and local permitting requirements for CTs with specific attention to anaerobic digesters.

- Focus on integrating a broader perspective of solid waste management into the Pierce County system by researching, discussing, publicizing and developing environmentally sustainable practices to manage organic materials.

Attached is a summary chart describing conversion technologies.

Conversion Technologies – This table is intended to only briefly list the conversion process types for biomass/organics, some of the appropriate primary feedstocks, energy or products, and comments about a few other pertinent issues. It is not intended to be all-inclusive nor name each type of facility.

TECHNOLOGY	FEEDSTOCKS	PRODUCTS	COMMENTS
Thermo-chemical	*In general, these are high temperature and high conversion processes best suited for low moisture materials.*		
Direct Combustion	Wood, agricultural waste, organic fraction of municipal solid waste, refuse-derive fuel, residential fuels, wood-pulping liquor	Heat – hot air, water Steam Electricity	Direct combustion systems to produce steam which is captured by a turbine or generator to convert into electricity. Examples: furnaces or boilers; WTE incinerators
Gasification	Biomass – typical materials are coal, petroleum-based and organic materials.	Fuel gases to be burned directly for space heat or drying; burned in a boiler to produce steam; or converted to methanol. Primarily these are: syngas, oils, and Char (carbon black/ash)	Uses heat, pressure and steam to convert materials directly into a gas. Electric power can be generated by combining a gasifier with a turbine or fuel cell. Due to heterogeneous nature of MSW, significant pre-processing is required.
Pyrolysis	Wood, agricultural waste, organic fraction of municipal solid waste	Synthetic fuel oil, charcoal Pyrolic oil can be refined for high quality uses such as engine oil, chemicals, and adhesives. Residues are inorganic portions of feedstock and carbon or Char.	Process of heating materials at high temperature in the absence of oxygen. Catalysts, cracking and arcing can be used as refinements to process. Heterogeneous nature of MSW requires pre-processing.
Bio-chemical	*In general, lower temperature and lower conversion rate processes best suited for high moisture biomass.*		
Aerobic composting	Yard debris, foodwaste, agricultural residue, landclearing debris, compostable paper, manures	Compost soil amendments or mulch	Uses controlled conditions to promote bacterial degradation in an oxygen-rich environment.
Anaerobic Digestion	Manures, agricultural residue, sewage sludge, foodwaste, organic fraction of municipal solid waste	Biogas for energy uses – principally methane and carbon dioxide but sometimes hydrogen. The "digestate" residue is suitable for composting, land application, or to produce fiber and fuel liquor.	Promotes bacterial breakdown of organic materials in the absence of oxygen. Biogas is used in boilers for heat or to operate turbines for electrical energy.
Fermentation	Sugar / starch crops, wood, pulp sludge, grass straw (Ideal MSW feedstock would only contain paper, wood, yard debris and purely vegetal biomass.)	Ethanol Other chemicals	Starch is converted to sugar and fermented. Cellulosic feedstocks, including the majority fraction of MSW organics, need pretreatment (acid, enzymatic or hydrothermal hydrolysis).
Hydrolysis	Biomass materials similar to those listed for fermentation.	Sugars can be converted into ethanol through fermentation or converted to levulini or citric acids used for specialty chemicals, fuel additives, herbicides and pesticides. Citric acid is also used in the beverage industry, candies, frozen foods, processed cheeses, and preservatives.	Chemical decomposition using water to split chemical bonds of substances. Feedstocks need to be pulped. Cellulosic materials, including majority fraction of MSW organics, need pretreatment. Technology is still under development.
Physio-chemical	*Suitable for oils, fats greases and animal tallow*		
Trans-esterification	Oils, fats, greases, animal fallows	Biodiesel	Catalytic production of biodiesel by removal of glycerols through combination with alcohol.

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Agricultural Waste Management

Technologies to manage agricultural waste and municipal organics

Federal agency recommendations: Since the early 1990's the U.S. Environmental Protection Agency (EPA) and the Department of Agriculture have been advocating a series of best management actions to mitigate greenhouse gas and reduce (or prevent) ground and surface water pollution from agricultural activities. EPA is a member of the international Methane to Markets Partnership whose focus "is on cost-effective, methane recovery from four major methane sources: landfills, underground coal mines natural gas and oil systems, and **animal waste management**."[58]

Why: Worldwide, agricultural activities account for approximately 50% of global anthropogenic (human caused) methane emissions (CH_4) and 85% of nitrous oxide (N_20) emissions. Both of these gases contribute about 6-8% of the global warming gases with the vast majority of the rest of the emissions being carbon dioxide (CO_2).

Methane and nitrous oxide are substantially more potent than CO_2. The media attention has focused on CO_2 because it is the reference gas used by the Intergovernmental Panel of Climate Change (IPCC) for evaluating emissions. (Their emission statistics use a formula to convert all gases to CO_2 equivalent.) Methane, however, is 23 times as potent as carbon dioxide; nitrous oxide is 296 times as potent. About 13% of the non-CO_2 gases comes from manure management practices and another 26.5% comes from "enteric fermentation" which is a more difficult management problem.

The EPA and Department of Agriculture have also focused on methane recovery because it is one of the easiest ways to reduce emissions because the technologies, mostly anaerobic digesters, have been available for many, many years and are used in all sorts of waste management practices, such as at wastewater treatment plants.

Biomass: bio-fuels & energy Organic wastes, particularly from forestry and agricultural activities, are also receiving wide recognition for their potential for producing alternative fuels in addition to managing them in ways to mitigate greenhouse gases. There are a number of new or updated old technologies that are based on converting organic wastes to either energy or bio-fuels. Most of these are referred to as "conversion technologies (CTs)."

Certain other practices in forestry and agriculture are seen as providing "carbon sinks." What this means is that these practices can sequester carbon in the soil.

[58] Source: Methane discussion on the U.S. Environmental Protection Agency Office of Solid Waste website: *www.epa.gov/outreach/lmop/index.htm.*

Use of compost and cover crops, and planting more trees are just a few of the many ways that can be used to sequester carbon. A full discussion of these activities can be found in EPA's report Greenhouse Gas Mitigation Potential in U.S. Forestry and Agriculture.[59]

Technologies: Anaerobic digesters are the long-time preferred, and considered "the key" technology by the two federal agencies for managing manure from dairy farms and from stock-feeding lots. There are many types of digesters, from small to large, that are designed to handle a particular waste and quantity (e.g., plug and flow, unheated or heated lagoon, complete mix, etc.). The digesters capture methane emitted from the manure where it can be converted to either electricity for use on-farm, consumed through flaring of the collected gases, or further converted to a bio-fuel such as bio-ethanol, bio-diesel, or liquefied or compressed natural gas (LNG/CNG). (The older style digesters which use flares generally release some CO_2 and do not convert the gas to bio-fuels or energy.)

High-solids digesters: There are many new improved versions of anaerobic digesters which are more energy efficient, capture more of the emissions, do not release CO_2, and which can also produce bio-hydrogen for a fuel. Many of the newer style digesters that produce electricity or fuel are in use in the U.S., particularly in the mid-West, New York, and Pennsylvania, and in California. There are also examples of small-scale facilities in Washington and Oregon. The Port of Tillamook County, Oregon has partnered with all the dairy farms in the County to build and operate a large-scale digester facility. *(See attached articles: "Generating A Revenue That Is Not Reliant On Milk Checks" and "Tillamook Digester Produces Power, Fiber and Interest.")*

States in the mid-west, particularly Wisconsin, Minnesota, Ohio, and Indiana, have adopted "agriculture-waste-to-energy" as part of their overall state economic development strategies. As a result, they fund or otherwise assist their big dairies and other large farm operations to install anaerobic digesters and/or composting operations to produce energy and other products.

California is leading the way on the West Coast in making methane capture from manure management a required part of greenhouse gas emission reduction goals and the State will be heavily relying on agricultural bio-mass to produce alternative fuels.

Europe: There are 86 industrial-sized anaerobic digestion plants in Europe handling about 3 million tons per year. They are converting over 12% of Europe's municipal solid waste to biogas. There are over 5,000 on-farm digesters in Europe capturing methane from manure and other agricultural wastes and turning it into electricity or bio-fuels.

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[59] EPA website: *www.epa.gov/sequestration/greenhouse_gas.html.*

Funding support

- Federal: In coordination with the Department of Agriculture, EPA runs the AgSTAR Program which is an outreach program designed to assist farmers to recover biogas to produce electricity, heat or hot water. There are a number of tax incentives, grants and loan programs. Agricultural Secretary Mike Johans just announced the availability of $176.5 million in loan guarantees and $11.4 million in grants to support investments in renewable energy and energy efficiency improvements by agricultural producers and small businesses. (March 21, 2007)[60]

The loan guarantees cover up to 50% of a project's costs, not to exceed $10 million. Grants are available for up to 25% of a project's cost, not to exceed $250,000 for energy efficiency improvements and $500,000 for renewable energy systems. Applications go to the U.S. Rural Department.

Washington - policy & funding support: Washington established the Energy Freedom Program (RCW 15.110) to provide assistance and financing to encourage the development of alternative fuels and other alternative power projects to increase energy independence. Anaerobic digesters for farm operations were specifically highlighted within this legislation. Recent legislation was adopted by the Legislature (ESSHB 1303) which has modified and expanded this program.

Mason County may be using this legislation to partner with other agencies to create a "High Solids Community Digester." Their partners include the Washington Center for Trade and Economic Development, Mason Conservation District, Puget Sound Action Team, WSU Energy Extension, WSU Center for Biological Research, and the Skokomish Tribe.

Feedstocks for the community digester may include municipal organic wastes, farm manures, and waste from a correction facility. The correction facility is planning on purchasing the gas and reducing their solid waste disposal costs.[61]

The Department of Ecology has completed a Biomass Inventory and Bioenergy Assessment for Washington which uses anaerobic digestion and/or combustion to project biomass potential for electricity. Ecology worked with WSU to develop a pilot-scale mobile anaerobic digester to handle agricultural waste.

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[60] EPA website: *www.epa.gov/agstart/overview.html.*

[61] Website: *www.masoncd.org.*

Facility Permitting*

Solid Waste Handling Standards (WAC 173-350); coordination with land use regulations; and oversight to protect the environment

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Summary: There are strong mechanisms in place to ensure that most waste facilities are operated in ways to protect the environment and "maintain a high level of public health and safety," as required by the Solid Waste Plan. However, facility exemptions and the widening gap between the labeling of zoning land uses and solid waste uses can cause coordination problems between agencies. The lack of coordination has resulted in public and industry confusion over permit requirements and regulatory responsibility. County residents are uncertain as to the types of facilities and intensity of uses allowed in their neighborhoods.

There is a widening gap between the types of uses listed in zoning codes and the types of uses listed for the purposes of solid waste regulations. The new waste laws change some definitions; add new facility levels based on volume and feedstocks; consolidate other facilities under one name; and recognize new activities and processes that were never envisioned in the zoning codes. Some of the terminology used to determine what is to be considered an exempt facility exacerbates the definition gap and the likelihood of coordination miss-steps between agencies.

"Permit exemptions" make it difficult to ensure that all businesses that handle waste materials are adequately permitted and protecting the environment. The major problem with the exemptions is that the Washington's new regulations provide no mechanism to fund oversight and preventative actions for exempt facilities. The locally-adopted facility review fee for exempt facilities must rely upon self-reporting by the potentially exempted facilities or after-the-fact enforcement by the Tacoma-Pierce County Health Department.

To resolve some of these inconsistencies, the Pierce County Council directed a coordinated agency review of businesses with outside storage. New definitions and outside storage standards to Pierce County development regulations are proposed for Council adoption.

