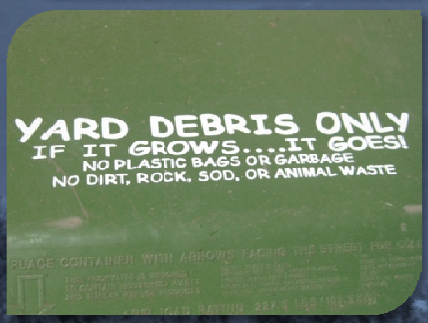

Organic Materials Management Strategy
for the Columbia Gorge Region

Assessment of Existing Conditions and Options for Increasing Recovery

Prepared for the

Tri-County Hazardous Waste & Recycling Program
Covering Hood River, Sherman, and Wasco Counties

April 2010

CASCADIA CONSULTING GROUP

Tri-County Hazardous Waste & Recycling Program

Acknowledgments

The **Tri-County Hazardous Waste & Recycling Program**—covering Hood River, Sherman, and Wasco counties—hired Cascadia Consulting Group to prepare this assessment and develop options for organic materials management in the Columbia Gorge region. **David Skakel** of the Tri-County Program managed the project on behalf of the three counties. The Cascadia team included Steven Sherman (project manager), Jessica Branom-Zwick, Katie Kennedy, and Christy Shelton, joined by subcontractors Harold Ruppert and Peter Moon of O_2Compost. We gratefully acknowledge the time and input of our many interviewees as well as the participants in the January 2010 stakeholders' meeting in Mosier.

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Executive Summary

The **Tri-County Hazardous Waste and Recycling Program**—covering Hood River, Sherman, and Wasco counties in Oregon—hired Cascadia Consulting Group to prepare this assessment and develop options regarding organic materials management in the Columbia Gorge region. The study region includes the Tri-County area, plus Klickitat and Skamania counties on the Washington side of the Columbia Gorge.

Organic materials are compostable and grindable carbon-containing materials such as green and woody yard trimmings, food scraps, food processing and fruit packing byproducts, compostable but non-recyclable paper ("soiled paper"), forest biomass, clean scrap wood, manure, and orchard and agricultural residues. These materials represent a significant portion of disposed waste.

When organic materials enter the disposed municipal solid waste (MSW) stream, they are costly to collect and haul, and they produce greenhouse gases that are released to the atmosphere as they decompose in landfills. The open burning of yard debris, orchard trimmings, and other organics adds to haze in the Columbia Gorge and can contribute to respiratory ailments in nearby populations. Organics are valuable, nutrient-rich materials that can be used to amend soil or generate energy. Currently, Oregon's Tri-County area—consisting of Hood River, Sherman, and Wasco counties—has few options available for diverting these materials.

To complete this study, Cascadia conducted the following steps:

- Prepared an inventory of organic materials in the Columbia Gorge region (Chapter 1).
- Identified existing and potential infrastructure for managing organic materials (Chapter 2).
- Reviewed the regulatory framework governing organics management in the region (Chapter 3).
- Obtained stakeholder input through interviews and a community meeting (Chapter 4 and 6).
- Developed management scenarios and rated them on selected evaluative criteria (Chapter 5).
- Recommended actions for increasing organics recovery in the Columbia Gorge (Chapter 7).

Organic Materials Inventory

This inventory of compostable organic materials estimated the total compostable portion of the disposed waste stream for the Tri-County area at about 20,000 tons, or about 38% of total disposed MSW. An additional 8,000 tons of compostable materials are disposed annually in the two Washington counties. The most prevalent compostable materials in the disposed waste stream in the Tri-County area include food, leaves and grass, compostable paper, and clean wood. Commercial disposed waste in Hood River and Wasco counties represent largest quantities of compostable material with strong potential for diversion.

Organic materials that currently are diverted from the waste stream include portions of orchard biomass, spent grains, spent yeast, wastewater solids from food processing, and organic remnants from fruit packing houses. Figure 11Together, orchards, food processors, and fruit packing houses are estimated to divert about 30,000 tons of organics for composting, animal feed, and other beneficial uses. In addition, the region generates an estimated 150,000 tons of non-merchantable forest biomass in the form of logging residues and materials removed for forest thinning. Overall, more than 200,000

tons of compostable material could potentially be available for new organics management strategies, including organic material that is currently diverted to other purposes or thrown away.

Organics Management Infrastructure

The study reviewed the existing regional capacity to handle organic materials, including collection, transfer, and processing. Currently, commercial haulers in the Tri-County area handle yard trimmings but not food scraps. Both The Dalles Disposal and Hood River Garbage Service offer drop-off locations, and The Dalles Disposal offers subscription service for collection of residential yard trimmings.

The existing infrastructure for processing organic materials in the Columbia Gorge is limited or already at capacity. Excess capacity at composting facilities is available primarily along the Interstate-5 corridor, more than an hour's from the Tri-County area—ranging from about 65 to more than 200 miles from Hood River or The Dalles. Trucking along the major highways appears to be the most viable transport method, though costs are significant: estimated at $0.20 to $0.40 per ton per mile, or roughly $20 to $40 to transport each ton about 100 miles to the Portland area.

At the time of the study, no facilities in Oregon were accepting all food scraps (including post-consumer, non-vegetative materials). Several have requested to permission to accept these materials, but Portland's move toward residential food scraps collection could fill much of the current excess capacity. Several sites in Washington's Puget Sound area currently compost all types of food scraps, though the nearest one is about 100 miles north of Portland.

Regulations and Permitting

Efforts to increase the capacity of the Columbia Gorge region to handle organic materials need to consider the regulations and permit requirements for facilities in Oregon and Washington. The study reviewed the regulatory framework that governs new and existing facilities, including permitting requirements for expanding or establishing new facilities and regulations that cover facility operations.

Even after the Oregon Department of Environmental Quality's adoption of new composting regulations in 2009, it appears to be easier to obtain a permit in Oregon than in Washington. Key features of Oregon's rules include fewer layers of review, discussions directly with permitting decision makers, and a more predictable project path. Composting facility operators or owners in Oregon will particularly benefit from a good working relationship and level of trust with regulators because the DEQ has more control over the permit conditions than Ecology. Overall, Oregon's composting regulations appear somewhat more flexible than Washington's rules, and analytical requirements in Oregon are less extensive. Washington, however, is expected to revise and simplify its composting rules in the next several years.

Stakeholder Input

Cascadia conducted numerous interviews with composting facility operators, prospective facility developers, regulators, local government officials, waste haulers, and other interested parties to identify and evaluate key issues, needs, opportunities, and potential recommendations. In January 2010 at the Mosier Grange, we held a community meeting with more than 40 farmers and orchardists, businesses, current and potential organics processors, waste management professionals, local government officials, and members of the public from within the Columbia Gorge and elsewhere. Stakeholder input addressed facility siting and location, feedstocks, environmental benefits, weighing costs and benefits, and other concerns.

When deciding between building a new organics processing facility and transporting organics to an existing processing facility, facility development costs and estimated operating costs must be weighed against transportation costs and known tip fees. When deciding where to site a new composting facility, the proximity and type of end-product markets to the facility should be taken into consideration, along with land use, feedstock location, and odor and vector control. Siting and land use regulations can pose major challenges to permitting a new organic materials processing facility; neighbors' concerns typically include odor, dust, noise, and truck traffic. As an alternative to open burning, a composting facility could help to improve the overall air quality in the Columbia Gorge; other compost benefits include improved water holding capacity of soil, erosion control, and reduced use of agricultural chemicals. New facilities must secure an adequate, ongoing supply of feedstock to be viable. Some composters prefer regional facilities, citing economies of scale, while others prefer smaller, local facilities. Some stakeholders raised concerns about importing or exporting organic materials and about public acceptance of the cost of a new collection and processing method.

Organics Management Scenarios

The study included development of eight potential scenarios for future organics management in the region. We developed evaluative criteria for ratings these scenarios and identified the top three options that hold greatest promise. The evaluation team identified and weighted criteria in these six categories: diversion, collection, transfer, processing, environmental impact, and overall. The top three organics management options were **Local, Centralized Grinding** (Scenario D), **Local Niches** (Scenario A), and **Export by Material Type** (Scenario B), as summarized below and described further in Chapter 5:

- In the **Local, Centralized Grinding** scenario (D), franchised haulers collect yard trimmings and scrap wood from residential curbside participants and self-haul customers. Woody material is ground at a local, centralized facility or on-site in rural areas, while leaves and grass are exported to a composting facility outside the region.

- In the **Local Niches** scenario (A), franchised haulers collect yard trimmings and scrap wood in curbside containers from all residential customers, and they accept similar material from self-haulers. A local, centralized facility composts yard trimmings and grinds woody material, while in rural areas, mobile equipment chips woody yard debris and commercial scrap wood on-site.

- In the **Export by Material Type** scenario (B), franchised haulers collect yard trimmings and scrap wood in curbside containers from all residents and accept these materials from self-haulers. Organics are collected separately from commercial customers. Yard trimmings are exported to a lower-cost composting facility, while other organics are sent to facility that accepts food scraps. In rural areas, mobile equipment chips woody yard debris and commercial scrap wood on-site.

The three top-ranked organics management options all involve collecting residential yard trimmings and scrap wood and expanding mobile grinding for woody materials in rural areas. They differ in whether the yard trimmings and scrap wood are processed locally or exported out of the region and in whether food scraps are addressed.

Recommendations

Based on the priorities identified through the evaluation process and results of the evaluation, Cascadia recommends refining an organics management strategy based on the top three scenarios that can be implemented in stages.

In the **near term**, the system should be **moderately sized, easy to implement, low-cost, and low-risk**. Elements to set up immediately include the following:

- Enhancing **mobile chipping** of woody yard debris and commercial scrap wood in rural areas.
- Supporting **centralized grinding** of woody yard debris and scrap wood for mulch or boiler fuel.
- Fostering **home composting**.
- Increasing **curbside collection of residential curbside leaves and grass** by franchised haulers.
- Encouraging **private haulers and large commercial generators** to communicate with each other to make their own arrangements to handle organic materials for beneficial use.

In the **medium term**, the Tri-County area could **expand the system** through the following efforts:

- Maximizing the **diversion of yard trimmings**.
- Piloting a **commercial vegetative food scraps collection** program.
- Developing a **local composting and grinding facility**.
- Securing a **long-term agreement** with out-of-area composting facility.
- Modifying **franchise and collection agreements** to expand organics collection.

In the **longer term**, the Tri-County area could build a **comprehensive organics management system**:

- Developing infrastructure to **collect and process all types of residential and commercial organics**, including yard trimmings, scrap wood, food scraps of all types, and soiled paper.
- Potentially expanding the system to address organics outside the municipal solid waste stream, such as **forestry slash and agricultural residues**.

As a follow-up the January 2010 stakeholders' meeting, **creating a local working group of stakeholders** will help the region identify and advance local solutions that begin to capture the opportunities associated with improved management of organics. The group should clarify shared goals, identify challenges and solutions, and recommend strategies to the Tri-County program's Steering Committee.

In January 2010, the Tri-County program issued a ***Request for Expression of Interest*** regarding organics management activities in the region, including current or potential producers, processors, haulers, product sellers, and product users. The Program will evaluate those responses and may follow up with stakeholders as part of the decision-making process on moving forward with a selected strategy. A stepwise approach will enable the region to begin with lower-cost, low-risk, smaller-scale solutions first and expand the materials and quantities handled over time, building on the initial successes.

1. Organic Materials Inventory

Organic materials are compostable and grindable carbon-containing materials such as green and woody yard trimmings, food scraps, food processing and fruit packing byproducts, compostable but non-recyclable paper ("soiled paper"), forest biomass, clean scrap wood, manure, and orchard and agricultural residues. These materials represent a significant portion of disposed waste. Biosolids, or sewage sludge, were not included in this study.

When organic materials enter the disposed municipal solid waste (MSW) stream, they are costly to collect and haul, and they produce greenhouse gases that are released to the atmosphere as they decompose in landfills. The open burning of yard debris, orchard trimmings, and other organics adds to haze in the Columbia Gorge and may contribute to respiratory ailments in nearby populations. Organics are valuable, nutrient-rich materials that can be used to amend soil or generate energy. Currently, Oregon's Tri-County area—consisting of Hood River, Sherman, and Wasco counties—has few options available for diverting these materials.

These three counties, along with six area cities, formed the Tri-County Hazardous Waste and Recycling Program (TCHWRP) to address solid waste, hazardous waste, and recycling issues in partnership. The Tri-County program hired Cascadia Consulting Group to help identify the best solutions for managing organic materials in the region. This chapter summarizes an inventory of organic materials in the Tri-County area as well as the neighboring counties of Klickitat and Skamania, across the Columbia River in Washington State. The purpose of this chapter is to describe the types and amounts of organic materials generated in and near the Oregon Tri-County area as a first step in the process to determine the best solutions for managing these materials.

The information in this chapter was collected from waste composition studies conducted in Oregon and Washington, interviews with local businesses, online research, and other publications. The chapter is organized as follows. First, the *Organics in the Disposed Waste Stream* section presents estimates of compostable material in the disposed waste stream. Data are shown for the overall Tri-County area; within each of the three counties (Hood River, Sherman, and Wasco); and for the two neighboring counties, Skamania and Klickitat counties in Washington State. The *Diverted Organic Materials* section describes organic material that is currently diverted from the waste stream from key industry groups, including orchards, food processors, and fruit packers. At the end of this document, *Appendix A* contains definitions of materials in the disposed waste stream, and *Appendix B* provides detailed waste composition data for Hood River, Wasco, and Sherman counties.

Key Findings

This inventory of compostable organic materials in the Tri-County area's disposed and diverted waste streams identified the following key findings.

- The total compostable portion of the **disposed** waste stream for the Tri-County area is estimated to be about 20,000 tons, or about 38% of total disposed MSW. An additional 8,000 tons of compostable materials are disposed annually in the two Washington counties.

- The most prevalent compostable materials in the disposed waste stream in the Tri-County area include food, leaves and grass, compostable paper, and clean wood.
- In terms of tons of compostable material, commercial disposed waste in Hood River and Wasco counties holds the greatest diversion potential.
- **Diverted** compostable materials in the five counties include the following:
    - About 21,000 tons of orchard biomass.
    - Approximately 6,500 tons of spent grains and 260,000 gallons of spent yeast and wastewater solids from food processing waste.
    - Between 1,400 and 1,700 tons of decayed fruit, leaves, stems, pits, and branches from fruit packing houses.
- The **total** (diverted and disposed) estimate of compostable organic material identified in the five-county area sums to about 57,000 tons of compostable materials from a mix of disposed MSW, orchards, and food processors. This figure excludes biosolids and non-orchard agricultural residues. In addition, the area generates an estimated 150,000 tons of forest biomass.

Table 1. Total Estimated Organic Materials Identified in the Five-county Area (tons)

Material Source	Tons	Counties
Disposed municipal solid waste	20,000	Hood River, Wasco, and Sherman
Disposed municipal solid waste	8,000	Klickitat and Skamania
Orchards	21,000	Hood River, Wasco, Sherman, Klickitat, and Skamania
Food processors and fruit packers	8,000	Hood River, Wasco, Sherman, Klickitat, and Skamania
*Sub-total**	*57,000*	
Forest biomass	150,000	Hood River, Wasco, Klickitat, and Skamania; no notable forest biomass exists in Sherman County
Total*	**207,000**	

** Subtotal and total exclude biosolids, agricultural residues, and other materials not specifically identified.*

Tri-County Population

The table below presents the population of the three counties and of their larger cities. As shown, most residents of the three counties live in Hood River and Wasco counties. The cities of Hood River, Cascade Locks, and The Dalles are the largest population centers.

Table 2. Population of Hood River, Sherman, and Wasco Counties and Selected Cities[1]

County	City	2008 Population	% of Tri-County Area Population
Hood River		**21,536**	**46%**
	Hood River	6,877	15%
	Cascade Locks	1,087	2%
Wasco		**23,775**	**51%**
	The Dalles	11,897	25%
	Dufur	581	1%
	Maupin	406	1%
	Mosier	479	1%
Sherman		**1,638**	**3%**
Incorporated Areas		22,380	**48%**
Unincorporated Areas		24,569	**52%**
TOTAL		**46,949**	**100%**

Organics in the Disposed Waste Stream

This section presents waste composition profiles for the commercial, residential, and self-haul waste sectors for Hood River, Wasco, and Sherman counties. The compostable fractions of the disposed waste stream for Klickitat and Skamania counties in Washington are also discussed.