I. Permits and Exemptions

Solid waste permits: In 2003, the State adopted WAC 173-350 Solid Waste Handling Standards to replace the older Minimum Functional Standards. The new regulations clarify definitions; incorporate new waste handling technologies; and have more up-to-date siting, design, and operation requirements. All existing and new facilities that require solid waste permits must meet those operating, environmental monitoring,

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* This applies to all waste handling facilities *except* Municipal Solid Waste Landfills which are regulated under WAC 173-351 Criteria for Municipal Solid Waste Landfills.

closure and post-closure requirements applicable for that facility. Some facilities are required to meet financial assurance requirements (i.e. facility operators must set aside funds to completely close and remove waste from the facility in the event of a failure resulting in permanent shut-down). Annual reports are required and must be provided to the Health Department and the Washington Department of Ecology.

Standards have been strengthened for "traditional" solid waste facilities – in many instances adding closure and financial assurance when no such requirements existed in the past – such as composting, energy recovery and incineration, limited purpose and inert landfills; and the intermediate solid waste handling facilities, such as transfer stations, drop-box facilities, and material recovery facilities (MRF's). There are also specific requirements for other waste handling practices such as for waste tires, moderate risk waste, land application, and on-site storage and collection.

Waivers: Local health departments, with the concurrence of the Department of Ecology, can waive the requirement for a solid waste permit if other air, water, or environmental permits issued for the facility provide an equivalent or superior level of environmental protection (WAC 173-350-710 (8)).[62] This has been used only once in Pierce County for General Metals/ Schnitzer Steel which has other permits which meet or exceed requirements for solid waste regulations.

Beneficial uses: The new regulations establish a beneficial use exemption process for waste generators that want to use waste as a substitute feedstock in a manufacturing process or as a soil amendment. They may apply directly to Ecology for the exemption. This process is intended for those activities that pose no threat to the environment and which uses the waste materials in ways that meet ground and surface water quality regulations. Ecology maintains a website of approved beneficial uses; few have been approved since the new regulations were adopted.

Exemptions: Certain facilities are "conditionally exempt" (also known as "permit exempt") from solid waste permitting if they meet reporting and operating requirements. The business must notify the Health Department and Ecology of their intent to operate as an exempt facility and make annual reports on their operations and about the waste they are handling.[63] All exempt facilities must comply with the performance and operating standards, and must allow Health Department staff to inspect their operations. A business that does not meet the requirements or operates in ways contrary to design and operating procedures becomes ineligible

[62] This waiver only applies to the facilities covered under WAC 173-350; not to municipal solid waste landfills regulated under WAC 173-351.

[63] No facility handling mixed municipal solid waste (MSW) destined solely for disposal can be exempt from being required to have a solid waste permit. Facilities that may be conditionally exempt are: some types of recycling facilities, material recovery facilities, composting facilities of certain sizes handling certain types of feedstock, and some facilities storing waste in piles.

for the "permit exemption," and then can be required to have a solid waste permit and to meet all the conditions of the permit process.

State regulations do not establish funding mechanisms to support local oversight of these exempt facilities, either when they start up or to ensure that they continue to meet the standards which originally made them exempt. For all other facilities that are not exempt and which must have a permit, the annual permit fees provide funding for most of the oversight costs

Coordination: An important state requirement which emphasizes the need for close coordination among all planning and permitting agencies is one that requires all facilities, including those that are exempt from having a permit, to be in compliance with the Solid Waste Plan, water and air pollution and control regulations, and all other "applicable local, state, and federal laws and regulations" (WAC 173-350-040).

In other words, health departments which administer the solid waste regulations are authorized to issue a solid waste permit, or determine that a facility is conditionally exempt, only after ensuring the facility or business is a legally permitted and allowed use under zoning regulations.[64]

II. Health Department oversight

Financial assurances and fees: The Tacoma-Pierce County Health Department adopted the State regulations in 2004[65] and added to the local regulations financial assurance requirements for some facilities that are more stringent than those required by Chapter 173-350 WAC. This was done to ensure that financial resources would be available at closure to properly dispose or recycle those wastes being handled at the facilities. These requirements apply to most large-scale composting facilities; certain piles used for storage or treatment; and large recycling-type businesses with storage piles.[66] The financial assurance requirements do not apply to permit-exempt facilities.

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[64] Zoning regulations must be in compliance with comprehensive land use plans. Certain uses may be allowed outright but will need building and other permits. Others must have a land use permit approved through a public hearing process. Some uses may be non-conforming to the zone but are considered a legal, non-conforming use because they legally existed before the zone changed. There are limits to how these businesses can expand or change the type of use. (Pierce County Code, Chapter 18A. Pierce County Development Regulations – Zoning)

[65] Chapter 28 Solid Waste Handling Standards, Regulations of the Tacoma-Pierce County Board of Health, January 7, 2004 (Resolution 2004-3550).

[66] Although the Health Department can adopt more stringent solid waste handling standards than in the State's regulations, it can not require solid waste permits for facilities that meet and continue to meet the conditional exemptions in State law.

To provide funding for oversight of conditionally exempt facilities, the Health Department established an initial "permit-exempt" review fee in lieu of the solid waste permit and permit fee process to cover annual inspections, review the initial notification of start-up or review annual reports. The Board of Health adopted new standards for enforcement, appeal processes, and monetary and criminal penalties.

This regulatory model requires the Tacoma-Pierce County Health Department to identify businesses handling solid wastes and to rely upon coordination among the various regulatory agencies (particularly land-use). With permit-exempt facilities, in particular, the Health Department relies upon businesses "self-reporting." It is also dependent upon the ability of Pierce County government, through the Department of Public Works and Utilities, to fund state enforcement grant local match requirements and other permit oversight, review and enforcement costs not directly tied to specific solid waste permits or permit-exempt reviews.[67]

III. Issues: Inequalities in oversight, definition gaps, and Council direction

Potential inequalities: The State's regulations have the potential to foster unequal treatment between similar businesses. This may impact the County's overall management system which relies upon private businesses to process recyclables and other waste.

One business may be doing the exact same thing as another business but as a "conditionally exempt" business it has fewer expenses than the business that is required to expend money annually to have a solid waste permit, to meet all operation and reporting requirements, and to, possibly, meet financial assurance requirements. Thus, the regulation system has created an incentive for a business to self-report inaccurate information or to not report at all.

The differences for what makes a facility exempt may be miniscule. An example is the difference between exempt and non-exempt status for materials recovery facilities (MRF's). These are processing facilities which take in recyclable materials and sort, repackage, or process the materials for transport to markets. The difference between a MRF that must have a permit and one that doesn't is in the amount of residuals left to be disposed after processing. Residuals for an

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[67] In the approved 2007 Pierce County budget, the Solid Waste Division will provide $728,820 to the Health Department as follows:

Enforcement – $202,000;
Household Hazardous Waste program – $69,000;
LRI Landfill permit enforcement – $119,000; and
General Solid Waste Program (includes permit enforcement for County facilities) – $339,000.

In 2006, the County's Solid Waste Fund directly provided 56% of the funding for the Health Department's solid waste related programs and secured an additional 12% through Department of Ecology grants. Other funding sources: Permit fees – 18% and Board of Health "pool" – 13%.

exempt facility "must not exceed five percent of the total waste received, by weight per year, or ten percent by weight per load."[68]

This might not be such a problem if both businesses had equal oversight but the funding for oversight of a potentially exempt facility is dependent upon the business first being willing to self-report and to pay the Facility Review Fee. Additional oversight and enforcement is possible, but at the expense of other enforcement and outreach programs offered by the Health Department or the County. What this means is that without sufficiently funded oversight one business might get away with not meeting requirements and stockpile materials in a manner that damages the environment.

Why coordination is needed:

One of the problems (or points of confusion to industry and the public) that has arisen is when the Health Department determines a business is "conditionally exempt" but doesn't receive confirmation from the local land use planning agency that the new activities of the existing business is a land use that would be allowed in the zone; or that the new activities expand a legal, non-conforming use beyond what is allowed in zoning regulations. From the Solid Waste Division's five-year history managing the Pierce County Responds program and its staff's decades of planning, permitting, and regulatory experience, the problem does not appear to be a problem of agency negligence. The problem appears to stem from lack of common language, and diverging regulatory responsibilities.

For good coordination, it is important for both planning agencies and the Health Department, to ask whether or not an existing business is beginning a solid waste activity that will transform it into a land use not allowed in the zone. Is it a legal non-conforming use that is expanding, and by doing so, will it become another type of land use? Is it expanding beyond what is allowed for a legal non-conforming use?

Under zoning principles, facilities that operate the same way, exempt from a solid waste permit or not, should be treated in the same manner with the same requirements. The above questions underlie the issues for the planning agencies that administer zoning regulations. Planning agencies, and the residents of the communities they serve, are concerned about the impact of the new activities in terms of noise and traffic on adjoining properties and whether or not the transformed use meets all other zoning and building requirements and the intensity of development planned for that zone or plan designation. For example: is a garden supply business already located in a low-intensity commercial or rural residential zone turning itself into an industrial scale recycling facility or MRF by advertising to take in organic debris for processing? How will this impact traffic? At what scale does it become another land use and when should it only be allowed in a zone with other industrial uses?

[68] WAC 173-350-310 (2) (b) (ii).

It is possible under the existing system for a MRF or other type of business to start-up without any early oversight by the Health Department and to slip through cracks in zoning codes by the new business claiming to be one sort of use when it intends to act as another. Or for an existing business to expand and start handling waste without notification to any agency about a change of use.

These businesses may not meet the exempt conditions and may not report their activities. The Planning Department may be unaware of the activity or unaware that the activity requires oversight as a solid waste facility, exempt from waste permitting or not.

The Health Department and, in the case for unincorporated Pierce County, the Planning and Land Services Department, have after-the-fact enforcement processes that could shut an illegal operation and pursue fines. However, there may be no money available to clean up the property since no money was set aside to meet financial assurance requirements unlike for many permitted facilities.

This is not a new problem. In the past (e.g. many of the original Pierce County Responds "Dirty Dozen" sites), some legal non-conforming uses under zoning regulations have expanded their activities under the guise of "recycling" without oversight by planning and permitting agencies resulting in some expensive, after-the-fact enforcement and cleanup of illegal dump sites by the Solid Waste Division through its Pierce County Responds Program.

Gaps between codes:

There are simple reasons for this definition gap between codes: 1) development of new technologies and best management practices; 2) words to identify types of facilities change their meaning over time; and 3) the State Legislature takes an action that requires new permitting approaches.

Gaps of this sort frequently occur when older rules are modernized. In fact, both Pierce County's Comprehensive Land Use Plan and Solid Waste Plan recognize the problem and have policies that direct periodic updates to improve coordination and clear-up contradictions.

For land use purposes, the zoning code already groups some solid waste and recycling facilities under broad categories based on similar processes, handling methods, and impacts. These groupings may no longer complement the waste regulations and may cause misunderstanding for new businesses and those who permit them. This is because the latest version of the State regulations changed some waste facility definitions; added new facility levels based on volume and feedstocks; consolidated other facilities under one name; and recognized new activities and processes that were never envisioned years ago in the zoning codes.

One example of a simple definition change that could cause misunderstanding is in the changed definition of a "recycling" facility. The commonly understood meaning is that this is a business that takes in, sorts, and processes recyclable materials. Under the new waste regulations this facility is now termed a "material recovery facility (MRF)." The "recycling facility" label now applies to a business that "transforms or remanufactures waste materials into usable or marketable materials..." but which "is not a facility that stores, treats, or repackages recyclables for transport to market..."