Methods for Developing Waste Composition Estimates

Waste composition estimates in this memo were calculated using the following sources.

- Commercial waste composition data profiles for Oregon counties were modeled on data reflecting numbers of employees by industry group for 2009 as obtained from a business list service, as well as on composition data from over 900 samples of disposed waste from specific types of businesses previously conducted by Cascadia Consulting Group.
- Oregon self-haul and residential sector composition data were based on the "Rest of Oregon" profile in Oregon's 2002 *Statewide Waste Composition Study*.[2]

[1] U.S. Census Bureau, 2000 Census, adjusted for population growth (2008).

- Klickitat County waste profiles were based on samples from Yakima County for Washington's statewide waste characterization study that is currently being conducted by Cascadia Consulting Group for the Washington State Department of Ecology. Skamania County waste profiles were based on samples from Clark County, Washington, from the same study.

- Quantities for Oregon waste sectors were based on the sector ratios from Oregon's 2002 *Statewide Waste Composition Study* and on individual county tonnages for 2007.[3]

- Quantities for Washington county waste sectors were based on facility surveys conducted for the current Washington statewide waste characterization study as well as Washington landfill tonnage reports for 2007.[4]

Overview of Disposed Waste in the Tri-County Area

Table 3 presents an overview of the portions of disposed municipal solid waste (MSW) that are compostable. Quantities are shown for the residential, commercial, and self-haul sectors for each of the three counties in the Tri-County area. Hood River and Wasco counties have similar quantities of compostable materials, roughly 10,000 tons each. Compostable materials include food, leaves and grass, prunings and trimmings, agricultural crop residues, compostable paper, and clean wood. With the compostable material portion from Sherman County, the total compostable portion of the disposed waste stream for this area is estimated to be about 20,000 tons, or about 38% of the total disposed waste. Further detail on each county's waste is provided in the following sections.

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[2] *2002 Oregon Solid Waste Characterization and Composition*. State of Oregon Department of Environmental Quality, Land Quality Division. April 20, 2004.
http://www.deq.state.or.us/lq/sw/disposal/wastecompositionstudy.htm

[3] Oregon landfill tonnages are available in the following report:
http://www.deq.state.or.us/lq/pubs/docs/sw/2007MRWGRatesReport.pdf

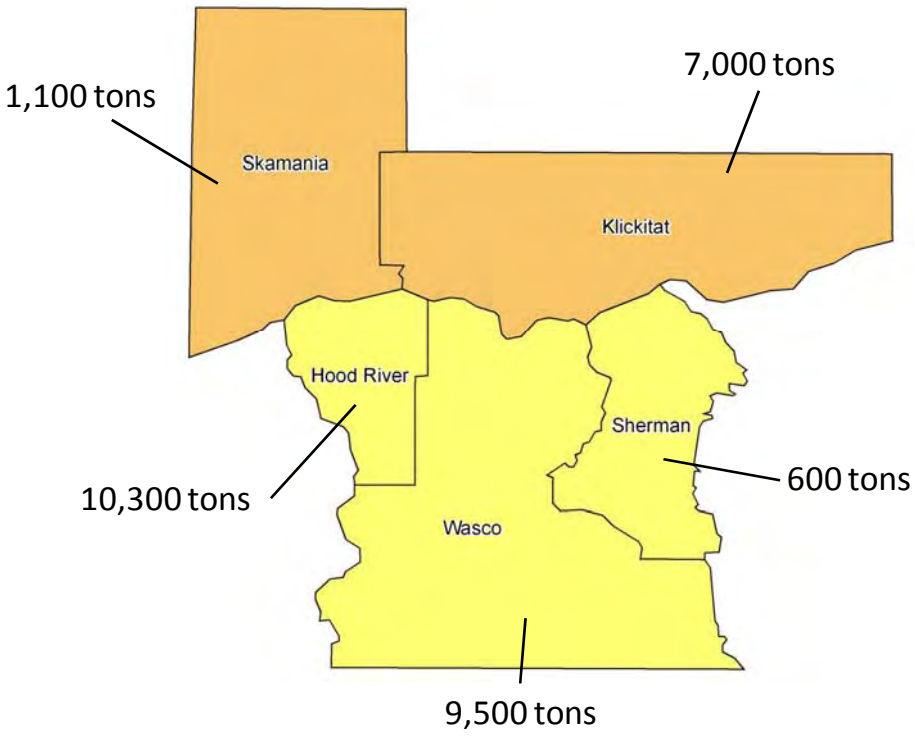
[4] Washington landfill tonnage report is available online at:
http://www.ecy.wa.gov/programs/swfa/solidwastedata/disposal/LandfillReports2007.pdf

Table 3. Overview of Compostable Portion of Disposed Municipal Solid Waste (MSW) in Hood River, Wasco, and Sherman Counties (tons)

		Compostable Material	Total Disposal	% of Disposal
Hood River County				
	Residential	2,300	5,700	40%
	Commercial	6,500	14,600	45%
	Self-haul	1,500	6,500	23%
	Subtotal	*10,300*	*26,800*	*38%*
Wasco County				
	Residential	2,600	6,400	40%
	Commercial	5,300	11,800	45%
	Self-haul	1,600	7,200	23%
	Subtotal	*9,500*	*25,400*	*38%*
Sherman County				
	Residential	100	300	40%
	Commercial	400	800	49%
	Self-haul	100	400	23%
	Subtotal	*600*	*1,600*	*40%*
Total		**20,500**	**53,700**	**38%**

Note: Figures may not sum to exact totals due to rounding.

Figure 1. Compostable Portion of Disposed MSW, by County (tons)



Hood River County

Agriculture—specifically pear, apple, cherry, and peach orchards—recreation, and lumber are the largest industries in Hood River County. Agricultural businesses generate large quantities of compostable waste and could be significant buyers of organic products, such as compost. Hood River's tourist industry also supports a number of local food service establishments, another source of rich, organic waste.

As shown in Figure 3, Figure 2, and Figure 4, food waste composes nearly one-quarter of disposed municipal solid waste (MSW) from Hood River County's residential and commercial sectors, by weight. The total estimated compostable portion of the residential and commercial waste sectors' disposed MSW is approximately 40% and 45%, respectively. Next to food waste, green yard waste (10%) in residential waste and compostable paper (13%) in commercial waste make up sizeable portions of the compostable material.

Self-haul waste, by contrast, was estimated to include about 23% compostable material, the largest portions of which were green yard waste (8%) and clean wood (7%).

Figure 2. Hood River County, Overview of Residential Waste

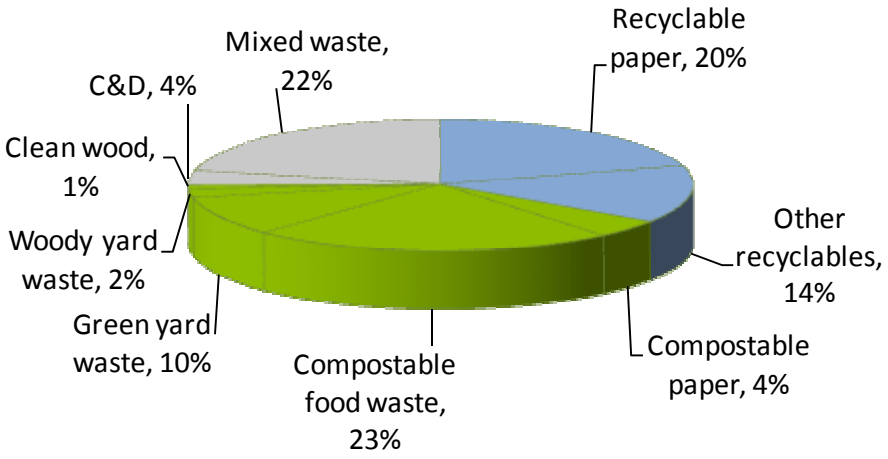


Figure 3. Hood River County, Overview of Commercial Waste

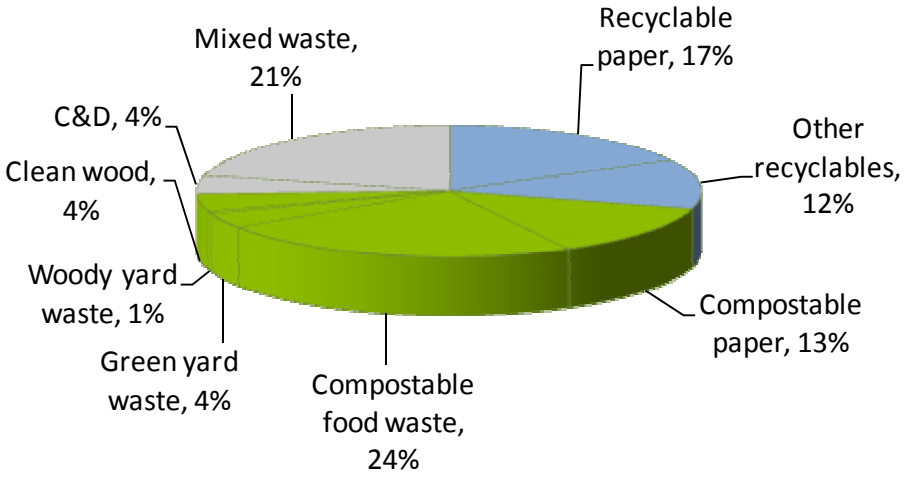


Figure 4. Hood River County, Overview of Self-haul Waste

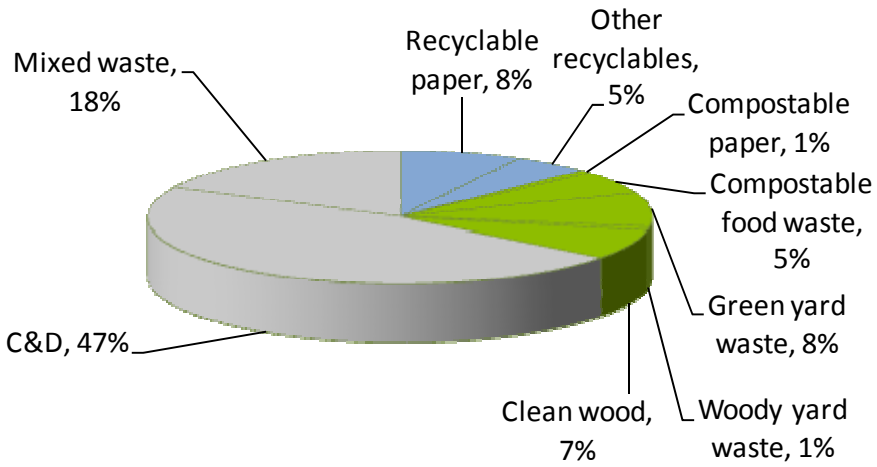


Table 4 presents the three most prevalent compostable materials in each waste sector. Collecting food waste from the residential and commercial waste sectors has the potential to divert up to approximately 4,700 tons of material.[5]

Table 4. Hood River County, Top 3 Compostable Materials from MSW by Waste Sector (tons)

Waste Sector	Food	Leaves and Grass	Compostable Paper	Clean Wood	Total
Residential	1,300	500	300		2,100
Commercial	3,400		1,900	600	5,900
Self-haul		500	400	500	1,400
Total	4,700	1,100	2,500	1,100	

Detailed waste composition results for Hood River County can be found in *Appendix B*, Tables 11 through 13.

Wasco County

Wasco County has a larger population but is more densely populated than Hood River County. Agriculture, in the form of cherry orchards, wheat farms, and cattle farms, is one of the key industries in Wasco County. As in Hood River County, these farms are both a source of organic materials as well as a potential market for value-added materials made from organics, such as soil amendments.

As with Hood River County, compostable materials compose approximately 40% of Wasco County's residential sector waste (see Figure 5, Figure 6, and Figure 7). Commercial sector waste contained the highest percentage of compostable material, an estimated 45%. The largest portions of the compostable material fractions for both residential and commercial waste were food waste at 23% and 24%, respectively. Green yard waste made up a significant portion of the residential compostable fraction (10%), while compostable paper accounted for about 13% of the commercial waste sector.

Almost one-half of waste from Wasco's self-haul sector was composed of C&D waste, while the compostable materials fraction made up about 23%. Green yard waste and clean wood accounted for approximately 8% and 7%, respectively, of the self-haul waste sector.

[5] Data regarding the ratio of total food waste that is pre-consumer and that is post-consumer were not available.

Figure 5. Wasco County, Overview of Residential Waste

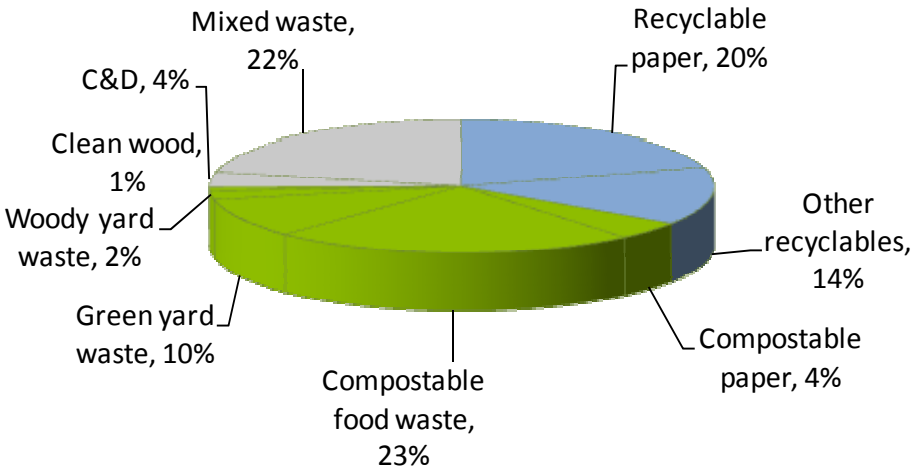


Figure 6. Wasco County, Overview of Commercial Waste

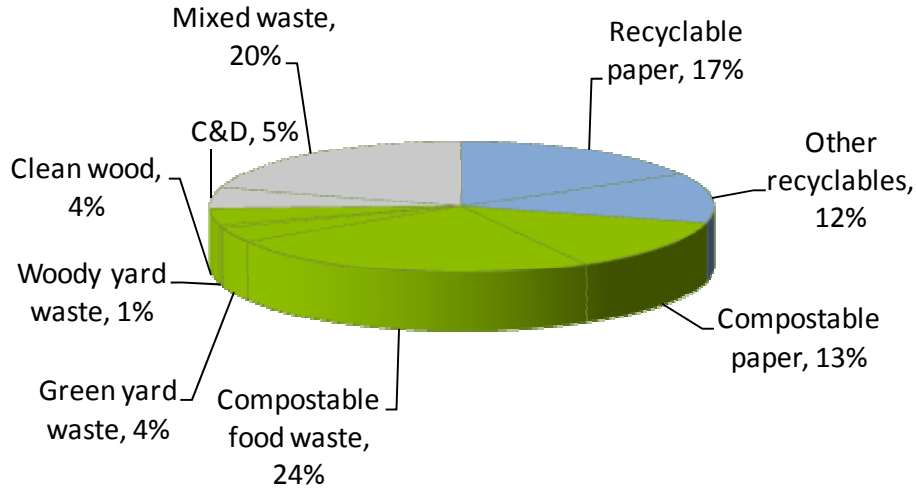


Figure 7. Wasco County, Overview of Self-haul Waste

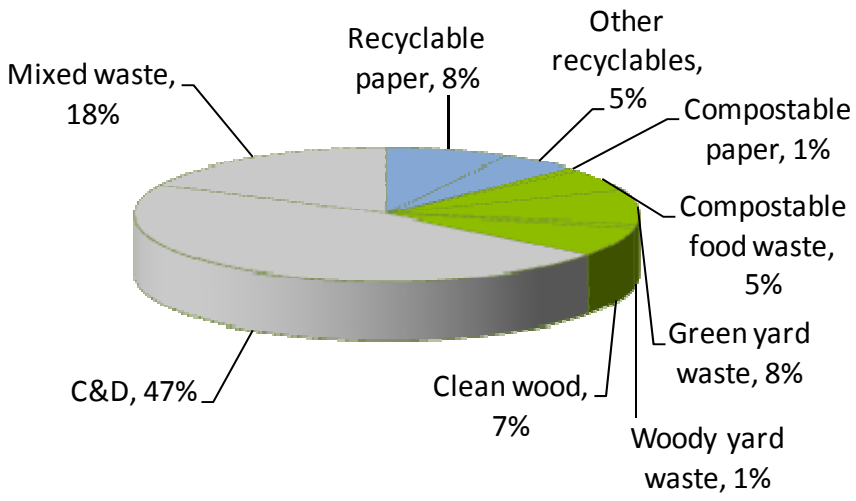


Table 5 presents quantities of the three most prevalent compostable materials for each of Wasco County's waste sectors. Food waste was one of the most prevalent materials for all three waste sectors, accounting for between about 400 tons for self-haul and approximately 2,800 tons for commercial waste.