The Year 2000 Solid Waste Plan tries to reconcile some interpretation problems by grouping zoning code use labels under commonly used waste use labels. For instance, the Plan groups a number of zoning code uses under the Material Recovery Facilities category, such as buy-back recycling businesses, recycling processing, waste separation and recovery facilities.[69]

Council direction: There have always been ambiguities about what types of businesses might also need review as solid waste facilities because they are stockpiling or processing waste; what to call the facility; and in which zones should they be allowed. The most recent issues have been raised about the activities of contractor yards, building materials and garden supply businesses, and buy-back recycling businesses.

The County Council has directed that the Planning and Land Services Department (PALS), the Tacoma-Pierce County Health Department, and the Solid Waste Division to review and identify actions to correct problems in the Development Regulations in regards to the definition and regulation of uses that involve outdoor stockpiling of materials for recycling, sale, or disposal.[70] The review may identify other similar uses that may need more coordinated oversight, such as such as wrecking yards or scrap-metal businesses.

IV. Existing initiative: coordinated oversight

Solid Waste Plan Goals: A strong initiative is already built into the current Solid Waste Plan to ensure all wastes are handled in a manner that protects the environment and that agencies strive to maintain consistency in all plans and permitting regulations. One of the Plan's major overall goals states the need to maintain "the highest practical level of public health and safety ...which protects the natural and human environment..." Secondary goals and policy recommendations support strong

[69] Chapters 6, 7, and 9 of the Solid Waste Plan all discuss related zoning and solid waste permitting issues for processing technologies, transfer facilities and systems, and special waste streams. Chapter 2 contains a summary table which outlines some of the zones applicable for certain facilities. Appendix H organizes the different uses and the permit processes by the zones that were current in 2000.

[70] Resolution #2006-123.

permitting approaches and speak to the need for consistency, inter-jurisdiction coordination, and adequate funding for permitting, monitoring and enforcement programs. [71]

Activities to continue to carry-out this initiative might include:

- Broad review of all regulations for inconsistencies between codes and to identify necessary revisions for a more integrated, consistent approach.

- Evaluation of which uses or businesses may need additional review as solid waste handling facilities beyond those uses already recognized as traditional waste handling facilities in zoning codes and in the waste regulations.

- Consideration of recent "sham" recycling legislation and ways to counteract the problems and implement procedures to reduce the problem.

- Implementation of improved coordination techniques between agencies.

- Consideration of new methods of funding such as licensing requirements for certain exempt facilities.

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[71] Overall plan goals, Chapter 1, page 1-8; Chapter 6, pages 6-2, 6-32 & 6-33; Chapter 9, pages 9-1, 9-24 & 9-25; Chapter 10, pages 10-1, 10-51 & 10-52.

ESSENTIAL PUBLIC FACILITIES

State land use requirements; Pierce County comprehensive plans and development regulations; relationship to solid waste facilities

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Summary: In 2004, Pierce County adopted more specific policies and direction in the comprehensive land use plan and development regulations about the criteria and processes for siting essential public facilities. An Essential Public Facility – Solid Waste Overlay was applied to the LRI Landfill during the adoption of the Graham Community Plan and it was designated with the overlay in the Pierce County Development Regulations.[72] The Central Puget Sound Growth Management Hearings Board found the overlay to be consistent with the County's Essential Public Facilities Element and other County comprehensive plan documents.[73]

No other solid waste facilities have been identified with an essential public facility overlay. There is a need to review the land use permitting processes to determine if certain solid waste facilities, such as a transfer station or recycling sites, should also be identified with an essential public facility overlay and to determine if the current permitting processes are sufficient and consistent with the County's 2004 criteria and the State growth management regulations. Within the Hearing Board's decision there are footnotes and a Concurring Opinion which indicate that the prohibition of siting other solid waste facilities (transfer stations and recycling stations) within the Graham sub-area may not meet GMA scrutiny if challenged in the future.

In addition, there is a need to review the land use permitting for essential public facilities in all community plans and zoning codes to clear up ambiguities and to ensure consistency.

Definition: Solid waste handling facilities have been identified in State law and in County planning and development regulations as "essential public facilities." Commonly referred to as "EPFs," these are "capital facilities which are typically difficult to site, such as airports, state education facilities, state or regional transportation facilities, state and local correctional facilities, **solid waste handling facilities**, and in-patient facilities including substance abuse facilities, mental health facilities, and group homes."[74] *[Bold emphasis added.]*

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[72] Pierce County Code, Development Regulations, Chapter 18A.24.020.

[73] *James Halmo, et. al v. Pierce County*, Case No. 07-3-004c., Synopsis, Central Puget Sound Growth Management Hearings Board.

[74] RCW 36.70 A. 200 of the Growth Management Act; Pierce County Code, Title 18 –Development Regulations – General Provisions.

Planning requirements: The State's Growth Management Act requires each county and city to provide a process for identifying and siting essential public facilities within their comprehensive plans, and that "no local comprehensive plan or development regulations may preclude the siting of essential public facilities." [75]

Both the State and County plans and regulations acknowledge the need to provide for a process to designate other types of facilities as EPFs, other than those specifically listed in the State definition.

County plans: Not all facilities that require a solid waste permit are defined as essential public facilities in the County's comprehensive plans or zoning regulations. Most facilities processing or otherwise handling waste materials for recycling or composting are businesses permitted under land use regulations in the same way as other businesses but which also are required to have a solid waste permit under solid waste regulations.

The LRI Landfill and the County-owned transfer stations and the Purdy Yardwaste Composting Facility are listed in the County's Comprehensive Land Use Plan, Solid Waste Plan, and Capital Facility Plan as the facilities which provide the essential capacity for the County's waste management system. In addition, the Land Use Plan contains policies in support of considering "privately-owned transfer stations as providing a public service." [76]

History - permitting for solid waste facilities: When the County first adopted the Comprehensive Land Use Plan and new development regulations to meet the Growth Management Act requirements in 1994, the new zoning code specifically provided for the siting of most types of facilities that might be considered as EPFs. However, in lieu of designating them as EPFs on a map by using a specific zone or overlay, the code specified which zones were appropriate for different types of facilities. Included as essential public facilities were those for transportation, waste water treatment, utility maintenance, solid waste, and other similar facilities that are used to provide public services through adopted utility comprehensive plans and the Capital Facility Plan.

For all the facilities or businesses that require a solid waste permit (not just those that had the potential for being designated essential public facilities), a variety of types (or "levels") are allowed in many zones. They are either allowed outright, as in the case of recycling drop-off sites, or through a public hearing permit process for a Conditional Use Permit (CUP), depending upon the zone.

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[75] RCW 36.70A.200 (5)

[76] Pierce County Code, Comprehensive Plan ,Titles 19.80 and 19A. 090 & 100; Capital Facility Plan 19E.50.160

Transfer stations or landfills are allowed only through a CUP or Public Facility Permit (PFP) process. Landfills were allowed only in those zones which corresponded to areas considered the closest match, at that time, to the State's landfill siting criteria.[77]

The PFP is the more stringent of the two public hearing processes because it recognizes that "certain public facilities provide necessary services....." and "require a special degree of review to incorporate and document consistency with the Comprehensive Plan, facility plans, or capital improvement programs....." Section 18A.75.060 of the Development Code establishes decision criteria and procedures for permitting of public facilities under the PFP process and provides for coordinated review with local and state agencies.

County action:

In 2004, Pierce County updated the *Pierce County Comprehensive Land Use Plan* to include an Essential Public Facilities Element to maintain consistency with the State requirements.[78] The plan element provides policy guidance for: recognizing essential public facilities; siting processes; siting criteria; broad public participation by citizens and concerned agencies; and the development of standardized review procedures.

Community plans:

With the more recent adoption of community plans during the last few years, the zoning and map designations for different types of essential public facilities have become more complex. Geographic areas outside the adopted community plans retain the same original permitting and zoning which was first adopted in 1994. Some of the community plans now have a mix of the original permitting and zoning processes coupled with specific new essential public facility zones or with essential public overlays. Examples of these include: a Public Institutional zone; an Essential Public Facility - Rural Air Port zone; and an EPF-State Corrections Overlay for McNeil Island Corrections Center.

For the most part, the permitting and zoning processes for solid waste facilities in the community plans and in the Comprehensive Land Use Plan remain the same as when the Plan and zoning code were originally adopted.

The Graham Community Plan designates the LRI Landfill with an EPF - Solid Waste Facility Overlay (and PFP Level 6 in the Development Regulations) which is specific to that particular landfill and which references the actual CUP under which it was approved. In a recent decision, the Central Puget Sound Growth Management Hearings Board confirmed that "Pierce County's action in adopting the Overlay to be consistent with its comprehensive plan, specifically the Capital

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[77] Landfill siting criteria and zoning is discussed in the Solid Waste Plan in Chapter 2, pages 2-6 – 2-15. Appendix H summarizes the permitting of most solid waste facilities in the Pierce County Code, effective as of the year 2000 when the Plan was adopted.

[78] Pierce County Code, Title 19A.120.

Facilities Element, Solid Waste Management Plan, and the Essential Public Facilities Element." The Board also affirmed that the potential gas-to-energy facilities at the LRI Landfill "would require review at the project specific level" and noted that "the gas to energy provision – is more protective of the environment."[79] The determination about such an action requiring a project specific review means that it is not necessary to require countywide review or changes to comprehensive plans in order to make specific facility changes on the LRI Landfill.

The Graham Community Plan prohibits the siting of other solid waste facilities (transfer stations and recycling stations) within the Graham sub-area. The Hearing Board's decision provides an overview that discusses the prohibitions and includes two footnotes and one Concurring Opinion that the preclusion of these facilities may not meet GMA scrutiny if challenged in the future.[80] "The Board has held that the ban on preclusion of EPFs means cities and counties must allow EPFs not only to be sited, but to be improved and expanded as necessary."[81]

Coordination initiative:

Both the Solid Waste Plan[82] and the Comprehensive Land Use Plan contain direction to periodically review and propose amendments to ensure consistency between codes and agencies' permitting procedures. It would be appropriate to begin a review to ensure that the permitting processes for all essential solid waste facilities are consistent and clear.

One alternative that might be considered as a more flexible complement to the existing zoning processes and the Essential Public Facilities policies and regulations is to consider that, instead of intermingling essential public facilities within the other individual use types listed in the various charts, to more explicitly list them all under the reserved EPF section in the zoning code.

Another consideration is to clarify if an overlay process is the best approach for all essential solid waste facilities and to consider if other waste-handling facilities, other than the landfill, need to be designated as essential to the system.

Drafted: 12/12/07

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[79] *James Halmo, et al v Pierce County*, Case No. 07-30-044c, Central Puget Sound Growth Management Hearings Board, page 46

[80] *James Halmo, et al v Pierce County*, Case No. 07-30-044c, page 29, footnotes #18 and 19, and Concurring Opinion of Board Member Margaret Pageler.

[81] *James Halmo, et al v Pierce County*, Case No. 07-3—044c, page 31 and footnote #19.

[82] *Tacoma-Pierce County Solid Waste Management Plan*, Chapter 10, Recommendation #10-10

Sham Recycling: Statewide efforts to re-regulate the transportation of recyclable materials to ensure economically sound and environmentally secure handling of waste materials.

Summary: "Sham recycling" is a broad category of "illegitimate activities executed under the guise of recycling in order to be exempt from or subject to lesser regulation."[83] It is not just a Pierce County or Washington State problem; environmental officials across the United States are taking action to prevent non-recyclable wastes from being handled in a manner similar to recyclable wastes. A number of Pierce County's "Dirty Dozen" sites have been tied to sham recycling, including the illegal landfill on Connells Prairie Road near Lake Tapps, the illegal scrap yard on South 348th Street near Roy, and the illegal yardwaste and woodwaste facility on SR-410 near Buckley. In July 2005 a new state law added institutional controls requiring that recyclable materials are sent to actual recycling facilities while materials requiring secure disposal are safely transported to disposal sites.