Table 5. Wasco County, Top 3 Compostable Materials from MSW by Waste Sector (tons)

Waste Sector	Food	Leaves and Grass	Compostable Paper	Clean Wood	Total
Residential	1,500	600	300		**2,400**
Commercial	2,800		1,500	500	**4,800**
Self-haul	400	600		500	**1,500**
Total	**4,700**	**1,200**	**1,800**	**1,000**	

Detailed waste composition results for Wasco County can be found in *Appendix B*, in Table 24 through Table 26.

Sherman County

Sherman County is the smallest of the three counties in terms of both land area and population. The main industry in Sherman County is also agriculture. The county has the highest percentage of tilled farmland of any county in Oregon, and its most common crop is winter wheat.[6]

Compostable materials compose nearly one-half (49%) of waste from Sherman County's commercial sector (see Figure 8, Figure 9, and Figure 10). Waste from the residential sector contains a slightly smaller percentage of compostable materials (about 40%). Food waste made up about 23% of residential waste and 27% of commercial waste. Compostable paper made up a much larger percentage of commercial waste (15%) compared to residential waste (4%). In contrast, woody and green yard waste, combined, accounted for about 13% of residential waste, compared to about 7% of commercial waste.

Less than one-quarter of Sherman County's self-haul waste was estimated to be compostable. The largest portions of the compostable materials were green yard waste and clean wood, which made up about 15% of the total, when combined, followed by food waste (5%).

[6] Mid-Columbia Economic Development District, *2009-10 Comprehensive Economic Development Strategy (CEDS) for Counties Klickitat and Skamania, Washington; Hood River, Wasco, and Sherman*. June 2009, p. 42. http://www.mcedd.org/documents/CEDS2009.pdf

Figure 8. Sherman County, Overview of Residential Waste

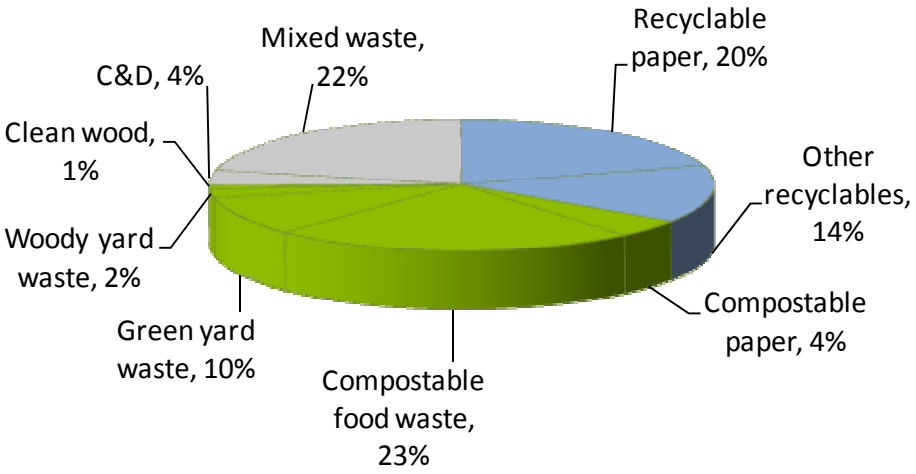


Figure 9. Sherman County, Overview of Commercial Waste

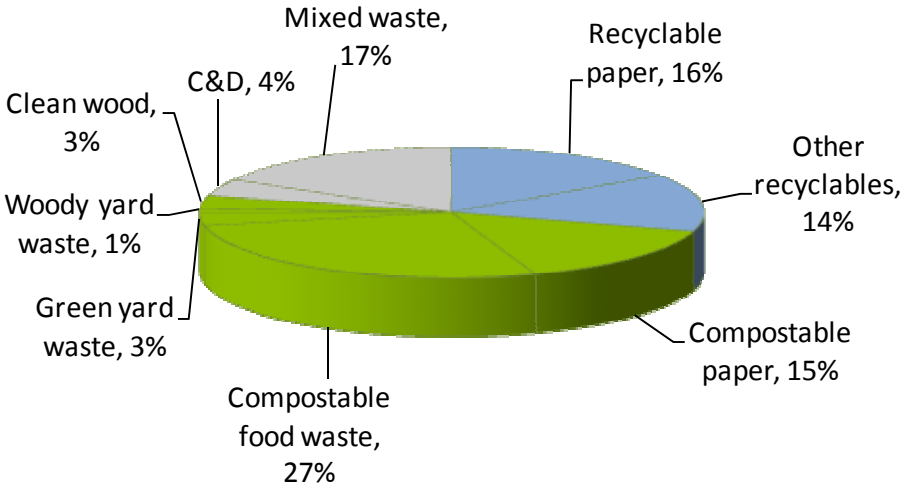
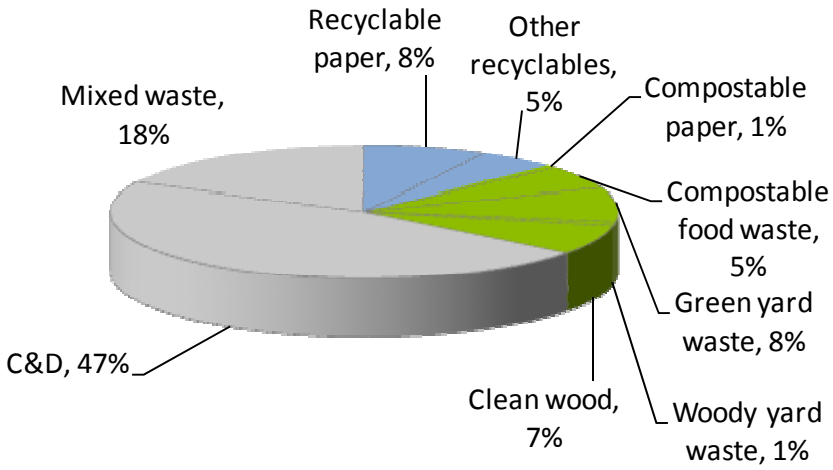


Figure 10. Sherman County, Overview of Self-haul Waste



With less than 10% of the population of either Hood River or Wasco counties, Sherman County generates much less waste. As shown in Table 6, diverting food waste from all three waste sectors for Sherman County could amount to about 300 tons of material. Leaves and grass accounted for approximately 30 tons in each of the residential and self-haul waste sectors. Clean wood was also estimated to be about 30 tons for waste from each of the commercial and self-haul sectors.

Table 6. Sherman County, Top 3 Compostable Materials from MSW by Waste Sector (tons)

Waste Sector	Food	Leaves and Grass	Compostable Paper	Clean Wood	Total
Residential	80	30	20		130
Commercial	220		120	30	370
Self-haul	20	30		30	80
Total	320	70	140	60	

Detailed waste composition results for Sherman County can be found in *Appendix B*, in Table 27 through Table 29.

Skamania and Klickitat Counties, Washington State

Similar to the Oregon counties, Skamania and Klickitat counties' residential and commercial waste were estimated to be composed of approximately 40% compostable material (Table 7 and Table 8). Self-haul waste in Skamania had a similar percentage of compostable material (26%) as the three Oregon counties. Compostable materials in waste from Klickitat County's self-haul sector, however, were estimated to account for only 9% of the total self-haul waste, by weight. The compostable fractions of waste in Klickitat and Skamania counties were estimated to amount to about 7,000 tons and approximately 1,000 tons, respectively.

Table 7. Klickitat County, Compostable Portion of Waste Sector

	Tons	% of Total
Residential	3,300	38%
Commercial	3,300	41%
Self-haul	400	9%
Total	**7,000**	**33%**

Table 8. Skamania County, Compostable Portion of Waste Sector

	Tons	% of Total
Residential	400	42%
Commercial	500	40%
Self-haul	200	26%
Total	**1,100**	**38%**

Food Waste in Klickitat and Skamania Counties

Data from the current Washington statewide waste characterization study was used to estimate the ratios of vegetative and non-vegetative food waste for Klickitat and Skamania counties. Table 9 below presents ratios of vegetative and non-vegetative food waste, by substream and county. In Klickitat County, at least 70% of food waste in all three substreams was estimated to be vegetative. In Skamania County, at least 70% of residential and commercial food waste was estimated to be vegetative, while only about 43% of self-haul food waste was vegetative.

Although comparable data were not available for the Oregon counties, an assumption could be made that the ratio in the Tri-County area is similar, and approximately three-quarters of the disposed waste is likely vegetative food waste.

Table 9. Ratios of Vegetative and Non-vegetative Food Waste in Klickitat and Skamania Counties

	Klickitat		Skamania	
	Vegetative	*Non-vegetative*	*Vegetative*	*Non-vegetative*
Residential	75%	25%	72%	28%
Commercial	72%	28%	83%	17%
Self-haul	76%	24%	43%	57%
Overall	**74%**	**26%**	**79%**	**21%**

Diverted Organic Materials

In addition to recovering compostable material that is currently disposed, the Tri-County area has a number of other potential sources of compostable waste material.

Orchard Biomass

Hood River and Wasco counties combined have about 26,000 acres of orchards, and Klickitat and Skamania counties have an additional 3,000 acres of orchards in Washington State.[7] According to a 2007 study, approximately 21,000 tons of orchard waste could be collected annually from the Tri-County and surrounding areas.[8] This material, reportedly, would likely be available in winter and spring seasons.

Table 10. Estimated Orchard Biomass Available for Collecting and Processing (tons/year)[9]

County	Total
Hood River County	14,800
Wasco County	2,300
Klickitat County (WA)	3,800
Skamania County (WA)	300
Total	**21,200**

Forest Biomass

Timberland covers a large portion of Hood River, Wasco, Skamania, and Klickitat counties: roughly 2 million acres total, or about 50% of the total land area in those four counties. An estimated 70% of the forest biomass is considered merchantable and the remainder is non-merchantable.[10] "Non-merchantable" biomass consists of living trees that are between one inch and five inches in diameter as well as the tops and limbs of larger trees. The non-merchantable portion is estimated at 7 million tons total in Hood River County; 8 million tons each in Wasco and Klickitat counties; and 32 million tons in Skamania County.[11] The majority of this material remains on the land, though some quantities are generated with timber harvests each year.

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[7] Data from the 2007 Census of Agriculture: http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/County_Profiles/index.asp.

[8] *Biomass Energy Study Initial Feasibility Assessment, Final Report*. Prepared by Pacific Energy Systems, Inc. and Mason, Bruce & Girard, Inc. (MB&G). November 27, 2007, Table 3-12, p. 3-33.

[9] *Biomass Energy Study Initial Feasibility Assessment, Final Report*. Prepared by Pacific Energy Systems, Inc. and Mason, Bruce & Girard, Inc. (MB&G). November 27, 2007, Table 3-12, p. 3-33.

[10] *Biomass Energy Study Initial Feasibility Assessment, Final Report*. Prepared by Pacific Energy Systems, Inc. and Mason, Bruce & Girard, Inc. (MB&G). November 27, 2007, Table 3-12, p. 3-19.

[11] *Biomass Energy Study Initial Feasibility Assessment, Final Report*. Prepared by Pacific Energy Systems, Inc. and Mason, Bruce & Girard, Inc. (MB&G). November 27, 2007, Table 3-12, p. 3-9.

Logging residues from commercial timber harvest, which are typically piled and burned on-site, as well as material removed for forest thinning to reduce fire risk are two likely sources of available forestry biomass. The combination of these two sources amounts to a total annual supply of approximately 150,000 bone dry tons (BDT) from the four-county area, as shown in Table 11 below.[12]

Table 11. Annual Logging Residues from Commercial Timber Harvest (bone dry tons)[13]

County	Total
Hood River County	30,000
Wasco County	25,000
Klickitat County (WA)	80,000
Skamania County (WA)	15,000
Total	**150,000**

Food Processing Waste

A brief survey of top employers in the food processing industry revealed that most are currently disposing of all their organic waste. One exception, Safeway of Hood River, reported that the store backhauls compostable material from the Hood River store to Portland for composting.

Full Sail Brewery, located in Hood River, generates about 125 tons per week of spent grains, 80% of which is solids. The brewery sends this material to farms in Tillamook for use as animal feed. The facility also produces about 15,000 gallons of spent yeast and water each week. The Oregon Department of Environmental Quality recently certified this material as a soil amendment when it is mixed with solids from Full Sail's on-site wastewater treatment process. When the brewery finds a land application for this material, about 5,000 gallons per week, or about 1,000 tons per year, will be used this way.

Another business, Mt. Hood Meadows Ski Resort & Sunnyvale Inn, currently disposes of all of its waste but expressed interest in composting its organic materials.

Fruit Packing Waste

All of the largest packing houses in the Tri-County area and one combined orchard and packing house were interviewed for this report. While one of the packing houses stated that it only packs fresh fruit and does not have any organic waste, the other packing houses reported generating waste in the form of decayed fruit; stems, leaves, and branches; cherry pits; and residue from making juice. From these five companies, between roughly 1,460 and 1,710 tons of waste are estimated to be used annually as animal feed or as compost or roadbed on nearby farms. This waste is typically generated in the early part of the year for pears. For cherries, leaves are generated from mid-June to the end of July, while

[12] *Biomass Energy Study Initial Feasibility Assessment, Final Report*. Pacific Energy Systems, Inc. and Mason, Bruce & Girard, Inc. (MB&G). November 27, 2007, Table 3-12, p. 3-22. These estimates include ±20% uncertainty.

[13] *Biomass Energy Study Initial Feasibility Assessment, Final Report*. Pacific Energy Systems, Inc. and Mason, Bruce & Girard, Inc. (MB&G). November 27, 2007, Table 3-12, p. 3-22. These estimates include ±20% uncertainty.

cherry pits and stems are generated in September through late November and from January through mid-May.

Table 12. Estimate of Non-disposed Organic Waste from Fruit Packing Houses (tons/year)

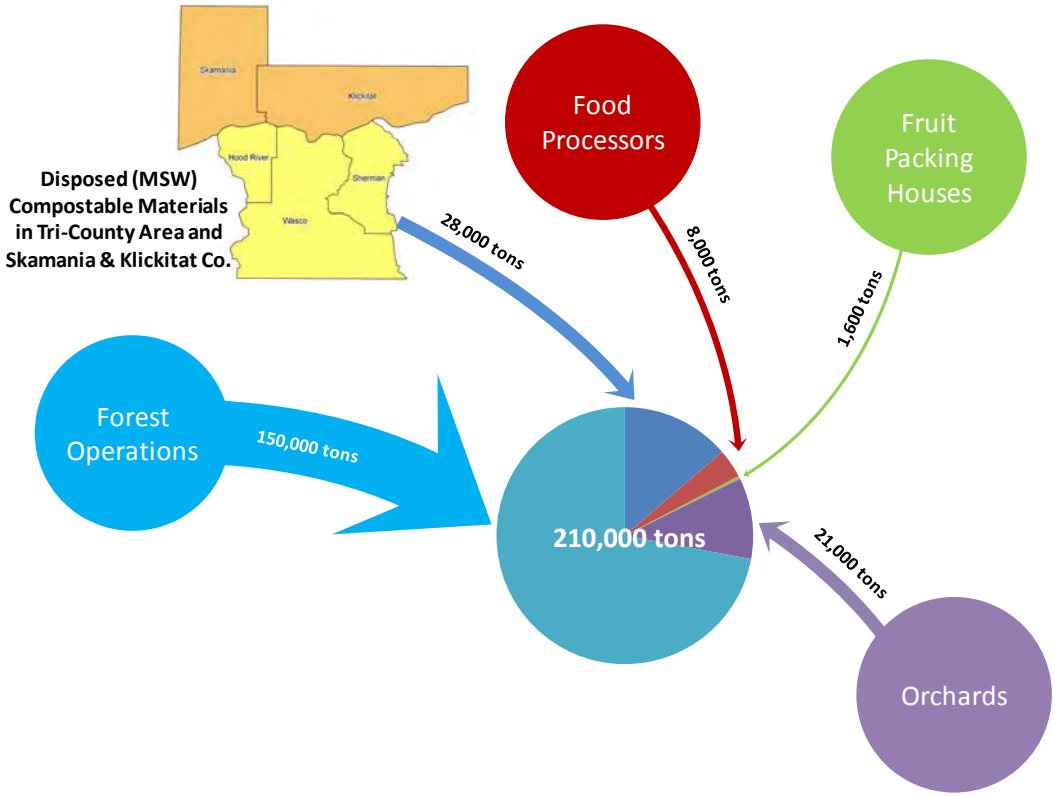
Company	County	Organic Waste	Notes
Stadleman Fruit Company	Hood River	0	
Duckwall Pooley	Hood River	300	Also disposes approximately 400-500 lbs/week of organic waste from wastewater filters.
Diamond Fruit	Hood River	250-500	Estimate may include other organic residue.
Oregon Cherry Growers	Wasco	750	Provides 750 tons of crushed pits to orchardists for roadbed. Also disposes approximately 150 tons of brined stems and 5 tons of leaves in a landfill.
Underwood Fruit	Klickitat (WA)	90	
Wells Packing House	Hood River	70	Orchard and packing house; also includes leaves and stems.
Total non-disposed waste		**1,460-1,710**	

Summary

Figure 11 below summarizes the organic material quantities found in the disposed waste stream in the five counties and diverted from orchards, forestry, food processing, and fruit packing. Annually, approximately 20,000 tons of the disposed MSW from the Tri-County area, plus 8,000 tons from Klickitat and Skamania counties, are estimated to be compostable, for a total of 28,000 tons. Forest operations generate an estimate 150,000 tons, while orchards add 21, 000 tons and food processors produce 8,000 tons. Quantities from fruit packing houses appear quite small in comparison.