I. Background – The Collection Regulatory System in Place Prior to July 24, 2005

In order to understand the problem and the impact of the solution, some background is in order.

G-permits: With some exceptions, collection of solid waste must be performed by companies that hold a Certificate of Public Convenience and Necessity from the Washington Utilities and Transportation Commission (WUTC).[84] The so-called "g-permits" allow a company to collect waste materials in a defined geographic area. Pierce County is served by five g-permit haulers: American Disposal; Lakewood Refuse; Pierce County Refuse; Murrey's Disposal; and University Place Refuse.

Cities and Towns: Cities and Towns can choose to exempt solid waste collection in their cities from WUTC regulation in either of two ways: Cities can collect solid waste using municipal equipment; or contract with a company lacking a g-permit. In almost all cases, cities that collect solid waste using municipal crews or which contract-out the service allow just one entity – the city or the contractor – to collect solid waste within the city limits. Language in municipal codes and contracts closely mirror the state requirements and exceptions.

In Pierce County, five cities have chosen to remain under the WUTC regulation. All of the other cities, except Tacoma and Ruston, contract with one of the five g-permit haulers already serving the unincorporated areas. Tacoma and Ruston have their own collection utilities.

[83] U.S. Environmental Protection Agency Terminology Reference Service (downloaded 11/27/06)
[84] RCW 81.77.020

Purpose of regulation: WUTC or city regulation provides for the following controls:

- Public process for setting and publishing rates;
- Regulation of accounts, service, and safety;
- Filing of annual reports and other data;
- Supervising and regulating companies' relationship with the public; and
- Requiring compliance with local solid waste management plans.

Exceptions: Exceptions when a g-permit or contract authority is not necessary:

- collecting or transporting recyclable materials from a drop-box or recycling buy-back center, or
- collecting or transporting recyclable materials by or on behalf of a commercial or industrial generator of recyclable materials to a recycler for use or reclamation.

These exceptions are not new. Most have been in place since 1989; some since the start of the regulatory system in 1961.

II. Background – The Facility Regulatory System in Place Prior to July 24, 2005

Landfills: Municipal Solid Waste Landfills (including the three landfills which accept Pierce County's waste: the City of Tacoma Landfill; the LRI Landfill; and the Roosevelt Regional Landfill) are regulated under Chapter 70.95 RCW and Chapter 173-351 WAC. Other types of landfills (limited purpose, construction and demolition debris) are regulated under Chapter 173-350 WAC. Local health departments implement these regulations, but all facilities also submit data and reports to the Department of Ecology, ensuring a statewide knowledge base.

Processors: Processing facilities must meet operating requirements under WAC 173-350 and may need a solid waste permit or may be conditionally exempt. Generally speaking, facilities that present little or no environmental risk, or that are subject to other forms of environmental regulations, are exempt from being required to have a permit. *(Please refer to the Facility Permitting Issue Paper for more detail.)* Local health departments serve as the regulatory authority over permitted and exempt facilities. As will be shown below, some facilities in this type are not captured in statewide reporting.

Purpose of regulation: The Department of Ecology and jurisdictional health departments regulate facilities to ensure that waste materials are handled in an environmentally secure manner. Changes to state law and regulations over the past decade have sought to level the playing field, providing consistency of regulation across county lines.

Facility regulations have been in place for decades and are regularly updated to recognize new types of facilities, changing technologies, and societal demands to curtail disposal and promote recycling.

III. Gaps in The System – More Than A Turf Battle

Collection exemptions: On the collection side, most controversy has stemmed from how to interpret the transportation exemptions. The gaps can best be seen by considering how the following questions could be interpreted and answered:

- What is a "recyclable material"? What is a "recycler"? Is it up to the generator, hauling company, receiving facility or government to decide?
- Can mixed materials be considered "recyclables" before being sorted?
- How much sorting is to be required before "waste" becomes "recyclable"?
- Can something happen later in the process to turn "recyclables" back into "waste"?

Facility exemptions: What is a recycling facility? Would you know it when you see it? Solid waste and recycling facilities are regulated and permitted (or exempted from permitting) at a local level by a jurisdictional health department. Each of the thirty-plus health departments have discretion to establish formal procedures to exempt facilities from permitting or to "look the other way" when it comes to recycling. The Tacoma-Pierce County Health Department has implemented some of the strictest permit review and exemption procedures in the State.

Thus, any given type of facility could be "permit exempt" but still monitored (as in Pierce County), or exempt from permitting and "off the books". Despite the State's efforts, there is little consistency in determining – across county lines – whether any given facility is actually processing and recycling materials. Is a given load of material being recycled at facility "X"? That depends...

Environmental impacts: Pierce County cares about sham recycling not because of a turf battle between competitors, but because of the environmental impacts. Companies which claim to be hauling recyclables, only to transport them to a transfer station or disposal facility outside the County, dupe unsuspecting businesses into diverting materials away from recycling and reclamation and into disposal. The non-regulated sham recycler transports waste at a much lower cost because it is not subject to the environmental and regulatory controls to which formal actors are subject.

Companies that process mixed waste into recyclables, **without** appropriate solid waste handling permits, may create environmental impacts to land, air, and water. Cases in point: the four Dirty Dozen sites in which property owners were claiming to recycle waste, when in fact they were permanently stockpiling or burying waste (including vehicles).

Economic impacts: Beyond the cost of cleaning up improper or illegal disposal and stockpiling sites, sham recycling impacts the viability of City and County planned, sanctioned, and funded waste reduction, recycling, and environmental control programs. The illegal diversion of disposable waste to facilities outside Pierce County reduces

the County's disposal surcharge revenue and city franchise fee revenue. In addition, hauling waste under the guise of recycling avoids payment of the state's 3.6 percent refuse tax, used to fund infrastructure improvements.

IV. 2005 Law Changes

Collection: Companies that engage in the business of hauling recyclable materials for hire and over public roads must register as "transporters" with the Department of Ecology. Transporters are prohibited from delivering recyclable materials to transfer stations and disposal sites. Ecology will maintain a statewide database of registered transporters. Transporters will be required to maintain records and report on where recyclables are generated and where they are processed.

Facilities: All facilities engaged in recycling, even permit-exempt facilities, must report activities to the Department of Ecology. Ecology will maintain a statewide database of official recycling facilities.

Penalties: Violators will be subject to civil penalties of $1,000 per violation. Parties harmed by sham recycling have a "right to private action" to file suit against a company which fails to register as a transporter or a facility which fails to register as a recycling facility.

V. Ongoing Steps

Outreach: Pierce County government advocated these changes to the law because of the County's experience with the Dirty Dozen. The Solid Waste Division's Pierce County Responds and Public Outreach programs both educate the public on proper recycling and disposal methods, including the care that should be taken in choosing a company to haul recyclable materials.

Assistance: The Solid Waste Division assists city and town governments with their monitoring of sham recycling activities within city limits. Cities and Towns have regulatory tools, which the County lacks, to quickly stop sham recyclers' operations within their cities.

Coordination: The Solid Waste Division is working with the Health Department, Department of Ecology, City of Tacoma, and private companies to better monitor the activities of sham recyclers in unincorporated Pierce County; to tell the "story" of sham recycling; and to discuss steps to enhance local regulatory controls.

VI. Conclusion

Promoting effective recycling programs is the most important thing the Solid Waste Division can do to promote a sustainable solid waste management system. Real recycling diverts waste from landfills and provides economic incentive to generators and recycling facilities. Sham recycling has allowed materials that could have been recycled to end up in other landfills or illegal dumpsites, harming recycling programs and the County's bottom line.

Drafted: 12/06/06

Definitions, Use Levels listings, and Outdoor Stockpile Standards

Pierce County Code, 2007

Council direction: To resolve ambiguities about stockpiling or processing of waste, the County Council directed the Planning and Land Services Department, the Tacoma-Pierce County Health Department, and the Solid Waste Division to review and identify actions to correct problems in the County's development regulations. The three agencies recommended changes to some definitions in the zoning regulations and new outdoor stockpile standards to regulate the stockpiling of materials for recycling, sale, or disposal. The changes to the definitions were proposed to ensure definitions in the zoning code were similar to those in Washington's Solid Waste Handling regulations which are administered by the Health Department. The changes were intended to improve coordination between the Planning and Health Department so that each agency uses the same definition during a permitting or enforcement action.

Appendix H: The following updates the definitions in Appendix H of the Year 2000 *Tacoma-Pierce County Solid Waste Management Plan* and includes the new outdoor stockpile standards. It includes all the related waste and recycling definitions, not just those that were revised to address the County Council's concerns.

Pierce County Code, Chapter 18 Development Regulations – General Provisions.

18.25.030 Definitions

"Buy-back recycling center" means any small business without industrial activity consisting of buildings with a cumulative gross floor area less than 5,000 square feet which collects, receives, or buys recyclable materials from household, commercial, or industrial sources for the purpose of sorting, grading, or packaging recyclables for subsequent shipment and marketing. All materials stored outside must be containerized. Examples of buy-back recycling centers include small-scale glass or aluminum buy-back centers. Uses such as automotive part rebuilding and/or salvage or reusable camera reloading are not considered buy-back recycling centers.

"Compost facility" means a solid waste facility specializing in the composting of one or more organic feedstocks under controlled conditions pursuant to Chapter 70.95 RCW to promote aerobic decomposition to produce a marketable product for reuse or as a soil conditioner. Feedstocks may include, but are not limited to, yard waste biosolids, manure, or food waste. A facility specializing in composting municipal solid waste (garbage) is a Municipal Solid Waste Composting Facility.

18.25 Definitions (continued)

"Composting" means the biological degradation and transformation of organic soil waste under controlled conditions designed to promote aerobic decomposition. Natural decay of organic solid waste under uncontrolled conditions is not composting.

"Contaminated soils storage & treatment facility" means any non-containerized accumulation of contaminated soils at sites or facilities engaged in storing or treating contaminated soils as defined in State and local solid waste regulations.

"Demolition waste" means solid waste, largely inert waste, resulting from the demolition of razing of buildings, roads, and other man-made structures. Solid waste facilities, such as inert or limited purpose landfills, material resource recovery facilities, or other types of recycling processing facilities which handle demolition waste must meet the permitting requirements of State and local solid waste regulations for the particular type of facility proposed.

"Drop-box transfer station" means a solid waste facility needing a Solid Waste Permit which is used for placement of a detachable container including the area adjacent for necessary entrance and exist roads, unloading, and turn-around areas. The facility normally serves the general public with loose loads and receives waste from off-site.

"Home composting" means composting of on-site generated waste, and incidental materials beneficial to the composting process, by the owner or person in control of a single-family residence, for a dwelling that houses two to five families, such as a duplex, or clustered dwellings.

"Inert landfill" means a solid waste facility for the permanent disposal of inert materials which are non-combustible and non-dangerous wastes likely to retain their physical and chemical structure including resistance to biological and chemical attack from acidic rainwater.

"Inert wastes" means noncombustible, non-dangerous solid wastes that are likely to retain their physical and chemical structure under expected conditions or disposal, including resistance to biological attack and chemical attack from acidic rainwater, and that meet criteria established in State and local solid waste regulations.

"Interim solid waste handling facility" means any facility where solid waste is collected or subjected to interim processing before being transported to a permanent disposal site. This includes transfer stations, drop boxes, baling and compaction sites, and material resource recovery facilities.

"Junk, salvage or wrecking yard" means any waste processing facility which dismantles, wrecks, stores, buys or sells scrap materials, junk or vehicles.

"Landfill" means a disposal facility or part of a facility at which solid waste is permanently placed in or on land and which needs a Solid Waste Permit pursuant to Chapter 70.95 RCW, including facilities that use solid wastes as a component of fill.