Commercial sector disposed waste from the two largest counties, Hood River and Wasco, appears to have the highest diversion potential for compostable materials. Although it would not be possible to divert all of this material from the waste stream, programs and policies could be developed to capture the majority of this material. In addition to organic material that is currently thrown away, over 200,000 tons of compostable material that is currently used for other purposes would potentially be available for new organics management strategies.

Figure 11. Summary of Organic Material Generation in Columbia Gorge Region



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2. Existing and Potential Organics Management Infrastructure

Organic materials—primarily landscape trimmings and food scraps—represent significant portions of disposed solid waste in the Tri-County area. When these materials enter the disposed municipal solid waste (MSW) stream, they are costly to collect and haul, and they produce greenhouse gases that are released into the atmosphere as they decompose in landfills. The open burning of these materials pollutes the air and can cause respiratory ailments in nearby populations. When diverted from disposal or open burning, organics are valuable nutrient-rich materials that can be used to amend soil or generate energy.

Currently, Oregon's Tri-County area—consisting of Hood River, Sherman, and Wasco counties—has few options available for recycling these organic materials. Wasco County's previous *Wasteshed Recovery Plan Update 2007-2009* identified several barriers to increased recovery of yard trimmings in the region, included in *Appendix E*.

This chapter identifies existing regional capacity to handle organic material from the Tri-County area. The analysis of existing infrastructure describes collection and transfer infrastructure while focusing on current and potential organics processors in the Tri-County area and broader region.

Key Findings

- The existing infrastructure for processing organic materials in the Columbia Gorge is limited or already at capacity.
- Excess capacity at organics composting facilities is available primarily along the Interstate-5 corridor, about 90 to 240 miles from The Dalles, or 65 to 220 miles from Hood River. Portland is seeking to begin residential food scraps collection, and several facilities have requested permission to process this material, which could fill much of the current excess capacity.
- Compost Oregon (near Salem) could accept significant quantities of organic materials for about $30 per ton, plus an estimated transport cost ranging from $30 to $60 per ton. The facility accepts yard trimmings and crop residues and has applied for permission to accept food scraps.
- Silver Springs Organics (near Tenino, Washington, about 100 miles north of Portland) could accept significant quantities of organic materials for approximately $30 to $50 per ton, plus an estimated transport cost of $35 to $70 per ton. The facility currently accepts yard trimmings, crop residues, and vegetative and non-vegetative food scraps.
- The current commercial hauler-operated collection system in the Tri-County area handles only yard trimmings. Both The Dalles Disposal and Hood River Garbage Service offer drop-off locations, but only The Dalles Disposal offers collection for residential yard trimmings.
- Trucking along the major highways appears to be the most appropriate transport method. Trucking costs approximately $0.20 to $0.40 per ton per mile, resulting in a cost of $20 to $40 to transport each ton about 100 miles to the Portland area.

Methods

The information in this chapter was collected from interviews with organics generators; haulers; processors; local government officials; regulators; and other interested stakeholders, as well as through online research and other publications. Cascadia obtained lists of permitted composting facilities from the Oregon Department of Environmental Quality (DEQ) and the Washington State Department of Ecology (Ecology). Cascadia divided the states into geographic regions based on travel distance from the Tri-County area, accounting for major transportation corridors. The table below shows the counties included in each region.

Table 13. Relevant Oregon and Washington Counties, by Geographic Region

Region	Oregon Counties	Washington Counties
Tri-County Area and Columbia Gorge	Hood River, Sherman, and Wasco (Tri-County area)	Skamania and Klickitat
Near Eastern	Jefferson, Deschutes, Gilliam, Morrow, and Umatilla	Yakima and Benton
Metro and Near Western	Clackamas, Multnomah, Washington, and Marion	Clark and Cowlitz
Distant	All other counties	All other counties

Cascadia contacted all permitted composting facilities in the Tri-County area and Columbia Gorge regions. Cascadia also contacted facilities in the Near Eastern region that seemed likely to be able to accept significant additional quantities of organic materials based on their type of permit in Oregon and their name.[14] Some facilities with names that indicated an association with agriculture (e.g., "Farms") were excluded on the assumption that they were less likely to accept significant quantities of off-site materials. To identify facilities in the Metro region, the Near Western region, and more distant counties, Cascadia contacted staff members and obtained recommendations from the DEQ, Metro, and the cities of Portland and Vancouver. Cascadia also contacted, based on recommendations and information from other interviewees, companies and individuals planning to build composting facilities.

This chapter describes existing infrastructure for collection, transfer, and processing of organic materials generated in the Tri-County region.

[14] Composting facilities in Oregon obtain permits based on their size and types of materials accepted. Cascadia made it a priority to contact facilities with "full" or "general" composting permits rather than "registration" permits.

Organics Collection and Drop-off

Currently, some organic materials in the Tri-County region are collected for composting from residential, commercial, and agricultural generators. Franchised waste haulers, other private haulers, and the generators themselves handle these materials. Table 14 presents an overview of the existing collection system and services. The Dalles Disposal offers curbside collection of yard trimmings for residential customers, for $5 to $8 per month.

Yard trimmings drop-off is available for $6 to $10 per cubic yard at the transfer stations of Hood River and The Dalles. These transfer stations are operated by the franchised haulers for the two cities (Hood River Garbage Service and The Dalles Disposal Service, respectively). Hood River Transfer Station also offers free yard debris drop-off on Wednesdays for residential customers. The other franchised hauler, Mel's Sanitary Service, does not offer yard trimmings collection or drop-off sites.

Agricultural and fruit processing generators generally either transport material themselves or may hire private carriers.

Table 14. Organic Materials Collection Options in the Tri-County Area

Collector	Jurisdiction	Residential	Commercial	Notes
Hood River Garbage Service (Waste Connections)	Hood River County	**Drop-off only.** Yard trimmings drop-off is offered for free to residential customers on Wednesdays. On other days, residential customers can drop off yard trimmings for $10.25 per cubic yard.	**Drop-off only.** Yard trimmings drop-off is offered to non-residential customers for $10.25 per cubic yard.	Hood River Garbage Service hires D&Z Grinding to grind the material into mulch. Mulch is available for free if customers pick it up themselves or for a fee if the hauler delivers material in a drop box. The delivery fee is approximately $120 per drop box.
The Dalles Disposal Service (Waste Connections)	Wasco County and Sherman County	**Pick-up.** The Dalles Disposal offers residential weekly and biweekly yard trimmings collection for $5 to $8 per month. **Drop-off.** Yard trimmings drop-off is available for $18.09 for the first 3 cubic yards, plus $6.05 for each additional cubic yard.	**Drop-off only.** Yard trimmings drop-off is available for $18.09 for the first 3 cubic yards, plus $6.05 for each additional cubic yard.	Material is collected in a drop box or trailer that is hauled by a private carrier to a facility in Vancouver owned by Columbia Resource Company (Waste Connections).
Mel's Sanitary Service Inc	Southern Wasco County	**None.**	**None.**	Does not offer any organics collection service.
Gary Donovan (private collector)		**None.**	**Pick-up.** Contracts with fruit packing facilities and others.	Hauls cull fruit from the three major packing facilities for cattle feed. Hauls some organic materials (leaves, stems, paper, and fruit) to Portland area, where it is "cold-composted" for future use. Interested in lease property for local composting business.

Existing Franchise Agreements

The City of The Dalles, the City of Hood River, and Hood River County all grant franchise agreements (generally exclusive) to collect solid waste and recyclable materials within their jurisdictions. These franchise agreements have three basic categories of exceptions: residents and businesses hauling their own waste (self-haulers), non-profit organizations collecting recyclable materials for charitable fundraising, and businesses that haul waste or recyclable materials incidentally to their core business. Likewise, most local franchise agreements contain exceptions for collecting solid waste or recyclables that are not adequately collected by the exclusive franchisee.

The City of The Dalles grants franchise agreements for 10 years. Waste Connections has an exclusive franchise to collect solid waste in the city. The city's waste collection and disposal ordinance (92-1155) requires that self-haulers, non-profit organizations, and businesses hauling waste incidentally deliver waste or recyclable materials to The Dalles Transfer Station or the Wasco County Landfill. Self-haulers, however, may transport source-separated recyclable materials to any facility authorized to accept such materials. The city's ordinance does not specify where the disposal company, recycling licensees, or self-haul customers may or may not deliver compostable material for composting.

Hood River County, on June 30, 2009, renewed its 5-year exclusive franchise agreement for Waste Connections to collect and transfer solid waste and to collect recyclable materials. Of relevance to this study, the recent franchise revision specifies that the exclusive franchise does not prevent Hood River County from pursuing a program to collect, transport, and/or process biomass material for conversion to energy, mulch, compost, or other beneficial products. The county must first negotiate with the franchisee (Waste Connections) to implement the desired biomass program, but another entity (either the county or a third party) is allowed to provide biomass services if the franchisee is unable or unwilling to do so. Although the agreement specifies that the franchisee must transfer recyclable materials to a suitable facility for processing, it does not specify a particular facility. The franchisee must transport solid waste to the Wasco County Landfill or to the Finley Buttes Landfill for disposal.

The City of Hood River issues franchise agreements for 5-year periods with an automatic 5-year renewal. The city can terminate the agreement by providing notice to the franchisee at least 30 days before the automatic renewal date, after which the franchisee may continue its operations under the existing agreement for 4 years after receiving notice. Waste Connections signed a franchise agreement with the city on May 1, 2001. With the automatic renewal terms, the franchise automatically extends until at least 2011. In terms of disposal sites, the agreement requires Waste Connections to provide an authorized site for disposal or recycling, but it does not specify a particular site.

Transfer Infrastructure

Based on interviews with generators, processors, and transportation professionals, trucking appears to be the best option for scenarios that may involve hauling materials from the Tri-County region to major organics processors elsewhere. Cost estimates for long-haul trucking range from $0.20 to $0.40 per ton-mile, based on the cost and estimated quantities of yard trimmings that The Dalles Disposal currently transports to Vancouver via Braun Enterprises. Note that transportation costs vary significantly with fuel prices; estimates in this section were made in the summer of 2009. Table 15 presents the estimated per-ton costs to transport one ton of material for various distances to different facilities. Distances are calculated from The Dalles and the City of Hood River using Google Maps.

Table 15. Distances to Potential Composting Facilities and Estimated Costs

Approximate Distance and Cost (per ton) from Tri-County Region		Relevant Cities or Facilities
The Dalles	Hood River	
50 miles $10 to $20	**20 miles** $4 to $8	Carson, Washington (potential facility)
80 miles $15 to $30	**100 miles** $20 to $40	Boardman, Oregon (potential facility)
90 miles $20 to $40	**65 miles** $15 to $25	Vancouver, Washington (West Van Materials Recovery Center) Clackamas, Oregon (Clackamas Compost Products)
100 miles $20 to $40	**100 miles** $20 to $40	Madras, Oregon (potential facility)
150 miles $30 to $60	**120 miles** $25 to $50	Aumsville, Oregon (Recology's Compost Oregon) Monmouth, Oregon (Allied's Processing and Recovery Center)
150 miles $30 to $60	**175 miles** $35 to $70	Milton-Freewater, Oregon (Quality Compost)
180 miles $35 to $70	**160 miles** $30 to $65	Tenino, Washington (Silver Springs Organics)
240 miles $50 to $95	**220 miles** $45 to $90	Maple Valley, Washington (Cedar Grove)

Currently, The Dalles Disposal trucks yard trimmings to a Columbia Resource Company facility (a subsidiary of Waste Connections) in Vancouver, Washington. Braun Enterprises, which transports the material, estimates that hauling to Vancouver costs approximately $400 per 48-foot trailer. Each trailer holds between 11 and 21 tons of material, depending on moisture content and how efficiently the material has been loaded. This charge results in a cost of approximately $4.40 per mile; $19 to $36 per ton from the Tri-County area to Vancouver; and $0.20 to $0.40 per ton-mile.

Note, however, that transport costs may not scale precisely with distance because of the fixed costs of loading and unloading. Braun Enterprises estimates that the company spends approximately 2 hours

driving to Vancouver and 2.5 to 3 hours loading and unloading the trailer. The cost also includes an implicit rental cost for the trailer that The Dalles Disposal keeps on-site to contain the material.

Other contacts estimated the cost of trucking at:

- $3.50 to $4.00 per mile for a tractor-trailer (semi) truckload.
- $400 for a semi truckload of compost from Boardman, Oregon, to the Tri-County area, or approximately $5 per cubic yard.
- $1 per ton per mile, plus the cost of fuel, based on estimated costs to Waste Management of Spokane to truck organics to a composting facility in Royal City, Washington.

Barge and rail transport do not appear to be cost-effective options for transporting organics in these corridors. Both methods would require additional loading and unloading to transfer materials by truck from the generator to the barge or rail car and then again by truck to an organics processing facility. Cascadia did not identify an organics processing facility with direct barge or rail access. According to BNSF Railway, the closest publicly available rail facilities are in the Portland/Vancouver area and in Bend, Oregon. SDS Lumber Company operates a marine division that runs barges along the Columbia River. Gary Collins, the marine supervisor, stated that unloading material in Portland would pose difficulties and could be costly. Unloading containerized material tends to be more expensive than unloading loose material, but loose material required additional handling to load into truck for final transport to the composting facility. Collins suggested that truck transport is likely more feasible unless the Tri-County region is transporting a large volume of material—each barge can hold 2,500 tons. One stakeholder suggested transportation costs could be reduces if the trucks that haul waste from the Metro region to the landfill at Arlington are able to backhaul organic material from the Tri-County region to Metro-area composting facilities.

Processing Infrastructure

In examining processing options, Cascadia considered the following types of organics processors:

- **Grinding operations** grind woody debris into mulch and wood chips (which may be suitable for boiler fuel).
- **Composting facilities** typically process yard trimmings and sometimes food scraps and other organics into soil amendments.
- **Anaerobic digesters** decompose organics (typically sewage or animal manure; sometimes food scraps and other organics) while generating bio-energy.
- **Hog fuel boilers** can burn sawdust and wood chips.
- **Biogas facilities** capture methane from decomposition.

Most existing composting facilities contacted accept yard trimmings and crop residue; however, excess capacity is limited within the Tri-County area and its environs. No excess composting capacity was identified **within** the Tri-County area or broader Columbia Gorge area, although several operators have expressed interest in expanding or creating capacity.

Similarly, most facilities contacted in **eastern** Oregon and Washington would not be able to accept significant quantities of additional materials.

Excess capacity is mainly concentrated along the Interstate-5 corridor in **western** Oregon and Washington, at a distance of 90 to 240 miles from the Tri-County area. Based on estimated costs ranging from $0.20 to $0.40 per ton per mile to transport materials by long-haul trailer, sending material to these facilities would cost $20 to $50 per ton.

Figure 12 and Table 16 shows the existing or potential facilities identified in the study region that could process organic materials or currently handle other waste materials. More detailed maps for each subregion are included in the subsequent sections.