18.25 Definitions (continued)

"Limited purpose landfill" means a landfill, as defined in State and local solid waste regulations, which receives solid waste limited by type or source but which does not include municipal solid waste (garbage). Limited purpose landfills include, but are not limited to, landfills that receive segregated industrial solid waste, construction, demolition and landclearing debris, wood waste, ash (other than special incinerator ash) and dredged materials.

"Moderate risk waste fixed facility" means a solid waste transfer facility needing a Solid Waste Permit which specializes in the collection of household hazardous waste for packaging for transport to a disposal facility or for recycling. It may collect limited amounts of hazardous waste from Small Quantity Generators (SQGs) which are businesses that generate hazardous waste in quantities below the threshold for regulation under Washington Dangerous Waste Regulations.

"Municipal solid waste composting facility" means a solid waste facility specializing in the composting of mixed waste from municipal sources to reduce the waste for final disposal or to produce a marketable product.

"Municipal solid waste landfill" means a solid waste facility for the permanent disposal of mixed household, commercial, or industrial waste from municipal sources delivered by hauling companies or self-hauled by residents or businesses.

"Municipal solid waste to energy facility" means a combustion plant specializing in disposal of or energy recovery from mixed waste from municipal sources.

"Problem waste" means soils removed during the cleanup of a remedial action site, dangerous waste site, or other sites with harmful substances, but not designated dangerous wastes; and contaminated dredge spoils.

"Recyclable materials" means those solid wastes that are separated for recycling or reuse, such as papers, metals, and glass that are identified as recyclable material pursuant to a local comprehensive solid waste plan.

"Recycling collection site" means a site with collection boxes or other containerized storage where citizens can leave materials for recycling.

"Recycling processor" means any large scale buy-back recycling business or other industrial activity which specializes in collecting storing, and processing waste, other than hazardous waste or municipal garbage, for reuse and which uses heavy mechanical equipment to do the processing. It may be a facility where commingled recyclables are sorted, baled, or otherwise processed for transport off site which is referred to as a materials resource recovery facility (MRF).

18.25 Definitions (continued)

"Solid waste" or "wastes" means all putrescible and nonputrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredge spoils, and recyclable materials.

"Solid waste handling facility" means any facility for the transfer or ultimate disposal of solid waste, including landfills and municipal incinerators.

"Special waste-to-energy facility" means a combustion plant designed to burn more than 12 tons per day and specializing in disposal of or energy recovery from a single type of waste of known and consistent composition, other than municipal waste, such as tires or infectious waste.

"Tire pile" means a solid waste facility needing a Solid Waste Permit, which stores more than 800 discarded tires.

"Transfer station" means a solid waste facility needing a Solid Waste Permit which is a permanent, fixed supplemental collection and transportation facility used by persons and route collection vehicles to deposit solid waste from off-site into a larger transfer vehicle for transport to a disposal facility. It may include baling or compaction activities or recycling facilities.

"Waste storage or treatment piles" means any non-containerized accumulation of solid waste that is used for: 1) treatment; 2) storage; 3) or any kind of processing to prepare materials for markets or to produce a product. State and local solid waste regulations establish criteria for management and permitting of waste piles.

"Waste to energy facility" means any solid waste facility designed as a combustion plant to dispose of solid waste or to recover energy in a useable form from mass burning, refuse-derived fuel incineration, pyrolysis, or any other means of using the heat of combustion of solid waste and which requires a Solid Waste Permit under Chapter 70.95.RCW.

"Woodwaste" means solid waste consisting of wood pieces or particles generated as a by-product or waste from the manufacturing of wood products, handling and storage of raw materials, or trees and stumps. This includes, but is not limited to, sawdust, chips, shavings, bark, pulp, hog fuel, and log-sort yard waste, but does not include wood pieces or particles containing chemical preservatives such as creosote, pentachlorophenol or copper-chrome arsenate.

"Woodwaste landfill" means a solid waste facility with 2,000 cubic yards or more of capacity for the permanent disposal of woodwaste which does not contain chemical preservatives. This does not include woodwaste landfills on forest lands regulated under the Forest Practices Act but does include facilities which use woodwaste as a component of fill.

"Woodwaste recycling facilities" means operations, which are designed to provide for the reuse of woodwaste.

"Yard waste" means leaves, brush, tree trimmings, grass clippings, weeds, shrubs, garden waste from vegetable garden and other compostable organic materials resulting from landscape, pruning, and maintenance generated from residences or from businesses, such as lawn and garden nurseries or landscaping services. Yard waste does not include rocks, glass, plastics, metal, concrete, sheetrock, asphalt, or any other non-organic landclearing debris.

Pierce County Code, Chapter 18A Development Regulations – Zoning

Zoning tables: The County's zoning regulations contain tables which show the type of permitting allowed or required for various uses and in which zones the uses are allowed.

The following are the descriptions for the use level listings used in the tables. For the types of permits required and the zones in which they are allowed within each community plan, please consult Chapter 18A.

18A.33.230 Utilities Use Category – Description of Use Categories

E. **Organic Waste Processing Facilities.** Organic Waste Processing Facilities Use Type refers to any solid waste facility specializing in the controlled decomposition of organic solid waste and which meets requirements of solid waste regulations for the type of feedstock it is composting or treating. Typical uses include composting facilities and soil treatment facilities.

- **Level 1:** Contaminated soil treatment facilities.
- **Level 2:** Composting facility designed to handle more than 40 cubic yards.
- **Level 3:** MSW composting facility.
- **Level 4:** Street or stormwater maintenance facility

J. **Waste Disposal Facilities.** Waste Disposal Facilities Use Type refers to permanent disposal sites for solid waste. Typical uses include inert or limited purpose landfills, MSW landfills, and waste-to-energy facilities handling municipal solid waste (MSW).

- **Level 1:** Inert landfills
- **Level 2:** Inert landfills as accessory uses to mineral extraction sites.
- **Level 3:** Limited purpose landfills.
- **Level 4:** Special Waste-to-Energy Facilities designed to burn more than 12 tons per day.
- **Level 5:** MSW landfill, special incinerator ash landfill, any landfill not previously identified, and MSW waste-to-energy facility.
- **Level 6:** Municipal Solid Waste (MSW) landfill located within an Essential Public Facility-Solid Waste Facility Overlay (EPF-SWFO) as set forth in 18A.33.160H.

K. **Waste Transfer Facilities.** Waste transfer Facilities Use Type refers to solid waste facilities where solid waste is collected or subjected to interim processing before being

transported to a permanent disposal site or for reuse. Typical uses include recycling collection sites, drop-box transfer stations, transfer stations with or without recyclables recovery facilities, moderate-risk facilities, and tire piles.

Level 1: Recycling collection sites.
Level 2: Drop-box transfer stations
Level 3: Tire piles.
Level 4: Transfer stations with or without recyclables recovery facilities (MRF) and Moderate-Risk Waste Facilities.

18A.33.330 Accessory Uses and Structures

Accessory uses:

One use was removed from the listing of accessory uses in section 18A.33.330 so as not to imply a waste pile would be allowed as an accessory use to any business or activity on a property. There was concern that some businesses, not normally involved in recycling, were mis-interpreting the listing as permission to take in and stockpile waste from residents or other businesses.

The listing that was removed was: "9.j Waste piles authorized by a solid waste permit"

The following are allowed accessory uses for some small-scale solid waste activities.

E. **Accessory Use List.**

3. **Utilities.**

b. Street maintenance and stormwater waste facilities.

9. **Accessory Uses Applicable to Principal Uses in More than One Use Category.**

j. Small-scale composting facility handling less than 40 cubic yards and which meets State and local solid waste regulations.
k. Solid waste impoundments; and
l. Waste-to-energy facilities designed to burn less than 12 tons per day.

18A.35.165 Outdoor Stockpile Standards

Outdoor stockpile standards:

The following are the newly adopted outdoor stockpile standards. These are intended to allow only a recycling processing business, which meets the design and operating requirements of waste regulations and is sited in the appropriate zone, to take in waste materials from residents or businesses for the purposes of recycling. At the same time, these new standards are intended to provide guidance for certain other businesses which stockpile materials in the course of their regular business operations.

18A.35.165 Outdoor Stockpile Standards

A. **Purpose.** The purpose of this Section is to establish general development standards and design criteria for businesses including, but not limited to, contractors, landscaping suppliers, garden nurseries, recycling processors, and scrap metal processors. Materials include, but are not limited to, yard waste, wood debris, landscape materials, construction materials, demolition waste, manure, or scrap metal. This section is not intended to allow a business to accept, purchase, process, or otherwise stockpile any waste materials from the general public or other businesses.

B. **Applicability.** The following provisions shall apply to all outdoor stockpiles. Expansion or other modifications of existing stockpiles shall be processed in accordance with the provisions of Section 18A.05.035 or the establishment of new uses in accordance with Chapter 18A.17-Use Tables. The standards set forth in subsection C. below shall apply only to the portion of the facilities expanded or modified, and shall only apply to the extent the expansion or modification directly increases the impact to which the standards is addressed. This Section does not apply to temporary stockpiles that are created during the course of normal construction where materials are stockpiled on a site for less than six months.

C. **Design Standards.** This subsection is intended to assist applicants in site planning. These design criteria shall be used by staff, the Director and the Hearing Examiner in reviewing development proposals.

1. **Setbacks.**
   a. Outdoor stockpiles shall maintain a minimum setback of 30 feet from exterior lot lines. When the exterior lot line is abutting an urban residential zone classification, the setback shall be increased to 100 feet.
2. **Maximum Height.** The maximum height of a stockpile shall not exceed that which is established for structures in the applicable zone classification or 30 feet, whichever is less. The following exceptions apply:
   a. A stockpile may be allowed to increase one foot in height for every foot the required set back is increased, not to exceed 40 feet.
   b. In the EC zone classification there shall be no height restriction on parcels exceeding 5 acres in size, provided all setback standards are met.
3. **Interior Fencing and Screening.**
   a. Outdoor stockpile areas must be secured by a surrounding fence or other enclosure. within an urban growth area, the fence or enclosure shall be sight obscuring and shall meet the standards set forth in Section 18A.35.030 H.4.
   b. Loading areas should be located to the side or rear of existing buildings to minimize views of this activity and shall be screened, in accordance with fencing standards contained in 18A.35.030H.5, from adjacent properties and streets.
4. **Exterior Screening.**
   a. Visual screening consisting of evergreen plant material that will provide a solid screen of at least 16 feet in height shall be required along the site's exterior boundaries when the use or activity occurs on property

that is adjacent to property improved with a residential use, public and private road rights-of-way, or urban residential zone classification.

b. The required visual screening buffer(s) width shall not be less than 30 feet in width and shall provide a site-obscuring screen within three years. If existing vegetation does not provide the required sight-obscuring screen, supplemental plantings or sight-obscuring fencing shall be required. When supplemental plantings are proposed, irrigation must be provided meeting the standards set forth in Section 18A. 35.030. One access way, not wider than 30 feet, will be allowed to cut through the designated visual screening buffer area for the life of the approved project, except as provided for dangerous or diseased trees.

Drafted: 9/12/07

C. WUTC COST ASSESSMENT

COST ASSESSMENT PREPARED FOR THE 2008 SUPPLEMENT TO THE TACOMA-PIERCE COUNTY SOLID WASTE MANAGEMENT PLAN

RCW 70.95.090 (8) "requires an assessment of the plan's impact on the costs of solid waste collection . . . prepared in conformance with guidelines established by the utilities and transportation commission."

RCW 70.95.096, however, limits the Commission's review to ". . . the plan's assessment of solid waste collection cost impacts on rates charged by solid waste collection companies regulated under chapter 81.77 RCW. . ." and requires the Commission to "advise the county or city submitting the plan and the department of the probable effect of the plan's recommendations on those rates."

This Cost Assessment is prepared to solicit the advice of the Washington Utilities and Transportation Commission as to how this Plan Supplement may impact the rates charged by Commission-regulated haulers. Other readers may wish to review the Cost Assessment in tandem with Chapters 10 and 11 of the 2000 Plan and Section IV of the 2008 Supplement which describe the County's solid waste management systems, provide a cost and financial review, and prioritize programs for implementation.

Summary of Findings

1) The 2008 Supplement does not propose policies or programs which will directly impact the regulated services or rates charged by Commission-regulated haulers.

2) The 2008 Supplement proposes a vision and path to reduce waste generation, increase recycling, and dramatically decrease *per capita* waste disposal needs. The rate impact of new programs is projected to be about $0.06 per household per month by 2013.

3) Between 2008 and 2013, the Solid Waste Division will actively spend down its fund balance, investing $10,000,000 to upgrade public transfer stations and to launch the next generation of waste reduction, recycling, education, conservation, and pollution prevention programs. This investment of fund balance will allow the County to minimize rate increases even while expanding programs and improving facilities.

4) It is expected that the portion of solid waste tipping fees dedicated to funding County-sponsored programs (such as those detailed in the plan Supplement) will need to increase $0.74 per ton to sustain public information and outreach campaigns in the wake of a declining waste stream. Past experience (with recycling and litter prevention programs) shows that successful programs only remain successful with continued investment in public outreach. If the County wants to see continued drops in disposal need, it will need to provide education and outreach programs even after tonnage starts to decline. As noted above, the impact on a single-family household will be about $0.06 per month.

5) Beyond the scope of this six year review and to the extent that solid waste disposal (tipping) fees remain a primary funding mechanism for the Pierce County solid waste system, per ton tipping fees may rise beyond the rate of inflation as disposal volumes decline. A review of the potential for fixed costs being borne by a shrinking waste stream will be a subject for review in the 2010 Supplement.

6) The 2008 Supplement does not recommend changes to waste collection, recycling, or yardwaste collection practices that would require new hauler investment.

7) The 2008 Supplement does recommend more focus on non-residential collection and diversion programs that fall outside the purview of WUTC-regulated haulers.

COST ASSESSMENT QUESTIONNAIRE

PLAN PREPARED FOR THE COUNTY OF: **Tacoma-Pierce County**

PREPARED BY: **Pierce County Public Works & Utilities**
Steve Wamback, Solid Waste Administrator
Sally Sharrard, Senior Planner

CONTACT TELEPHONE: **(253) 798-2179** DATE: **12/15/07**

Definitions

1. Throughout this document:
   BASE shall refer to **January 1 to December 31, 2007**
   YR. 1 shall refer to **January 1 to December 31, 2008**
   YR. 3 shall refer to **January 1 to December 31, 2010**
   YR. 6 shall refer to **January 1 to December 31, 2013**

2. Data and dollar figures are rounded to the nearest thousand

3. Base year costs reflect the adopted 2007 Solid Waste Division budget.

4. Year 1 costs reflect the 2008 Solid Waste Division budget, adopted in November 2007.

5. Cost projections for years 3 and 6 are adjusted on an assumed 3 % annual inflation rate, unless otherwise noted in the text.

1. DEMOGRAPHICS

1.1 Population

1.1.1 Current and projected population of Pierce County, including Tacoma and military bases

790,500	**805,520**	**836,688**	**874,889**
Base – 2007	2008	2010	2013

1.1.2 Current and projected population of Tacoma/Ruston and the military bases

225,000	**229,575**	**238,147**	**249,020**
Base – 2007	2008	2010	2013

1.1.3 Current and projected population of the Pierce County Solid Waste System

565,500	**576,245**	**598,541**	**625,869**
Base – 2007	2008	2010	2013

1.2 References and Assumptions

- The response to item 1.1.1 is based on the 2007 population of Pierce County as calculated by the Washington State Office of Financial Management. Future projections are the officially released long-term planning projections approved for use by the Pierce County Department of Planning and Land Services.

- The response to item 1.1.2 is based on the 2007 population for the City of Tacoma and Town of Ruston as calculated by the Washington State Office of Financial Management. Added to this is an estimate of the population of service members and families residing on Fort Lewis and McChord Air Force Base. Pierce County Department of Planning and Land Services does not disaggregate future projections to the city-level. For this Cost Assessment, future projections follow the same percentage as the County as a whole.

- Item 1.1.3 reflects current and future population for the portion of Pierce County that participates in the solid waste management system managed by Pierce County government.

2. WASTE STREAM GENERATION

This data set estimates tonnage generated by all three waste management systems within the County: the Pierce County Solid Waste System, the Tacoma/Ruston System, and the Fort Lewis/McChord AFB System.

2.1 Tonnage Recycled

480,407	**490,000**	**519,000**	**559,000**
Base – 2007	2008	2010	2013

2.2 Tonnage Disposed

649,198	**662,000**	**653,000**	**630,000**
Base – 2007	2008	2010	2013

This data set estimates tonnage for just the Pierce County Solid Waste System, using the population presented in response 1.1.3.

2.3 Tonnage Recycled

343,668	**350,000**	**371,000**	**400,000**
Base – 2007	2008	2010	2013

2.4 Tonnage Disposed

464,417	**473,000**	**467,000**	**451,000**
Base – 2007	2008	2010	2013

2.5 References and Assumptions

- Tonnage figures include all wastes labeled as "municipal solid waste" by the Washington Department of Ecology and tracked in their annual reporting. Since data for calendar year 2007 will not be confirmed until later in 2008, the base year and 2008 estimates reflect performance in 2006, adjusted for the current population. In 2006, *per capita* waste generation was approximate 7.83 pounds *per capita* per day, with 4.5 pounds disposed *per capita* per day and 3.33 pounds recycled *per capita* per day.

- By 2010, the programs contained within this plan supplement will have started showing impact. Waste generation will drop to 7.67 pounds per day and recycling will increase to 3.4 pounds per day. The remainder requiring disposal will drop to 4.28 pounds per day.

- By 2013, waste generation will drop to 7.45 pounds per day and recycling will increase to 3.5 pounds per day. The remainder requiring disposal will drop to 3.95 pounds per day.

3. SYSTEM COMPONENT COSTS:

In 2000, Pierce County modified the Cost Assessment Questionnaire developed by the Washington Utilities and Transportation Commission to make the Cost Assessment a more useful tool and specific tool for the County, the local solid waste industry, recyclers, and our customers, in addition to meeting the needs of the WUTC. We continue that approach in this Cost Assessment developed for the 2008 Supplement.

- The following presentation on *Waste Reduction and Recycling* includes all of the information requested by Sections 3.1 and 3.2 Cost Assessment Questionnaire.

- The following presentation on *Solid Waste Processing Technologies* presents information not specifically requested, but which could have been included in Section 3.7 of the Cost Assessment Questionnaire.

- The following presentation on *Transfer Facilities and Systems* presents information not specifically requested, but which could have been included in Section 3.7 of the Cost Assessment Questionnaire.

- The following presentation on *Landfilling* presents information requested by Sections 3.5 and 3.7 of the Cost Assessment Questionnaire.

- The following presentation on *Special Waste Systems* presents information not specifically requested, but which could have been included in Section 3.7 of the Cost Assessment Questionnaire.

- The following presentation on *Enforcement and Administration* presents information requested by Section 3.6 of the Cost Assessment Questionnaire.

While we have diverted from the WUTC suggested format, you will find <u>at a minimum</u>, the same information requested by the WUTC. This approach is consistent with the instruction on page 9, of the Cost Assessment Guidelines, 2nd Edition, Revised, August 2001.

The Cost Assessment concludes with a variety of presentations on system costs, all following the models found in the Cost Assessment Guidelines.

A final note: all of the program costs relate solely to the Pierce County Solid Waste Management System served by WUTC-regulated and City-contracted haulers.

Waste Reduction and Recycling

Current and Continuing Programs:

1. Public Information, Education, and Outreach for Waste Reduction and Recycling

$670,050	**$654,000**	**$694,000**	**$758,000**
Base – 2007	2008	2010	2013

2. In-House Recycling Programs to Pierce County Employees

$33,000	**$40,000**	**$42,000**	**$46,000**
Base – 2007	2008	2010	2013

Total for Current and Continuing Programs

$703,050	**$694,000**	**$736,000**	**$804,000**
Base – 2007	2008	2010	2013

Proposed New Programs:

1. School Recycling Program Outreach and Assistance (page 66)

N/A	**$40,000**	**$42,000**	**$46,000**
Base – 2007	2008	2010	2013

2. Incorporate climate change, Puget Sound protection, product stewardship, and adult classroom education to supplement existing programs - Add 5th Environmental Educator

N/A	**$73,000**	**$90,000**	**$98,000**
Base – 2007	2008	2010	2013

3. Business Assistance Programs (page 66)

N/A	**$100,000**	**$156,000**	**$166,000**
Base – 2007	2008	2010	2013

4. Residential Recycling Enhancements (page 68)

N/A	**N/A**	**$156,000**	**$166,000**
Base – 2007	2008	2010	2013

Total for Proposed New Programs

N/A	**$213,000**	**$444,000**	**$476,000**
Base – 2007	2008	2010	2013

Total for Current and Continuing and Proposed New Programs

$703,050	**$907,000**	**$1,180,000**	**$1,280,000**
Base – 2007	2008	2010	2013

❖ Funding Mechanisms

This component of the Pierce County solid waste system is primarily funded by the **County Administrative Cost** (CAC) component of solid waste tipping fees, the **Department of Ecology Coordinated Prevention Grant** (CPG), and a portion of the Solid Waste Enterprise Fund Balance (reserves) which has been set aside to sustain these programs.

Please refer to the Funding Mechanism Summary Charts for more detail on the specific allocation of revenues and expenses.

Solid Waste Processing Technologies

Current and Continuing Programs:

1. Yardwaste Composting Facility Operations

$4,212,262	**$4,448,000**	**$4,658,000**	**$4,913,000**
Base – 2007	2008	2010	2013

Proposed New Programs

1. Organic Waste Division Assistance Program – Develop sustainable best management practices for organic waste that can help capture or sequester carbon, recover energy resources, and produce product. (page 67)

$-	**$-**	**$120,000**	**$260,000**
Base – 2007	2008	2010	2013

Total for Current and Continuing and Proposed New Programs

$4,212,262	**$4,448,000**	**$4,778,000**	**$5,173,000**
Base – 2007	2008	2010	2013

❖ Funding Mechanism

Pierce County's Yardwaste Composting Facility and composting system are currently funded by the **Yardwaste Composting** component of the solid waste tipping fee.

Public outreach programs are funded primarily funded by the **County Administrative Cost** (CAC) component of solid waste tipping fees, the **Department of Ecology Coordinated Prevention Grant** (CPG), and a portion of the Solid Waste Enterprise Fund Balance (reserves) which has been set aside to sustain these programs.

Please refer to the Funding Mechanism Summary Charts for more detail on the specific allocation of revenues and expenses.

Transfer Facilities and Systems

Current and Continuing Programs:

1. Purdy Transfer Station and Composting Facility Improvements (page 70)

$-	**$161,500**	**$380,000**	**N/A**
Base – 2007	2008	2010	2013

2. Key Center Transfer Station Fencing (page 70)

$-	**$125,000**	**N/A**	**N/A**
Base – 2007	2008	2010	2013

3. Pierce County Public and Private Waste Transfer and Recycling Systems

$17,527,092	**$18,527,000**	**$19,404,000**	**$20,456,000**
Base – 2007	2008	2010	2013

Total for Current and Continuing Programs

$17,527,092	**$18,813,500**	**$19,784,000**	**$20,456,000**
Base – 2007	2008	2010	2013

❖ Funding Mechanism

The primary funding mechanism for this component of Pierce County's system is the **Transfer Facilities, Recycling, and Transportation** (TFRT) component of the solid waste tipping fee. Capital improvements at County-owned transfer stations are funded from the Solid Waste Enterprise Fund Balance (reserves).