Figure 12. Existing or Potential Materials Processing Facilities Identified in Study Area

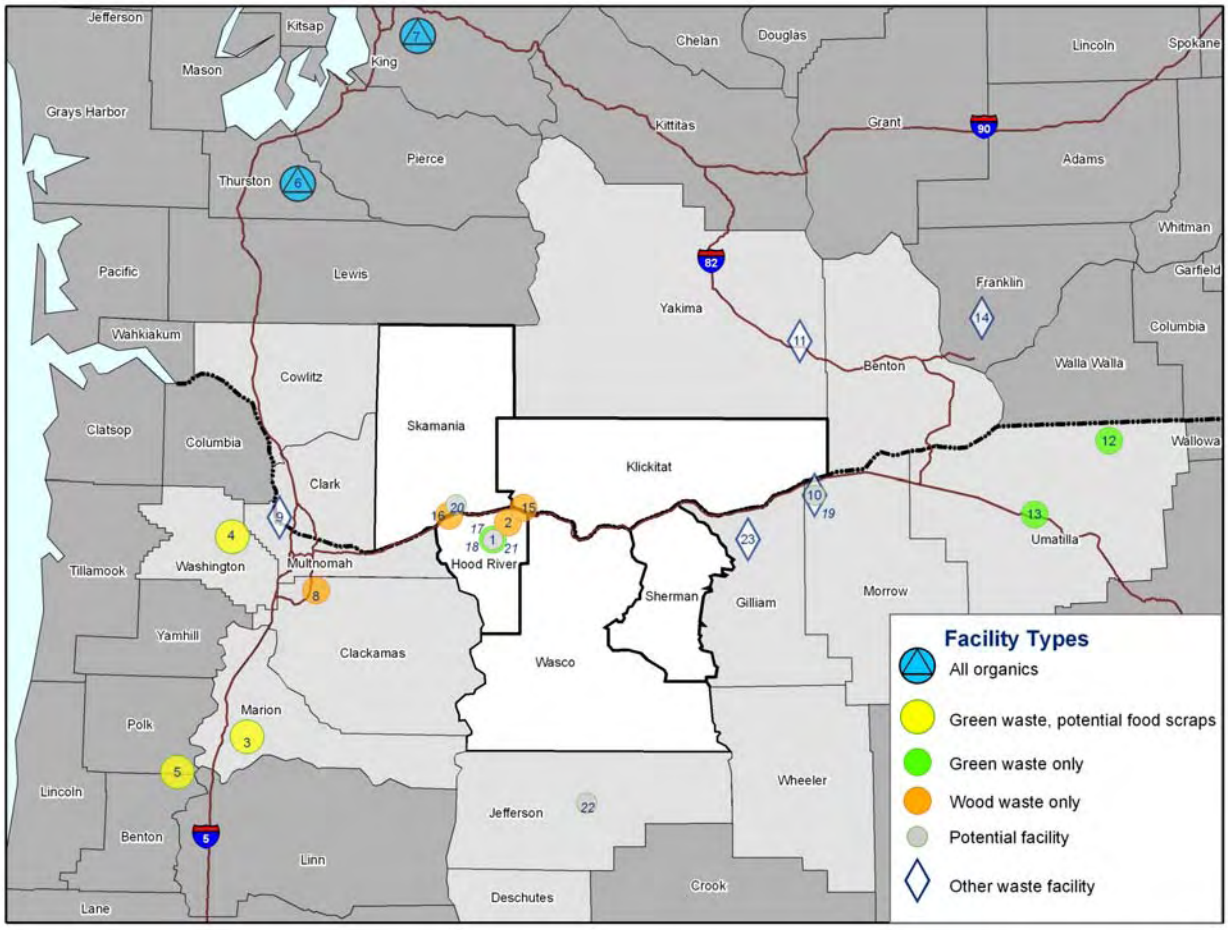


Table 16. Existing or Potential Materials Processing Facilities Identified in Study Area

#	Facility	Location	State
1	Columbia Gorge Organic Fruit Compost Facility	Hood River	OR
2	D&Z Grinding	Hood River	OR
3	Compost Oregon (Recology)	Aumsville	OR
4	Nature's Needs (Recology)	North Plains	OR
5	Processing and Recovery Center (Allied)	Monmouth	OR
6	Silver Springs Organics (Waste Connections)	Tenino	WA
7	Cedar Grove	Maple Valley	WA
8	Clackamas Compost Products	Clackamas	OR
9	West Van Materials Recovery Center (Waste Connections)	Vancouver	WA
10	Three Mile Canyon Farm	Boardman	OR
11	Skyridge Farms	Sunnyside	WA
12	Quality Compost	Milton-Freewater	OR
13	Pendleton Transfer Station Compost Facility	Pendleton	OR
14	Lamb-Weston Compost Facility	Franklin County	WA
15	Hog Fuel Boiler (SDS Lumber Company)	Bingen	WA
16	Bear Mountain Forest Products	Cascade Locks	OR
17	Potential Forestry Biomass	Hood River	OR
18	Potential Facility (Diamond Fruit Growers)	Hood River	OR
19	Potential Facility	Boardman or The Dalles	OR
20	Potential Facility	Carson	WA
21	Potential Facility	Hood River	OR
22	Potential Facility	Madras	OR
23	Columbia Ridge Landfill	Arlington	OR

The sections below provide an overview of facilities for processing organic materials by geographic region: the Tri-County area, the five-county Columbia Gorge region, eastern Oregon and Washington, and western Oregon and Washington. Following this summary, Table 17 provides more information on composting facilities in these areas.

Tri-County Area

The Tri-County area has one active and permitted composting facility, the Columbia Gorge Organic Fruit Compost Facility. (See map in Figure 13.) The facility is operated by a local organic farm to provide compost for farm operations. The facility currently receives horse manure mixed with straw from a nearby stable and some fruit discards from Duckwall Pooley and other local conventional growers. As an organic farm, the composting operation can accept only certain materials and will not accept lawn clippings or organics treated with specific chemicals. The farm currently meets its compost needs through its existing feedstock, but it may be willing to expand the operation if it could sell the compost. To do so, however, the farm would need marketing assistance.

A grinder in Hood River, D&Z Grinding, reports that demand for its services has increased by 50 percent since it began operating in 2006. D&Z Grinding grinds trees, stumps, brush, wood, and other woody debris. Currently, D&Z Grinding sells approximately 90 percent of ground material to SDS Lumber in Bingen, Washington, to be burned as hog fuel, which offsets the cost of grinding. Some customers prefer D&Z Grinding to leave material on-site. D&Z also grinds woody yard debris at Hood River Transfer Station.

In addition to mobile grinding and land clearing, D&Z Grinding operates a small site, but the site does not accept woody debris from households because it is not staffed on a regular basis. The company would like to expand to a full-scale facility in the future that could grind residential material at a relatively low cost. D&Z Grinding has the capacity to expand its operations to meet demand, but purchasing additional equipment requires steady work to pay for the expensive machinery. The operation has traveled up to 65 miles away to grind materials, and D&Z would be willing to travel as far as 150 miles. An associated business, Columbia Tree Service, chips the trees and limbs that it removes. Wood chips are reportedly in high demand as horse bedding and landscaping material. Kris Zorza, the business owner, would prefer to have a central site that could handle distribution of these materials to small-scale customers.

Bill Fashing at the Hood River County Office of Economic Development has been exploring a project to generate energy from forestry biomass. Hood River County owns 30,000 acres of forest, but it would need feedstock from additional sources. The county faces challenges in procuring needed material from U.S. national forests. The cost of collecting, grinding, and transporting material from steep mountain slopes is another barrier. He reported that the forestry biomass project is still in the exploratory stage and is on hold for at least 6 to 9 months while the county pursues a wind energy project. He said that the next steps are to research examples of other forestry residue projects on steep terrain and to find project partners.

Diamond Fruit Growers has expressed interest in anaerobic digestion of fruit and forest residue to co-generate heat and electricity, according to communications the project team had with Al Gosiak, Bill Fashing, and Maui Meyer (a Hood River Commissioner). This project was in the exploratory phase in June 2009. Cascadia was not able to confirm whether Diamond Fruit Growers continues to pursue the

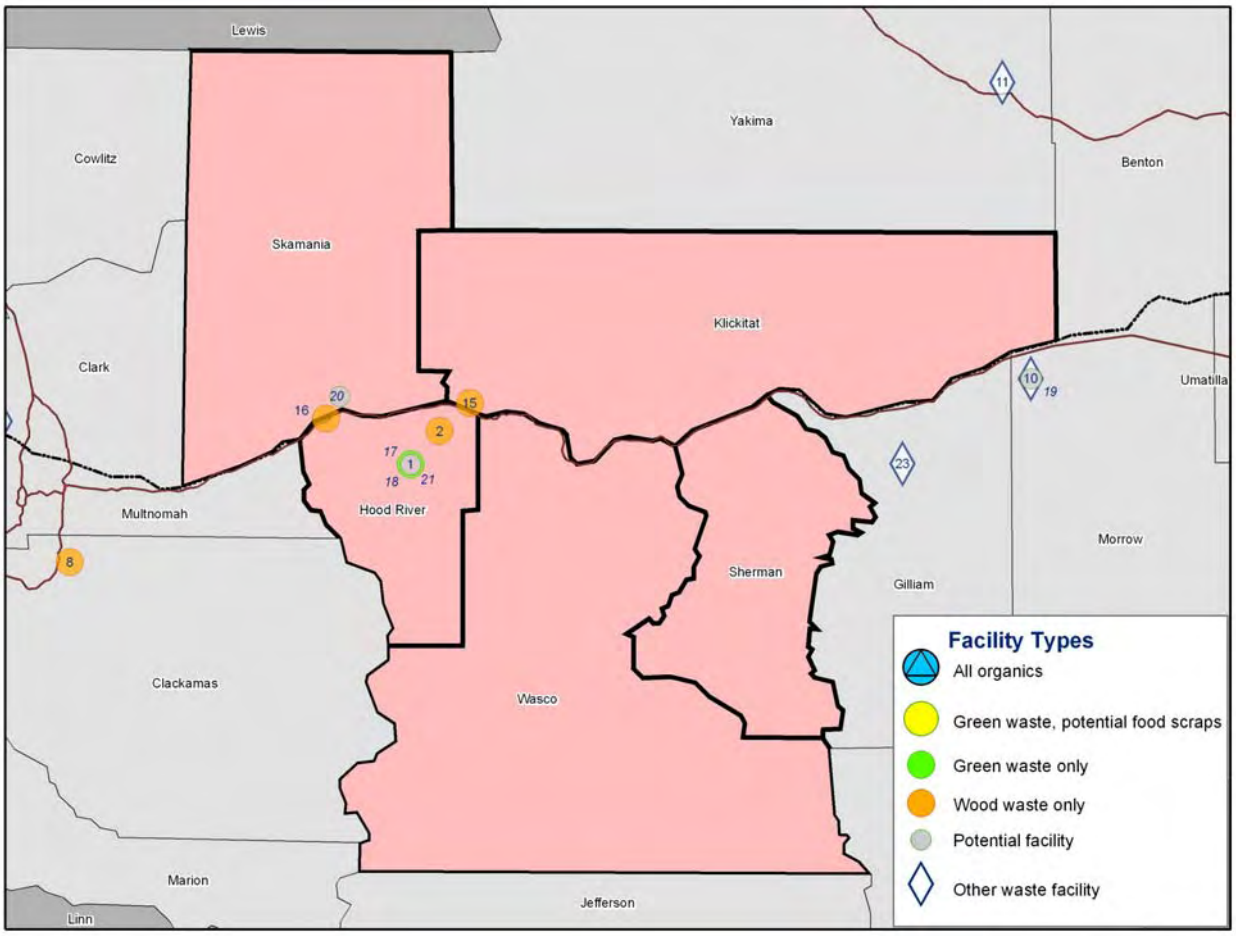
project, and, if so, how high a priority it represents. Diamond Fruit Growers has spoken with Hood River County about establishing the cogeneration facility through a public-private partnership in which Diamond Fruit Growers would be the main buyer of electricity. Fashing reported that the growers association needed funding for the project, potentially from grants, to create a formal feasibility plan.

Broader Columbia Gorge Region

The Columbia Gorge region beyond the Tri-County area does not currently have a facility that can accept additional organic material, but two interviewees expressed interest in building new composting facilities. The Three Mile Canyon Farms composting facility in Boardman, Oregon, is permitted as an agricultural operation rather than a disposal facility, so it cannot accept waste from off-site sources. Organix, the firm that operates composting at Three Mile Canyon, is interested in developing another composting facility that could accept off-site material in Boardman or The Dalles. (Figure 13 shows facilities in the Columbia Gorge region, though some potential facilities do not have specific locations selected yet.)

Jeff Logosz, a local business owner, expressed interest in building a composting facility in Skamania County using the technology used at Silver Springs Organics, but he does not think the region generates enough feedstock to support a large regional facility. He suggested that a smaller facility would not be economically viable given Washington's current regulations governing composting facilities.

Figure 13. Existing or Potential Materials Processing Facilities Identified in Columbia Gorge Region



Eastern Oregon and Washington

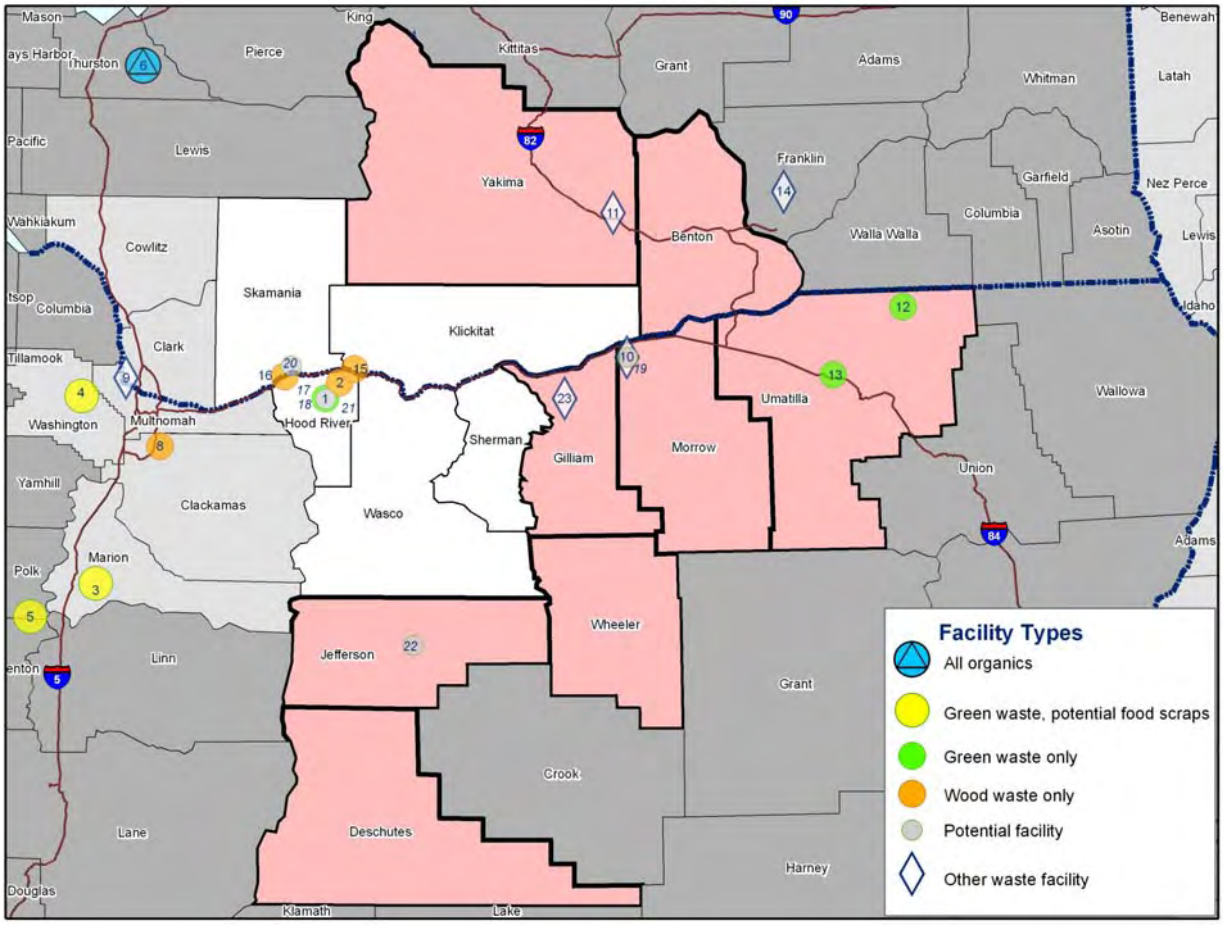
In eastern Oregon, only a few composting facilities are located within a reasonable distance from the Tri-County area and near major roads. The Pendleton Transfer Station Compost Facility is currently permitted for only 2,000 tons per year, and the interviewee reported that the nearby Waste Pro Compost Facility in La Grande, Oregon, is similarly small. The Quality Compost facility in Milton-Freewater, Oregon, is permitted to accept 7,500 tons per year, and it currently receives about 5,500 tons annually. Quality Compost could expand, but the operator views his businesses as creating a premium end-product using a tightly controlled recipe, rather than as a waste management operation. Uncertainty around the quality and reliable composition of municipal organics may pose a problem for this facility. Although the facility does not charge a tip fee, transporting material to Milton-Freewater is estimated to cost at least $45 per ton. (Figure 14 shows facilities in this region of eastern Oregon and Washington.)

Although the Columbia Ridge Landfill in Arlington, Oregon, has a permit for composting, Waste Management, Inc., does not currently operate a composting facility there and does not intend to begin composting at this time. Before the Columbia Ridge Landfill could begin composting, it would need to update its permit under Oregon's new composting facility rules.

High Desert Organix is working to permit a new composting facility in Madras, Oregon. The planned 40-acre facility is expected to accept discards from Jefferson County farmers then sell finished compost to local farmers, landscapers, or nurseries. According to our contact at the Oregon Department of Environmental Quality, the facility is facing organized opposition that has filed an appeal with the Land Use Board of Appeals regarding the facility's location. The DEQ indicated that the facility is currently intended to serve Jefferson County generators and that the opposition may make it difficult for the facility to accept out-of-county waste.

The research did not identify a facility in nearby eastern Washington that would accept additional organic material. Like Three Mile Canyon Farms, Skyridge Farms in Sunnyside, Washington, has an agricultural composting facility run by Organix but cannot accept waste from off-site sources. The only composting facility in Franklin County, run by Lamb-Weston, appears to be for private use only. The Quincy Compost Facility in Quincy, Washington, recently announced to the Grant County Solid Waste Advisory Committee that it would not accept material from outside the city.

Figure 14. Existing or Potential Materials Processing Facilities Identified in Near Eastern Region



Western Oregon and Washington

Based on the list of permitted facilities from the Oregon Department of Environmental Quality and the Washington State Department of Ecology, western Oregon (specifically the Metro region) and Washington contain many composting facilities. Several facilities are large and have excess capacity, but transportation costs may pose a barrier. Key informants provided a wide range of transportation costs, from $0.20-$0.40 per ton per mile. Transportation costs for each facility were calculated using $0.30 per ton per mile as the mid-point of the estimate.

Most organics processing facilities in the Metro region accept only yard trimmings and vegetative materials but not yet non-vegetative food scraps. Based on suggestions from staff contacts at the City of Portland, Metro, the DEQ, and composters, we interviewed representatives from four facilities, all of which reported having excess capacity at the present time.

- **Compost Oregon** (Recology) in Aumsville, Oregon, currently accepts yard trimmings and crop residues. The facility has requested permission to begin accepting food scraps, though Recology did not provide a specific timeline. The tip fee is approximately $30 per ton, with an estimated transport cost of $40 per ton, for a total cost of $70 per ton.
- **Processing and Recovery Center** (Allied Waste) in Monmouth, Oregon, currently accepts all vegetative waste, including yard trimmings, crop residues, and fruit packing waste. The facility has requested permission to collect manure and food scraps that contain meat and dairy, but Allied did not provide a specific timeline. The tip fees are approximately $20 to $25 per ton for vegetative waste and are expected to be $35 to $55 per ton for food scraps. Transport costs are estimated at $45 per ton. Total costs are estimated at $65 per ton for vegetative waste and $80 per ton for food scraps.
- **Clackamas Compost Products** in Clackamas, Oregon, has additional capacity for wood and potential capacity for yard trimmings, depending on the time of year. The tip fee is estimated at $40 to $60 per ton, plus a transport cost of $25 per ton, for a total cost of $65 per ton.
- **Nature's Needs** (Recology) in North Plains, Oregon, currently accepts yard trimmings and crop residues. The facility has requested permission to begin accepting food scraps, though Recology did not provide a specific timeline. The facility has experienced problems with odor and neighbor complaints in the past, under previous ownership. The contact at the facility reported that a new food scraps stream would consume the facility's remaining capacity. The tip fee is approximately $30 per ton, with an estimated transport cost of $30 per ton, for a total cost of $60 per ton.

In Clark County and the City of Vancouver, Washington, also served by Waste Connections, residential customers can subscribe to yard trimmings collection, and some commercial customers participate in a pilot food scraps composting program. Yard trimmings are sent to a Waste Connections facility in the Vancouver area. The West Van Materials Recovery Center participates in the Fall Leaf program, accepting a relatively small quantity of leaves from drop-off customers from the City of Vancouver and Clark County. Commercial food scraps are sent to Metro's reload facility to be transported to Cedar Grove (in Maple Valley, Washington), along with material from the Metro area. According to Tanya Gray of Vancouver Solid Waste Services, the city wants to expand food scraps collection but needs additional capacity. Metro's reload facility, in particular, is at or near capacity. Like the Tri-County area, Clark County and Vancouver need to locate another reload or composting facility.

We interviewed staff at the two largest composting facilities in western Washington, Cedar Grove and Silver Springs Organics. Silver Springs Organics is located about 60 miles closer to the Tri-County area than Cedar Grove and currently has excess capacity.

- **Silver Springs Organics** in Tenino, Washington, has excess capacity and currently accepts crop residues, yard trimmings, food scraps, clean wood, and non-liquid manure. The gate fee ranges from $29 to the upper $40s per ton, with food scraps assessed at the high end of the range. The facility would negotiate fees for a long-term contract. Transport costs are estimated at $55 per ton, for a total cost of $85 per ton.
- **Cedar Grove** in Maple Valley, Washington, could likely accommodate some additional quantities, but the facility is currently at or over capacity during the spring and summer when generation of green yard trimmings is highest. The facility accepts yard trimmings, non-liquid crop residues, pre- and post-consumer food scraps (vegetative and animal), easily compostable paper, approved other compostable paper products, approved compostable bags, and pallets and crates. The current gate fee is $47 per ton, but Cedar Grove would negotiate fees for a long-term contract. Transport costs are estimated at $70 per ton, for a total cost of $120 per ton.

Figure 15. Existing or Potential Materials Processing Facilities Identified in Near Western Region

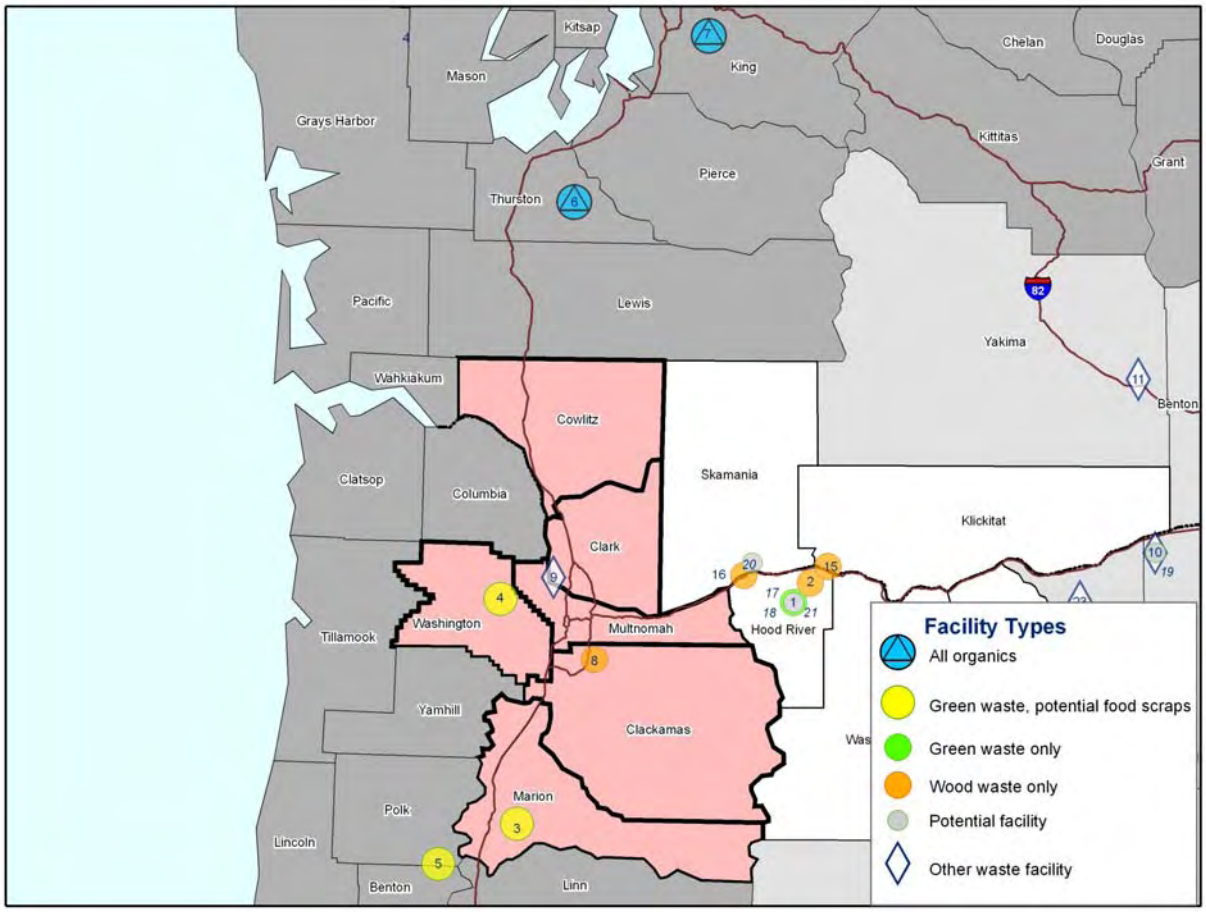


Table 17. Processing and Composting Facilities

Facility Information[15]	Capacity and Ability to Accept Additional Materials	Tip Fee	Estimated Transportation Cost	Materials Composted	Notes
Active Facilities					
Columbia Gorge Organic Fruit Compost Facility Stewart Farms Hood River, Oregon (0-20 miles)	The current capacity is only the amount of compost the farm can use. The facility currently purchases or accepts some off-farm material, but it generally meets its annual needs with its existing feedstock. The facility has room to expand, but it would do so only if it could sell the compost, which would require marketing assistance.	Tip fee depends on the material: the facility may purchase some materials, but it would likely charge a fee for most materials.	$5	The facility composts mainly fruit and orchard waste along with horse manure mixed with sawdust. The facility sometimes purchases finely ground mulch made from leaves and branches. Because of the orchard's organic status and use of the compost on-site, the composting facility would not accept lawn clippings and accepts only certain conventionally grown fruits, depending on the type of chemicals used on them.	Composting system appears to involve open-air rows that are turned (per website).
D&Z Grinding Kris Zorza and Tony Dehart Hood River, Oregon (0 or 20 miles)	As a grinder, D&Z does not have a permitted capacity. The operation currently has a small, unmanned site, two grinders (tub and horizontal), a chip trailer, and an excavator. D&Z could handle more material with its current capacity and if it purchased additional equipment. Eventually, D&Z would like to operate a full-scale facility.	D&Z charges grinding fees on an hourly basis, equating to approximately $750-$1,000 per acre.	$5	D&Z grinds stumps, trees, brush, limbs, and wood from excavation and land clearing, contractors, orchards, Hood River Garbage, and public agencies. An associated company, Columbia Tree Service, chips the branches and trees that it removes.	Approximately 90% of the material that D&Z grinds is sold to SDS Lumber for burning as hog fuel. These sales subsidize grinding, reducing costs from approximately $1,500-$2,000 per acre to $750-$1,000 per acre. Wood chips from Columbia Tree Service are in high demand as horse bedding and landscaping material. D&Z expressed interest in a central site to handle chip distribution.
Compost Oregon Recology Aumsville, Oregon (140 miles)	The current infrastructure can accommodate 60,000 to 70,000 tons per year. The facility currently receives 35,000 to 40,000 tons per year and has excess capacity to accept additional material.	~$30	$40	The facility currently operates under a "Type 1" composting permit, so it is allowed to accept yard trimmings, lawn clippings, and pre-consumer vegetative waste including crop residues. The facility does not accept any bagged waste. Recology wants to obtain a "Type 3" permit to be able to accept non-vegetative food scraps.	The facility uses a system of aerated static piles. Recology wants to add more technology to this system.

[15] Measured from The Dalles, which is the largest city in the Tri-County area and located at the junction of I-84/U.S. Route 30 and U.S. Route 197.

Facility Information[15]	Capacity and Ability to Accept Additional Materials	Tip Fee	Estimated Transportation Cost	Materials Composted	Notes
Nature's Needs Recology North Plains, Oregon (100 miles)	The facility is permitted to accept 50,000 tons per year and currently receives 32,000 to 34,000 tons per year. Recology expects to reach capacity when the facility begins accepting food scraps, though the company may expand the facility in the future.	~$30	$30	The facility currently operates under a Type 1 composting permit, so it is allowed to accept yard trimmings, lawn clipping, and pre-consumer vegetative waste including crop residues. The facility does not accept any bagged waste. Recology is working to obtain a Type 3 permit to be able to accept non-vegetative food scraps.	The facility uses an open windrow system and an in-vessel system of AgBags. Recology plans to add more technology to this system.
Processing and Recovery Center Valley Landfills, a subsidiary of Allied Waste Monmouth, Oregon (145 miles)	The 38-acre site can currently process 80,000 tons per year. Although the facility is not near its functional capacity, the operator plans to expand throughput by changing from a static row process to aerated static piles.	The current tip fee is $20-$25 per ton for vegetative waste. The facility expects to begin accepting food scraps containing meat and dairy for $35-$55 per ton.	$45	The facility currently accepts yard trimmings, pre- and post-consumer vegetative food scraps, crop residues, and easily compostable paper (pizza boxes, coffee filters, and paper towels). The facility is applying for a Type 3 permit to accept meat and dairy materials as well as manure solids. Compostable bags are not accepted, but the facility is conducting performance trials; one issue with bags is that they are not considered organic feedstock for creating organic compost.	The facility currently uses a static row system but is testing an aerated static pile system. The facility expects to expand its throughput, but Allied does not have plans to build another facility.
Silver Springs Organics Waste Connections Tenino, Washington (180 miles)	The facility's permitted capacity is 120,000 tons per year, but it currently accepts around 60,000 tons per year. The facility has excess capacity and could accept material from the Tri-County region.	Ranged from $29 to upper $40s per ton. Food scraps are assessed at the high end of the range.	$55	The facility accepts yard trimmings, small and large trees, stumps, pallets, clean construction wood, pre- and post-consumer food scraps, horse stall waste, non-liquid manure (horse, cow, chicken, goat, and sheep), and spoiled farm feed. Only pre-approved compostable bags are allowed.	The facility uses a system with covered, static, aerated piles designed by Engineered Compost Systems. Other Waste Connections composting facilities are north of Silver Springs Organics and are at capacity.

Facility Information[15]	Capacity and Ability to Accept Additional Materials	Tip Fee	Estimated Transportation Cost	Materials Composted	Notes
Cedar Grove Maple Valley, Washington (240 miles)	Excess capacity depends on the season. The facility has excess capacity in winter when fewer yard trimmings are generated. In spring and summer, Cedar Grove sometimes needs to divert material to other facilities. Although Cedar Grove has considered locating a facility in the Portland metropolitan area, it has not found a location. Without a contract longer than two years, Cedar Grove does not have enough guaranteed feedstock to build a new facility.	Current gate fee is $47 per ton, but contracted fee could be lower.	$70	Facility can accept yard trimmings, non-liquid crop residues, pre- and post-consumer food scraps (vegetative and animal), easily compostable paper, approved other compostable paper products, approved compostable bags, and pallets and crates. The facility has more capacity to compost non-food materials.	The facility uses a Gore system, which can process *all* accepted materials. It also operates a separate negative air system, which can process yard trimmings and pre-consumer vegetative material.
Clackamas Compost Products Clackamas, Oregon (90 miles)	The facility is permitted to keep 12,500 yards of material on-site at any time; it has no specific annual throughput capacity. The facility may be able to accept additional material, especially wood waste. Capacity for yard trimmings depends on the time of year: the facility is typically busy in May-June and September-November. In 10 months of 2009 (a busy year), the facility accepted 185,000 cubic yards.	$4-$10 per cubic yard, depending on material. Equates to $40-$60 tip fee per ton.[16]	$25	The facility accepts clean wood and yard trimmings.	Wood is assessed at the lower end of the tip fee range, and yard trimmings are assessed at the higher end.
West Van Materials Recovery Center Waste Connections Vancouver, Washington (90 miles)	The facility composts a small quantity of leaves.	N/A	$25	The facility has a small composting operation for leaves from the City of Vancouver, Clark County, and drop-off customers. The facility does not accept curbside collected yard debris.	