Please refer to the Funding Mechanism Summary Charts for more detail on the specific allocation of revenues and expenses.

Landfilling

Current and Continuing Programs:

1. Solid Waste Disposal Services

$20,262,508	**$21,272,000**	**$22,219,000**	**$23,335,000**
Base – 2007	2008	2010	2013

2. Hidden Valley and Purdy Landfills Post-Closure Care

$449,600	**$474,000**	**$585,000**	**$300,000**
Base – 2007	2008	2010	2013

Total for Current and Continuing Programs

$20,712,108	**$21,746,000**	**$22,804,000**	**$23,635,000**
Base – 2007	2008	2010	2013

Proposed New Programs:

1. Waste Characterization Audit (page 65)

$-	**$500,000**	**N/A**	**N/A**
Base – 2007	2008	2010	2013

2. Develop and Implement "Best Management Practice" Landfill Diversion Program (page 65)

$-	**$104,000**	**$240,000**	**$262,000**
Base – 2007	2008	2010	2013

Total for Current and Continuing and Proposed New Programs

$20,712,108	**$22,350,000**	**$23,044,000**	**$23,897,000**
Base – 2007	2008	2010	2013

❖ Funding Mechanism

The funding mechanism for solid waste disposal is the Disposal component of the solid waste tipping fee.

Closure activities and Post-Closure care are funded entirely from **Dedicated Reserve Accounts**.

The new programs will be funded by the **County Administrative Cost** (CAC) component of solid waste tipping fees.

Please refer to the Funding Mechanism Summary Charts for more detail on the specific allocation of revenues and expenses.

Special Waste Systems

Current and Continuing Program:

1. Household Hazardous Waste Management Program

$445,270	**$459,800**	**$488,000**	**$533,000**
Base – 2007	2008	2010	2013

2. Purdy HHW Collection Facility (page 70)

$-	**$120,000**	**N/A**	**N/A**
Base – 2007	2008	2010	2013

Total for Current and Continuing Programs

$445,270	**$579,800**	**$488,000**	**$533,000**
Base – 2007	2008	2010	2013

New Program:

1. Construction Debris Outreach and Diversion Programs (page 67)

N/A	**N/A**	**$120,000**	**$262,000**
Base – 2007	2008	2010	2013

Total for Current and Continuing and Proposed New Programs

$445,270	**$579,800**	**$608,000**	**$795,000**
Base – 2007	2008	2010	2013

❖ Funding Mechanisms

This component of the Pierce County solid waste system is funded by the **County Administrative Cost** (CAC) component of solid waste tipping fees and the **Department of Ecology Coordinated Prevention Grant** (CPG).

Please refer to the Funding Mechanism Summary Charts for more detail on the specific allocation of revenues and expenses.

Enforcement and Administration

Current and Continuing Programs:

1. Solid Waste Planning Functions

$73,740	**N/A**	**$82,000**	**N/A**
Base – 2007	2008	2010	2013

2. Tacoma-Pierce County Health Department Source Protection – Waste Management Program

$770,000	**$735,000**	**$780,000**	**$852,000**
Base – 2007	2008	2010	2013

3. Solid Waste Administration

$1,497,590	**$1,508,000**	**$1,600,000**	**$1,748,000**
Base – 2007	2008	2010	2013

4. Pierce County Responds: Nuisance Vehicle and Illegal Dumping Abatement

$644,510	**$714,670**	**$758,000**	**$829,000**
Base – 2007	2008	2010	2013

Total for Current and Continuing Administration Programs

$2,985,840	**$2,957,670**	**$3,220,000**	**$3,429,000**
Base – 2007	2008	2010	2013

❖ Funding Mechanisms

This component of the Pierce County solid waste system is primarily funded by the **County Administrative Cost** (CAC) component of solid waste tipping fees, **Interest** earned on the reserves maintained within the Solid Waste Enterprise Fund, and a portion of the Solid Waste Enterprise Fund Balance (reserves) which has been set aside to sustain these programs.

Please refer to the Funding Mechanism Summary Charts for more detail on the specific allocation of revenues and expenses.

Other Programs

Current and Continuing Programs:

1. Water Resources Education

$171,740	**181,440**	**$192,000**	**$210,000**
Base – 2007	2008	2010	2013

2. Environmental Education Center

$50,000	**$146,500**	**$2,500,000**	**N/A**
Base – 2007	2008	2010	2013

Total for Current and Continuing Administration Programs

$221,740	**$327,940**	**$2,692,000**	**$210,000**
Base – 2007	2008	2010	2013

❖ Funding Mechanisms

Water Resources Education is funded entirely by internal department transfers from the Water Resources Division, the Wastewater Utility, and Road Maintenance.

The Environmental Education Center project is a joint project of Pierce County government and the not-for-profit Chambers Creek Foundation. The County's contribution to planning and constructing the center is capped at $3,000,000 from the Solid Waste Enterprise Fund Balance (reserves).

Please refer to the Funding Mechanism Summary Charts for more detail on the specific allocation of revenues and expenses.

Energy Recovery & Incineration Programs (Cost Assessment Section 3.4)

There are no waste to energy or incinerator facilities handling waste generated within the Pierce County Solid Waste System.

Land Disposal Program (Cost Assessment Section 3.5)

The primary disposal site for waste generated within the Pierce County Solid Waste System is the LRI Landfill in Graham, WA. Pierce County Recycling, Composting, and Disposal LLC (d/b/a LRI) owns and operates this landfill. The partners in LRI are Waste Connections, Inc. (owning 51%) and the LeMay family (49%).

In 2007, less than 10% of the waste stream was diverted to the Roosevelt Regional Landfill (owned/operated by Allied Waste) in Klickitat County, Washington.

The City of Tacoma Solid Waste Utility owns and operates the City of Tacoma Sanitary Landfill which provides disposal for a portion of the City waste stream. Certificated haulers do not deliver waste to this disposal site.

This page and the two pages that follow provide information on waste hauling companies, as requested by Section 3.3 of the cost assessment. The WUTC-certificated haulers provided the base year data to the County in December 2007.

Solid Waste Collection Programs
(Cost Assessment Section 3.3)
Certificated Haulers

American Disposal, G-37 & Murrey's Disposal, G-9
(subsidiaries of Waste Connections, Inc.)

	Base - 2007	Year 1 - 2008	Year 3 - 2010	Year 6 - 2013
Residential Customers	48,000	48,912	50,784	53,136
Commercial Customers	4,800	4,891	5,078	5,314
Estimated Annual Tonnage	98,550	100,422	99,168	95,761

Harold LeMay Enterprises, G-98

	Base - 2007	Year 1 - 2008	Year 3 - 2010	Year 6 - 2013
Residential Customers	42,800	43,613	45,282	47,380
Commercial Customers	4,100	4,178	4,338	4,539
Estimated Annual Tonnage	87,874	89,543	88,425	85,387

Solid Waste Collection Programs
(Cost Assessment Section 3.3)
Non-Certificated Haulers

Waste Connections, Inc.

	Base - 2007	Year 1 - 2008	Year 3 - 2010	Year 6 - 2013
Residential Customers	20,700	21,093	21,901	22,915
Commercial Customers	1,200	1,223	1,270	1,328
Estimated Annual Tonnage	42,500	43,307	42,766	41,297

University Place Refuse and Westside Disposal

	Base - 2007	Year 1 - 2008	Year 3 - 2010	Year 6 - 2013
Residential Customers	13,600	13,858	14,389	15,055
Commercial Customers	800	815	846	886
Estimated Annual Tonnage	27,923	28,453	28,098	27,132

Harold LeMay Enterprises, Inc.

	Base - 2007	Year 1 - 2008	Year 3 - 2010	Year 6 - 2013
Residential Customers	17,300	17,629	18,303	19,151
Commercial Customers	2,100	2,140	2,222	2,325
Estimated Annual Tonnage	35,519	36,194	35,742	34,514

Solid Waste Collection Programs
(Cost Assessment Section 3.3)
Data Summary

Total Certificated Haulers

	Base - 2007	Year 1 - 2008	Year 3 - 2010	Year 6 - 2013
Residential Customers	90,800	92,525	96,066	100,516
Commercial Customers	8,900	9,069	9,416	9,852
Estimated Annual Tonnage	186,424	189,966	187,594	181,148

Total Non-Certificated Haulers

	Base - 2007	Year 1 - 2008	Year 3 - 2010	Year 6 - 2013
Residential Customers	51,600	52,580	54,593	57,121
Commercial Customers	4,100	4,178	4,338	4,539
Estimated Annual Tonnage	105,941	107,954	106,606	102,943

Total Certificated and Non-Certificated Haulers

	Base - 2007	Year 1 - 2008	Year 3 - 2010	Year 6 - 2013
Residential Customers	142,400	145,106	150,659	157,637
Commercial Customers	13,000	13,247	13,754	14,391
Estimated Annual Tonnage	**292,365**	**297,920**	**294,200**	**284,091**

FUNDING MECHANISMS

Solid Waste Tipping Fee

Pierce County entered into a Waste Handling Agreement with Land Recovery, Inc. (LRI) in 1998. LRI operates five solid waste facilities owned by Pierce County:

- Purdy Transfer Station
- Anderson Island Residential Waste Transfer Site (Drop Box)
- Key Center Residential Waste Transfer Site (Drop Box)
- Prairie Ridge Residential Waste Transfer Site (Drop Box)
- Pierce County Yardwaste Composting Facility (at Purdy)

LRI makes available the Hidden Valley Transfer Station for the use of Pierce County residents, businesses, and haulers; and transports waste to its LRI Landfill in Graham.

The Pierce County – LRI Waste Handling Agreement establishes the solid waste tipping fee. There are four components to the tipping fee:

- Transfer Facilities, Recycling, and Transportation Component (TFRT)
- Yardwaste Composting Component (Yardwaste)
- Disposal Services Component (Disposal)
- County Administrative Cost Component (CAC)

The following chart shows current and estimated future tipping fees. Please note that the current waste handling agreement expires in 2011 and will have to be amended or renegotiated prior to that date.

Component	2007	2008	2010	2013
TFRT	$ 37.74	$ 39.15	$ 41.53	$ 45.38
Yardwaste	$ 9.07	$ 9.40	$ 9.97	$ 10.90
Disposal	$ 43.63	$ 44.95	$ 47.56	$ 51.77
CAC	$ 8.45	$ 8.45	$ 9.42	$10.54
Total	$ 98.89	$ 101.95	$ 108.48	$ 118.59

This final section of the Cost Assessment includes a number of tables that link program costs with revenues. First, however, is a requested chart identifying solid waste facilities and the current (year 2007) fees charged.