[16] Tip fees were converted using a material density of 312 pounds per cubic yard for leaves and grass (U.S. Environmental Protection Agency) and 127 pounds per cubic yard for prunings, trimmings, branches, and stumps (Cascadia, California Integrated Waste Management Board, 2004).

Facility Information[15]	Capacity and Ability to Accept Additional Materials	Tip Fee	Estimated Transportation Cost	Materials Composted	Notes
Three Mile Canyon Farm Three Mile Canyon Farm and Organix Boardman, Oregon (80 miles)	Facility is permitted for agricultural on-farm composting, so it cannot accept outside materials. The current throughput is approximately 2,300 tons daily. The farm does not plan to re-permit to accept outside material.	N/A	$25	The facility composts dairy and feedlot manure and yard trimmings.	
Skyridge Farms Skyridge Farms and Organix Sunnyside, Washington (100 miles)	Facility is permitted for agricultural on-farm composting, so it cannot accept outside material. The current throughput is approximately 25,000 yards annually. The farms are not able to accept outside material.	N/A	$30	The facility composts dairy solids as well as open lot and animal bedding materials.	
Quality Compost Milton-Freewater, Oregon (155 miles)	The facility is permitted to accept up to 7,500 tons of material per year and currently accepts 5,500 tons. The facility could expand the operation, but the operator explained that the logistics would be complicated to maintain a high-quality product and purchase additional equipment.	The facility charges no tip fee for delivered materials.	$45	The facility accepts ground clean green, leaves, grass, hay, and some manure. It does not accept food waste. Material inputs are tightly controlled and balanced because the facility views itself as a producer of premium compost using a particular recipe, rather than a waste management facility.	The facility uses a thermophilic turned-windrow process, turning each row 25-50 times.
Pendleton Transfer Station Compost Facility Pendleton Sanitary Service Pendleton, Oregon (120 miles)	The facility is currently permitted to accept 2,000 tons per year. The current throughput is approximately 800 tons per year. The facility may have excess capacity, but Pendleton Sanitary Service is in discussions with four Wal-Mart stores to accept their pre-consumer vegetative waste. The capacity may change when the facility receives its new permit. The facility has no plans or room to expand.	$25 per ton.	$35	The facility currently accepts only un-bagged yard trimmings, though it previously also took vegetative, pre-consumer waste. Materials may change when the facility receives its new permit.	The facility uses a frequently turned pile system, but not windrows. The facility is neither lined nor paved.

Facility Information[15]	Capacity and Ability to Accept Additional Materials	Tip Fee	Estimated Transportation Cost	Materials Composted	Notes
Lamb-Weston Compost Facility Lamb-Weston Inc. Franklin County, Washington (130 miles)	Facility appears to be for private use only.	N/A	$40		The Benton Franklin Health District lists the facility as "for private use only." The Draft Franklin County Solid Waste Management Plan from 2008 does not list the facility as a diversion option.
Hog Fuel Boiler SDS Lumber Company Bingen, Washington (0-20 miles)	The facility is able to accept additional clean wood waste.	The facility typically purchases material for $30 - $50 per bone dry ton.		The facility does not compost. It burns clean wood waste (primarily forest products) for energy recovery.	
Bear Mountain Forest Products Cascade Locks, Oregon (40 miles)	The facility cannot accept additional non-sawdust materials at this time but may expand over the next two to three years, at which point it could accept woody yard trimmings, orchard trimmings, and dried grape pomace.	N/A		The facility does not compost. Currently the company manufactures stove pellets from clean sawdust. The company has a new "brick" product (intended to replace cord wood) that can be made from any kind of clean wood and dry, vegetative agricultural residue. The company has created test products with up to 25% dried grape pomace. Orchard trimmings can also be made into barbeque pellets.	Pellets for American-style stoves must be made of clean sawdust because they produce less ash than pellets made from wood waste containing bark and other materials. European-style pellet stoves can handle the higher ash production of pellets made from other materials, such as orchard trimmings.

Facility Information[15]	Capacity and Ability to Accept Additional Materials	Tip Fee	Estimated Transportation Cost	Materials Composted	Notes
Potential or Inactive Facilities					
Potential Forestry Biomass Hood River County Hood River, Oregon (0 to 20 miles)	Not yet known	Not known	$5	The facility is expected to focus on forest residue.	Bill Fashing of the Hood River County Office of Economic Development is exploring the potential for a facility to convert forest residue into energy. The current barriers are limited feedstock and the high cost of collecting feedstock from steep hillsides. The project is on hold for 6-9 months while the county pursues a wind energy project.
Potential Facility Diamond Fruit Growers Hood River, Oregon (0 to 20 miles)	Not yet known	Not known	$5	Diamond Fruit Growers has expressed interest in processing fruit and forestry residue.	Diamond Fruit Growers has expressed interest in an anaerobic digester to co-generate heat and electricity from fruit and forestry residue.
Potential Facility Organix—to handle excess wheat straw Boardman or The Dalles, Oregon (0 to 80 miles)	Not yet known	Not known	$25	Russ Davis reported that someone in Boardman has 150,000 tons (annually) of wheat straw that he wants to pelletize or gasify.	Facility is not in planning stage yet.
Potential Facility Jeff Logosz Carson, Washington (40 miles)	Current Washington permitting rules make only large facilities (40,000 tons) economically viable, according to Jeff Logosz. He said that he prefers to build a smaller facility for local use.	Yes but not known.	$10	Materials not yet determined, but the interviewee prefers to use the same composting system as Silver Springs, but on a smaller scale.	Facility is in early planning stage but on hold.

Facility Information[15]	Capacity and Ability to Accept Additional Materials	Tip Fee	Estimated Transportation Cost	Materials Composted	Notes
Potential Facility Pierce Louis Hood River, Oregon (0 to 20 miles)	Pierce Louis said the facility will likely start small (two to five acres) with the ability to expand to twenty acres. Eventually the facility may accept food scraps from Portland.	Not known.	$5	The facility expects to accept initially vegetative material from grocery stores and food processors. The current plan is to process materials with a grinder, open aerated windrows, and a screener.	The facility is in the early planning stage. Pierce Louis and his partners are researching composting technologies, exploring potential sites, and identifying feedstock sources and end markets. Louis stated the group would like to begin composting in 2010.
Potential Facility High Desert Organix Madras, Oregon (90 miles)	The planned facility does not yet have a permitted capacity, but it is expected to be a 40-acre facility that will accept materials from Jefferson County farmers and sell compost back to local farmers or to landscapers/nurseries. The interviewee at the DEQ suggested that the organized opposition to the facility may make it difficult for the facility to accept out-of-county materials.	Not known.	$25	The facility is expected to accept agricultural and animal residues.	The facility is in the permitting stage but is facing organized opposition that has filed an appeal with the Land Use Board of Appeals.
Columbia Ridge Landfill Waste Management, Inc. Arlington, Oregon (50 miles)	The facility is permitted under Oregon's old permit system but is not active. Waste Management, Inc. has no plans to begin composting at this time. The facility would need an updated permit to conduct composting.	N/A	$15	N/A	Permitted prior to Oregon's new rules but not currently active.

3. Regulations and Permitting for Managing Organics

This chapter provides an overview of the regulatory framework that governs new and existing composting facilities in Oregon and Washington, including the Columbia Gorge region. It addresses permitting requirements for expanding or establishing new organics management facilities. It also explores the regulations that cover day-to-day facility operations in both states. Efforts to increase the capacity of the Columbia Gorge region to handle organic materials need to consider the regulatory framework and permitting requirements.

Located on the Columbia River, the Tri-County area could work to site or expand a facility on either side of the border between Oregon and Washington. This review of key regulatory and permitting requirements for composting facilities addresses specific issues in the composting regulations recently adopted by the Oregon Department of Environmental Quality (DEQ). Each issue is discussed as regulated in Oregon by the DEQ and in the Washington by the Department of Ecology (Ecology). This review focuses on the Oregon Administrative Rules (OAR) 340-096 and the Washington Administrative Code (WAC) 173-350-220 as they are currently written and implemented. The analysis does not speculate on the outcome of future reviews or regulation changes. One important point to note is that regulators typically do not direct facilities to a specific composting technology; instead, they facilities can choose the processing technology they prefer as long as the results fulfill regulatory requirements.

At the present time, it appears to be easier to obtain a permit in Oregon than in Washington. Key features of Oregon's rules include fewer layers of review, discussions directly with permitting decision makers, and a more predictable project path. Composting facility operators or owners in Oregon will particularly benefit from a good working relationship and level of trust with regulators because the DEQ has more control over the permit conditions than Ecology.

Key Findings

The key differences between regulations in Oregon and Washington are as follows:

- Oregon DEQ composting regulations appear somewhat more flexible than Washington's rules.
- Oregon allows more flexibility on leachate management.
- Odor regulation in Oregon is less proactive than in Washington.
- In Oregon, the DEQ rather than the local health district has jurisdiction over permitting and facilities, which should increase consistency across counties and reduce the number of regulators reviewing the application.
- While Washington has only one level of permitting for all non-exempt facilities, Oregon has an intermediate registration procedure for low-risk facilities. Instead, Washington uses its exemption process to reduce requirements on low-risk facilities.
- Analytical requirements in Oregon are much less extensive than in Washington. Generally, permit requirements for facilities appear somewhat less stringent in Oregon than Washington.

Table 18 compares current regulations governing composting facilities in Oregon and Washington for key issues that vary between the states. Marni Solheim, at the Washington State Department of

Ecology, stated that the department will likely file in early 2010 for approval to revise and simplify the composting rules; however, she reported the entire process will likely take three years.

Table 18. Comparison of Composting Regulations in Oregon and Washington

Oregon	Washington
Status of Regulations: Oregon adopted new regulations in September 2009, and Washington soon may consider updates to its rules, in place since 2003.	
The DEQ recently adopted regulations that became effective September 14, 2009. This set of regulations is referred to as Division 96, "Solid Waste: Special Rules for Selected Solid Waste Disposal Sites." Sections that reference organic management, specifically composting, are numbered OAR 340-096-0060 through OAR 340-096-150.	Ecology adopted solid waste regulations in March 2003, after considerable review by regulatory and industry staff and public comment. The regulations referred to as the "350s" are designated WAC-173-350-010 through WAC-173-350-990. Sections include Beneficial Use Exemptions, Recycling, Composting, Land Application, Energy Recovery, and Incineration. The sections that are pertinent to composting are found in WAC-173-350-220. Ecology will soon begin discussing potential modifications, considering what has been learned in these first years of implementation.
Review Procedures: In Oregon, regulators have some discretion to exempt facilities based on estimated risk levels. In Washington, the exemptions are specified in regulation, and the same rules apply to large and small facilities.	
The DEQ initially requests "screening" information from all existing and new composting facilities that are not exempt. Using this information, The DEQ will estimate facility risk based upon location, volume of material, composting process, weather, and other factors to determine if an Operation Plan and Permit are necessary. All facilities must comply with Performance Standards. *OAR 340-096-080*	Ecology specifies facilities that are exempt from solid waste regulations. Non-exempt facilities are required to obtain a full Permit and Operations Plan. All facilities with over 250 cubic yards of feedstock, composting material, and curing compost on site (approximately equivalent to composting 1,000 cubic yards per year) are subject to the same permit conditions as much larger facilities because risk to health and environment is not a consideration. The jurisdictional authority has no flexibility when deciding if a site needs a permit. *WAC 173-350-220(1)(b)*

Definitions: This review discusses a few selected definitions that are defined differently and might affect the design and management of a site.	
Composting	
Under DEQ regulations, composting is defined as a managed process of controlled biological decomposition. The process includes size reduction, pile manipulation, moisture addition, and procedures to meet PFRP (Process to Further Reduce Pathogens) standards. Maintaining aerobic conditions is not specified.	According to Ecology, composting must be designed to promote aerobic decomposition and must be controlled. However, the definition does not restrict the process to a particular aerobic technology. The facility operator has the option of verifying that the process used is aerobic. In Washington, anaerobic processes are not defined as composting.
Leachate	
Leachate in Oregon means liquid that has come into direct contact with solid waste and contains dissolved, miscible, and/or suspended contaminants as a result of such contact. Solid waste is defined as the feedstock typically used in composting.	In Washington, leachate is defined as water in a solid waste unit that has contaminants from contact with the solid waste. Within the solid waste regulations, leachate is later considered any water that falls upon the surface of specific areas of the composting facility, including any area that contains feedstock, composting, and curing material, regardless of contaminant level (*WAC 173-350-220*).
Feedstock Types	
Oregon defines three types of feedstocks: Type 1: Yard and garden trimmings including wood wastes. Type 2: Manure and bedding. Type 3: Dead animals, meat and source-separated mixed food scraps and industrially produced non-vegetative food scraps; higher risk from contaminants and pathogens than Types 1 and 2. *OAR 340-093-0030*	Washington defines four types of feedstocks: Type 1: Yard and garden trimmings including wood wastes. Type 2: Manure and bedding. Type 3: Meat and source-separated post-consumer food scraps. Type 4: Mixed municipal solid waste, post-collection separated or processed solid waste, industrial solid waste, high risk. *WAC 173-350-100*
Jurisdiction: In Oregon the state DEQ has authority over composting facility permitting, while in Washington permitting authority is delegated to local jurisdictional health departments.	
Regulations in the State of Oregon refer to the regulating authority as the "department," meaning the DEQ. By vesting permitting and review at the state level, Oregon allows the possibility of more consistent regulation from county to county. Review of permitting conditions by one agency also avoids redundant review of the same information. However, state-level permit review also reduces the ability of a local government to address unique local conditions. *OAR 340-093-0030(1)*	In Washington, permitting authority is delegated to the County Jurisdictional Health Department (JHD). A JHD regulates the permitting, oversight, and operation of composting facilities within its county. During the initial permitting phase, however, Ecology reviews all documents and comments on the design and content of the Operation Plan. Most of the suggestions made by Ecology are passed straight through to the site owner/operator. In some cases, Ecology will ask for more conditions than state Solid Waste Regulations require. *WAC 173-350-220(1)(b)*

Performance Standards: Performance standards are more specific and targeted in Oregon than in Washington.	
In Oregon, performance standards specifically address leachate, stormwater, groundwater, odor, pathogen destruction, and vector attraction. *OAR 340-093-0070*	In Washington, performance standards are broader and more vague than in Oregon when addressing health and environment, water pollution, conformance to solid waste planning, and emission standards. *WAC 173-350-040*
Applicability: Overall, Ecology-exempt conditions are higher and more suitable for small landscape operations or small businesses. They are somewhat more complicated and require discussion with the jurisdictional health department staff to be sure the operator/owner has same interpretation as the health department.	
The DEQ exempts facilities that compost less than: ▪ 100 tons per year of Type 1 and 2 feedstocks. ▪ 20 tons per year of Type 3 feedstocks. ▪ 40 tons per year of Type 3 feedstocks using an in-vessel process. ▪ Silage. ▪ Home composting. ▪ Confined Animal Feeding Operations (CAFOs), which are regulated by the Oregon Department of Agriculture. *OAR 340-093-0060*	Ecology exempts facilities that: ▪ Produce mushroom substrate for on-site use. ▪ Vermicompost Type 1, 2, or 3 feedstocks for on-site use. ▪ Maintain less than 40 cubic yards on-site at any time of Type 1 and 2 feedstocks, composting material, and compost. ▪ Compost food scraps generated on-site using a container no large than 10 cubic yards. ▪ Compost for agriculture if feedstock is generated on-site and used on-site. ▪ Compost less than 1,000 cubic yards of materials total on-site for agricultural purposes if feedstock is generated off-site and used on-site. ▪ Compost for agriculture at registered dairies under a nutrient management plan (NMP). ▪ Maintain 250 cubic yards or less of Type 1 or 2 feedstocks on-site at one time. ▪ Maintain 1,000 cubic yards or less of materials total on-site for agricultural composting; feedstock must be generated off-site, used on-site, and composting is part of a certified nutrient management plan. *WAC 173-350-220(1)*