Cost Assessment Questionnaire Table 4.1.1

Facility Name	Type of Facility	Tip Fee Per Ton	Transfer Cost	Transfer Station Location	Final Disposal Location	Tons Disposed 2007 (estimate)	Total Revenue Generated
Facilities Open to the Public For Residential Self-Haul Waste Only - Closed to Commercial Haulers							
Anderson Island	Drop Box	$98.89	averaged across all waste and included in tip fee	Anderson Is.	LRI LF		
Key Center	Drop Box	$98.89		Key Peninsula	LRI LF		
Prairie Ridge	Drop Box	$98.89		Bonney Lake	LRI LF		
Facilities Open to the Public For Residential Self-Haul Waste, Commercial Self-Haul Waste, and Commercial Haulers							
Hidden Valley	Transfer Station	$98.89	see above	South Hill	LRI LF	460,000	$45,489,400
Purdy	Transfer Station	$98.89		Gig Harbor	LRI LF		
Facilities Open for Commercial Self-Haul Waste and Commercial Haulers only							
LRI Landfill	Landfill	$98.89	see above	Graham, WA	N/A		
Private Facilities Open to Haulers for their own wastes							
Lakewood	Transfer Station	included as part of the haulers' collection operations		Lakewood	LRI LF		
Murrey's	Transfer Station			Puyallup/Fife	LRI LF		

FUNDING MECHANISM SUMMARY - 2007

System Component	Solid Waste Tipping Fees Components				Other Revenue Sources						TOTAL
	TFRT	YARDWASTE	DISPOSAL	CAC	GRANTS	Interest	Transfer Within Department	Dedicated Reserve Funds	Fund Balance	Other	
Waste Reduction and Recycling				$ 424,550	$ 275,500					$ 3,000	$ 703,050
Processing Technologies		$ 4,212,262									$ 4,212,262
Transfer Facilities and Systems	$ 17,527,092										$ 17,527,092
Landfilling			$ 20,262,508					$ 449,600			$ 20,712,108
Special Waste Streams				$ 169,770	$ 275,500						$ 445,270
Enforcement & Administration				$ 2,725,510	$ 46,000	$ 159,080		$ 55,000		$ 250	$ 2,985,840
Other Programs				$ 50,000		$ 920	$ 170,820				$ 221,740
Total	$ 17,527,092	$ 4,212,262	$ 20,262,508	$ 3,369,830	$ 597,000	$ 160,000	$ 170,820	$ 504,600	$ -	$ 3,250	$ 46,807,362
Est. Revenue	$ 17,527,092	$ 4,212,262	$ 20,262,508	$ 3,767,675	$ 300,869	$ 344,401	$ 170,820	$ 672,781	$ -	$ 2,718	$ 47,261,126
Surplus (Deficit)	$ -	$ -	$ -	$ 397,845	$ (296,131)	$ 184,401	$ -	$ 168,181	$ -	$ (532)	**$ 453,764**

For 2007, the Solid Waste Division will end the year contributing over $450,000 to its fund balances.

Solid Waste Tipping Fee Components

TFRT	37.74 per ton	Transfer Facilities, Recycling and Transportation
YARDWASTE	9.07 per ton	Yardwaste Composting
DISPOSAL	43.63 per ton	Disposal Services
CAC	8.45 per ton	County Administrative Cost Component

Other Components

GRANTS	Department of Ecology Coordinated Prevention Grant & Community Litter Cleanup Program
Interest	Interest Earned on Solid Waste Enterprise Fund Balance
Dedicated Reserve	Restricted Post-Closure and Self-Insurance Accounts (including interest earned on those accounts)
Fund Balance	Solid Waste Enterprise Fund Balance
Other	class registration fees and miscellaneous revenue

FUNDING MECHANISM SUMMARY - 2008

	Funding Mechanisms										
	Solid Waste Tipping Fees Components				Other Revenue Sources						
System Component	TFRT	YARDWASTE	DISPOSAL	CAC	GRANTS	Interest	Transfer Within Department	Dedicated Reserve Funds	Fund Balance	Other	TOTAL
Waste Reduction and Recycling				$ 730,850	$ 100,150				$ 73,000	$ 3,000	$ 907,000
Processing Technologies		$ 4,448,000									$ 4,448,000
Transfer Facilities and Systems	$ 18,527,000								$ 286,500		$ 18,813,500
Landfilling			$ 21,272,000	$ 604,000				$ 474,000			$ 22,350,000
Special Waste Streams				$ 114,950	$ 344,850				$ 120,000		$ 579,800
Enforcement & Administration				$ 2,249,360	$ 17,000	$ 280,000		$ 50,000	$ 361,110	$ 200	$ 2,957,670
Other Programs				$ 840			$ 180,600		$ 146,500		$ 327,940
Total	$ 18,527,000	$ 4,448,000	$ 21,272,000	$ 3,700,000	$ 462,000	$ 280,000	$ 180,600	$ 524,000	$ 987,110	$ 3,200	$ 50,383,910
Budgeted Revenue	$ 18,527,000	$ 4,448,000	$ 21,272,000	$ 3,700,000	$ 462,000	$ 280,000	$ 180,600	$ 524,000	$ 987,110	$ 3,200	$ 50,383,910
Surplus (Deficit)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Solid Waste Tipping Fee Components

TFRT	37.74 per ton	Transfer Facilities, Recycling and Transportation
YARDWASTE	9.07 per ton	Yardwaste Composting
DISPOSAL	43.63 per ton	Disposal Services
CAC	8.45 per ton	County Administrative Cost Component

Other Components

GRANTS	Department of Ecology Coordinated Prevention Grant & Community Litter Cleanup Program
Interest	Interest Earned on Solid Waste Enterprise Fund Balance
Dedicated Reserve	Restricted Post-Closure and Self-Insurance Accounts (including interest earned on those accounts)
Fund Balance	Solid Waste Enterprise Fund Balance
Other	class registration fees and miscellaneous revenue

FUNDING MECHANISM SUMMARY - 2010

	Funding Mechanisms										
	Solid Waste Tipping Fees Components				Other Revenue Sources						
System Component	TFRT	YARDWASTE	DISPOSAL	CAC	GRANTS	interest	Transfer Within Department	Dedicated Reserve Funds	Fund Balance	Other	TOTAL
Waste Reduction and Recycling				$ 945,000	$ 235,000						$ 1,180,000
Processing Technologies		$ 4,658,000		$ 120,000							$ 4,778,000
Transfer Facilities and Systems	$ 19,404,000			$ 380,000							$ 19,784,000
Landfilling			$ 22,219,000	$ 240,000				$ 585,000			$ 23,044,000
Special Waste Streams				$ 373,000	$ 235,000						$ 608,000
Enforcement & Administration				$ 2,278,000	$ 20,000	$ 275,000		$ 53,000	$ 594,000		$ 3,220,000
Other Programs							$ 192,000		$ 2,500,000		$ 2,692,000
Total	$ 19,404,000	$ 4,658,000	$ 22,219,000	$ 4,336,000	$ 490,000	$ 275,000	$ 192,000	$ 638,000	$ 3,094,000	$ -	$ 55,306,000
Budgeted Revenue	$ 19,404,000	$ 4,658,000	$ 22,219,000	$ 4,400,000	$ 490,000	$ 275,000	$ 192,000	$ 638,000	$ 3,094,000		$ 55,370,000
Surplus (Deficit)	$ -	$ -	$ -	$ 64,000	$ -	$ -	$ -	$ -	$ -	$ -	**$ 64,000**

Solid Waste Tipping Fee Components

TFRT	37.74 per ton	Transfer Facilities, Recycling and Transportation
YARDWASTE	9.07 per ton	Yardwaste Composting
DISPOSAL	43.63 per ton	Disposal Services
CAC	8.45 per ton	County Administrative Cost Component

Other Components

GRANTS	Department of Ecology Coordinated Prevention Grant & Community Litter Cleanup Program
Interest	Interest Earned on Solid Waste Enterprise Fund Balance
Dedicated Reserve	Restricted Post-Closure and Self-Insurance Accounts (including interest earned on those accounts)
Fund Balance	Solid Waste Enterprise Fund Balance

FUNDING MECHANISM SUMMARY - 2013

	Funding Mechanisms										
	Solid Waste Tipping Fees Components				Other Revenue Sources						
System Component	TFRT	YARDWASTE	DISPOSAL	CAC	GRANTS	Interest	Transfer Within Department	Dedicated Reserve Funds	Fund Balance	Other	TOTAL
Waste Reduction and Recycling				$1,025,000	$ 255,000						$ 1,280,000
Processing Technologies		$ 4,913,000		$ 260,000							$ 5,173,000
Transfer Facilities and Systems	$20,456,000										$ 20,456,000
Landfilling			$ 23,335,000	$ 262,000				$ 300,000			$ 23,897,000
Special Waste Streams				$ 540,000	$ 255,000						$ 795,000
Enforcement & Administration				$2,646,000	$ 25,000	$ 100,000		$ 58,000	$ 600,000		$ 3,429,000
Other Programs							$ 210,000				$ 210,000
Total	$20,456,000	$ 4,913,000	$ 23,335,000	$4,733,000	$ 535,000	$ 100,000	$ 210,000	$ 358,000	$ 600,000	$ -	$ 55,240,000
Budgeted Revenue	$20,456,000	$ 4,913,000	$ 23,335,000	$4,750,000	$ 535,000	$ 100,000	$ 210,000	$ 358,000	$ 600,000		$ 55,257,000
Surplus (Deficit)	$ -	$ -	$ -	$ 17,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,000

Solid Waste Tipping Fee Components

TFRT	37.74 per ton	Transfer Facilities, Recycling and Transportation
YARDWASTE	9.07 per ton	Yardwaste Composting
DISPOSAL	43.63 per ton	Disposal Services
CAC	8.45 per ton	County Administrative Cost Component

Other Components

GRANTS	Department of Ecology Coordinated Prevention Grant & Community Litter Cleanup Program
Interest	Interest Earned on Solid Waste Enterprise Fund Balance
Dedicated Reserve	Restricted Post-Closure and Self-Insurance Accounts (including interest earned on those accounts)
Fund Balance	Solid Waste Enterprise Fund Balance
Other	class registration fees and miscellaneous revenue

FUNDING MECHANISM SUMMARY BY PERCENTAGE

Funding Mechanisms for 2007

System Component	Tipping Fee (less CAC component)	County Admin Cost Component	Grants	Interest	Transfer Within Department	Dedicated Reserve Funds	Fund Balance & Other	TOTAL
Waste Reduction and Recycling		60%	39%				1%	100%
Processing Technologies	100%							100%
Transfer Facilities and Systems	100%							100%
Landfilling	98%					2%		100%
Special Waste Streams		38%	62%					100%
Enforcement & Administration		91%	2%	5%		2%		100%
Other Programs		23%			77%			100%

Funding Mechanisms for 2008

System Component	Tipping Fee (less CAC component)	County Admin Cost Component	Grants	Interest	Transfer Within Department	Dedicated Reserve Funds	Fund Balance & Other	TOTAL
Waste Reduction and Recycling		81%	11%				8%	100%
Processing Technologies	100%							100%
Transfer Facilities and Systems	98%						2%	100%
Landfilling	95%	3%				2%		100%
Special Waste Streams		20%	59%				21%	100%
Enforcement & Administration		76%	1%	9%		2%	12%	100%
Other Programs					55%		45%	100%

FUNDING MECHANISM SUMMARY BY PERCENTAGE

Funding Mechanisms for 2010

System Component	Tipping Fee (less CAC component)	County Admin Cost Component	Grants	Interest	Transfer Within Department	Dedicated Reserve Funds	Fund Balance & Other	TOTAL
Waste Reduction and Recycling		80%	20%					100%
Processing Technologies	97%	3%						100%
Transfer Facilities and Systems	98%	2%						100%
Landfilling	96%	1%				3%		100%
Special Waste Streams		61%	39%					100%
Enforcement & Administration		71%	1%	9%		2%	18%	100%
Other Programs					7%		93%	100%

Funding Mechanisms for 2013

System Component	Tipping Fee (less CAC component)	County Admin Cost Component	Grants	Interest	Transfer Within Department	Dedicated Reserve Funds	Fund Balance & Other	TOTAL
Waste Reduction and Recycling		80%	20%					100%
Processing Technologies	95%	5%						100%
Transfer Facilities and Systems	100%							100%
Landfilling	98%	1%				1%		100%
Special Waste Streams		68%	32%					100%
Enforcement & Administration		77%	1%	3%		2%	17%	100%
Other Programs					100%			100%