Leachate and Stormwater Management: Facilities in Oregon appear to have more flexibility over leachate and stormwater management than facilities in Washington	
Oregon regulations allow the infiltration of stormwater and leachate but give the DEQ the option to control design and operation of the system and impose groundwater monitoring if it sees the need. If stormwater or leachate is discharged, the facility must meet the conditions of a National Pollutant Discharge Elimination System (NPDES) permit. Leachate and stormwater collection and treatment facilities must be engineered. Facilities must construct containment systems for leachate from feedstock storage and composting, but the storm event or volume they must handle is not specified. Facilities are not required to collect water from the curing area. *OAR 340-093-0120*	Ecology requires more engineering standards for composting operations. Stormwater and leachate are defined as separate materials and must be kept separate. Holding ponds must have a capacity to hold the runoff from a 25-year 24-hour storm event. Generally, stormwater is managed under a stormwater permit, and leachate is reused onsite. Facilities are often required to have back-up options to manage leachate if it cannot all be utilized in the composting process. *WAC 173-350-220(3)(b) and (c)*
Odor Management: While facilities in Washington must create an odor management plan prior to starting operations, facilities in Oregon need to do so only if they receive odor complaints.	
Oregon regulations regarding odor are more reactive than proactive. The DEQ does not currently require odor reduction measures for all facilities but has the option to require an Odor Minimization Plan. Section OAR 340-096-0150 lays out specific steps to take if the facility receives odor complaints. Considering that odor is the primary reason that composting facilities fail, the DEQ regulations seem lenient. A facility located near a community or that is composting feedstocks that are wet, high in oxygen demand, or high in nitrogen content might be wise to do more than the regulations require. *OAR 340-093-0150*	Ecology requires facilities to have a nuisance odor management plan and a neighbor relations plan (both part of the operation plan) in place before startup. In addition, the local air authority in metropolitan areas can impose further conditions to avoid potential odor problems proactively. *WAC 173-350-220(4)(e)(ii)(J)*
Pathogen and Vector Control: Facilities in Oregon and Washington must meet certain conditions regarding pathogen and vector controls, but they also have the opportunity to use alternative procedures that are demonstrated to achieve equivalent results.	
The DEQ requires PFRP (Process to Further Reduce Pathogens) and VAR (Vector Attraction Reduction) conditions or equivalent, as specified by federal standards (40 CFR Part 503.32). The owner/operator has the option to prove an alternative procedure will achieve equivalent pathogen destruction. In Oregon, the owner/operator has the option of using a procedure that is not aerobic as long as pathogen destruction can be verified. *OAR 340-093-0140*	Ecology's operating standards defined in Washington regulations specify PFRP conditions that facilities must meet. Paragraph (D) allows facility the option to use alternative procedures that can be demonstrated to achieve an equivalent reduction of human pathogens. *WAC 173-350-220(4)(a)(vi)(A-D)*

Registration and Permitting: Where Washington has one level of permitting, Oregon offers a simpler "registration" level of permitting for low-risk facilities.	
In Oregon, all facilities that are considered a low risk and are not exempt will be required to register and to meet several conditions specified in OAR 340-096-080(3). If the facility is determined to be a higher risk, the operator will be required to obtain a permit and prepare an Operation Plan.	In Washington, a facility is either exempt or required to have a permit: there is no intermediate registration level.
Analytical Testing: Oregon requires facilities to test for only salmonella or fecal coliform while Washington requires facilities to test for additional parameters.	
The DEQ requires testing compost for only salmonella or fecal coliform. Depending upon volume of material being composted, the testing frequency will range from once a year to as often as once per month. *OAR 340-096-0140(2)*	Ecology requires testing for a number of parameters including metals, inert materials, sharps, pH, stability, nutrients, and pathogens. Required frequency varies between once per month and once per year, based on the feedstock type and the volume of feedstocks processed per year. *WAC 173-350-220(4)(a)(viii)*

4. Stakeholder Input—Key Issues, Needs, and Opportunities

This section summarizes information gathered through interviews with stakeholders including composting facility operators, prospective facility developers, regulators, local government officials, waste haulers, and other interested parties to identify key issues, needs, and opportunities to help evaluate the feasibility of recommendations. Considerations are presented by category: facility site and location, feedstocks, environmental benefits, weighing costs and benefits, and other considerations. The January 2010 stakeholders' meeting provided additional input, which is summarized in Chapter 5.

Key Findings

- To increase economic viability, new facilities must secure adequate feedstock for several years. Some composters prefer regional facilities, citing economies of scale, while others prefer smaller, local facilities. A facility that relies on new diversion from the Tri-County region should anticipate a start-up period in which diversion begins slowly and the facility operates at a sub-optimal throughput level.
- By displacing burning of orchard trimmings and logging residues, an organics processing facility could help to improve the overall air quality in the Columbia Gorge (see Figure 16). Additional environmental benefits—such as improved soil, erosion control, and reduced use of agricultural chemicals—could result from the local production and use of soil amendments.
- Siting and land use regulations can pose major challenges to permitting a new organic materials processing facility. Neighbors' concerns typically include odor, dust, noise, and truck traffic.
- When deciding between building a new organics processing facility and transporting organics to an existing processing facility, facility development costs and estimated operating costs must be weighed against transportation costs and known tip fees. When deciding where to site a new composting facility, the proximity and type of end-product markets to the facility should be taken into consideration, along with land use, feedstock location, and odor and vector control.

Figure 16. Poor Air Quality in the Hood River Valley

Facility Siting and Land Use Permitting

Several stakeholders mentioned land use issues and the permitting process as posing significant obstacles to establishing a new organic materials processing facility. In Oregon, composting facilities are considered solid waste operations, which are allowed to be sited on land zoned for industrial use. With a conditional use permit, composting facilities may be sited on agricultural land, as long as the property is not considered "high-quality" agricultural land. Land use regulations are more stringent in the Columbia River Gorge National Scenic Area, and a permit would need to be approved by the Columbia Gorge Commission in addition to the relevant county's planning department. No matter where the facility is sited, neighbors will likely have concerns. Early discussions with county development staff, state regulators, and an open public process will be important steps.

In addition to zoning considerations, locating a composting facility should take into account climate (especially rainfall due to its effect on leachate generation), proximity to feedstock sources and end-use markets, proximity to neighbors with concerns about odor and vectors, and the quality and capacity of access roads. Locating a facility in the eastern part of the Tri-County region may reduce costs for leachate containment and concerns about vector control, but the facility would be farther from end-product markets in the Metro region and from orchard trimmings as a source of feedstock.

Feedstocks

Secured Feedstock

Several stakeholders that either currently run or seek to establish organics processing facilities mentioned securing feedstock as a key issue. Establishing a composting or grinding facility requires capital investment that must be supported by revenue from future operations. Before making such an investment, facility operators need to be reasonably certain that they will continue to receive sufficient feedstock over time. Several composters stated that without a guaranteed source of feedstock they cannot obtain financing to establish a new facility.

Whether a new facility in the Tri-County area could secure access to organic materials that are in the municipal waste stream requires a close evaluation of the terms of the existing franchise agreements. Two of the key questions include: Who has the right to collect residential and commercial yard trimmings and food scraps? Once collected, who has the right to determine where this material is processed?

Meanwhile, several facilities along the I-5 corridors reported having or expecting to build additional capacity, which could attract material from the Portland area and perhaps from the Tri-County area. Some of these facilities along I-5 have begun accepting food scraps.

Although the Tri-County region generates a large quantity of potential organic feedstock, some of the material already goes to beneficial uses (such as ground orchard trimmings to a hog fuel boiler), and other material may be difficult to access (such as forest biomass on federal land and remote, steep hillsides). According to Bill Fashing, of the Hood River Economic Development Department, the county has had difficulty obtaining biomass in U.S. National Forests because other groups have the right of first refusal for the material. Fashing also mentioned that the cost of grinding and transporting forestry

biomass from steep mountain hillsides appears cost prohibitive at this point. However, he is still exploring options and interested in finding examples of similar projects elsewhere. Bruce Lumper of the Oregon DEQ said that he expects forestry biomass to become more available over the next three to five years as the U.S. Forest Service undertakes fuels reduction projects. He reported that Mt. Hood National Forest's Barlow Ranger District currently has three or four such thinning projects.

Existing Feedstocks

Based on Cascadia's inventory of organic materials, the Tri-County area plus Klickitat and Skamania counties generate approximately 230,000 tons of organic materials each year. Much of this material is not disposed in landfills. Approximately 76,000 tons per year of disposed solid waste are generated in the Tri-County area plus Klickitat and Skamania counties. Annually, approximately 20,000 tons of the disposed municipal solid waste from the Tri-County area, plus 8,000 tons from Klickitat and Skamania counties, are estimated to be compostable, for a total of 28,000 tons. This landfilled material is the primary focus of this study. Meanwhile, forest operations annually generate an estimated 150,000 tons, while orchards add 21,000 tons and food processors produce 8,000 tons. Quantities from fruit packing houses appear quite small in comparison.

Stakeholders also provided anecdotal evidence of large, unclaimed piles of brush and tree trimmings around the area that may be aggregated from multiple sources. Due to open burning concerns, they present a need for an organics management solution. Although these piles may not be a long-term source of materials, they offer an immediate carbon-rich feedstock.

Collection

It is important to develop a plan for the collection of organic materials that currently enter the municipal solid waste stream. Stakeholders interviewed tended to focus more on processing than on collection. This is understandable in the context of available residential curbside collection and community drop-off opportunities for yard trimmings but insufficient local organics processing capacity at present.

Collection, however, usually constitutes the most significant part of the overall system cost of managing materials diverted from solid waste disposal. Many key questions must be addressed. At the broadest level, these questions include:

- What are the goals for an organic materials recovery program?
- What are the quantitative targets for diversion, by material type?
- What is an acceptable level of additional cost for collection of source-separated organics?
- What policy measures will be put in place to ensure a high rate of participation and diversion?
- What materials will be collected, from whom, by whom, and how often?

It will be essential to address these fundamental program planning questions once processing issues have been explored preliminarily.

Processing

Stakeholders with existing facilities or plans for organic materials processing facilities or operations envision a range of facility sizes. At one end of the spectrum, a mobile chipping service for woody yard trimmings in rural areas might be part of an overall organics management plan. At the other end of the spectrum, Waste Connections, which has much of the solid waste collection, transfer and disposal infrastructure in the Tri-County area, appears to have a preference for larger, regional facilities, to process a wide array of organic materials. Rob Nielsen, Waste Connections' regional manager, stated that small, local organics processing facilities may make sense from one standpoint but may not be economically viable.

Greg Schoenbachler, of Silver Spring Organics (a Waste Connections facility), noted that any new organics collection program should expect to start small and capture only a relatively small portion of the available organic tons at the outset. If a small facility to process local material is developed, he suggested that the business plan should account for this ramp-up period.

Local individuals and companies that expressed interest in building composting facilities in the Tri-County region stated that they preferred smaller, local operations, rather than larger, regional facilities. Several suggested starting small and expanding over time. However, two stakeholders interested in building small facilities expressed concern about the financial prospects of a small facility.

The Tri-County region is currently an air quality attainment area, meaning that it meets federal air quality standards. The Columbia River Gorge has additional federal protection through its designation as a National Scenic Area (NSA). Under the NSA Management Plan, the Columbia River Gorge Commission has responsibility to protect natural, scenic, recreational, and cultural resources. At this time, the Columbia Gorge Commission does not impose additional air quality regulations on emitting facilities in the Tri-County region beyond those imposed by the Oregon DEQ.

Though composting and transportation of organics may produce some emissions of their own, composting and grinding are expected to result in a net reduction of emissions from agricultural burning and other sources. When displacing agricultural burning, composting and grinding operations can improve regional visibility and reduce overall particulate emissions.

Maui Meyer, Hood River County Commissioner, stated that vector control for agricultural pests is vital for any organics processing facility located in the Tri-County region. Local residents and businesses may have fewer concerns about a local facility that processes feedstock from only the Tri-County region than about a regional facility in the Columbia Gorge that imports materials from outside the area.

Stakeholders considered the municipal organics stream as a whole, but it can also be broken down by material type and source into constituent parts that may be best addressed separately. For example, food scraps and yard trimmings from the cities of Hood River and The Dalles may be collected differently from the same materials generated in more rural areas. In addition, food scraps may be processed separately from woody yard trimmings and orchard waste. The overall organic materials management system, which will be discussed in the next segment of this project, may include multiple collection pathways, processing methods, and end-products.

End Product Marketing

While distance to end product markets should not be overlooked as a cost factor, a more fundamental challenge to profitability, and sometimes outright viability, is the production of end products that meet customer specifications, are adequately tested, are of consistent quality, and are available when needed. No end product market analysis was performed as part of this study. Any facility operator would be expected to perform an end product market analysis.

End uses for recycled organic materials typically include the following:

- Compost
- Mulch
- Blended topsoil
- Boiler fuel
- Erosion control
- Bio-gas
- Landfill cover

For each of these end uses, different customers may have different specifications. Viewing the end product market as a group of niches, each with its own needs, rather than as a single entity is the starting point for effective end product marketing. Facilities that produce consistently high-quality end products that have undergone generally accepted testing protocols tend to command higher prices, customer loyalty, and a wider geographic range.

Local Opportunities

D&Z Grinding, which grinds yard trimmings, land-clearing debris, orchard trimmings, and forest residue, could expand its operation but would need a secure flow of feedstock before purchasing additional equipment. Chris Zorza reported that demand for his business has increase by 50 percent since D&Z Grinding began operating. He sees an opportunity to work with the City and County of Hood River and with the U.S. Forest Service to grind slash piles.

Cheryl Stewart at the Columbia Gorge Organic Fruit Composting Facility reported having space to expand but said that the company would need help marketing the product and would need to charge a tip fee. Using its current technology, the facility could probably accept only crop residue, manure, and size-reduced, woody yard trimmings. Currently, the facility does not accept grass.

Other stakeholders have expressed interest in establishing new composting facilities in the region, including Russ Davis, Jeff Logosz, and Pierce Louis. They all envision building facilities to serve local needs, rather than large regional facilities. Hood River County continues to be interested in generating energy from forestry biomass, but it sees securing feedstock and the cost of collecting feedstock from steep hillsides as barriers.

This list is not meant to be exhaustive. Additional opportunities may be uncovered, for instance, at the upcoming public stakeholder meeting, and through other avenues (e.g., expression of interest, RFQ or RFP process).

Financing Options

Several stakeholders interested in constructing local facilities cited financing as a barrier. If the private sector is not able to provide an organics management solution, the public sector may consider the extent to which public money could or should finance any proposed solution. Local governments could fund the entire system—collecting material, constructing a facility, operating the facility, and selling the finished product. Local governments could also enter into a public-private partnership or could provide grants or loans. Local government stakeholders that were interviewed stated that a public facility must be financially viable (at least revenue neutral) with a solid, long-term business plan. A Hood River County Commissioner discussed organics management in terms of a self-sustaining local economy. He stated that Hood River County is interested in finding a solution that is good for the local economy as well as the environment.

Although not directly a funding activity, if local governments changed franchise agreements to require collection and processing of organic materials, the requirement would create a powerful incentive to divert organic materials. The Oregon DEQ Solid Waste Program offers grants annually for recycling, solid waste reduction and prevention, and hazardous waste projects. The program provides approximately $250,000 statewide each year, and most grants are $20,000 to $25,000. Commercial composting is an eligible activity. The application period typically runs from June to September.

Environmental Benefits

Stakeholders identified several likely and potential local environmental benefits associated with the diversion of organics from the Tri-County area's municipal solid waste, including the following:

- Reduced air pollution in the Columbia Gorge associated with the open burning of yard trimmings and other organic materials.
- Reduced potential for creating greenhouse gas (GHG) emissions at the landfill through the reduction in landfill disposal of GHG-causing materials, such as yard trimmings and food scraps.
- Increased capacity of soils to conserve water, retard erosion, and resist plant diseases through the use of soil amendments (e.g., compost, mulch) derived from recycled organics.
- Local environmental business and job retention and creation, especially if some or all processing of collected organics occurs locally.

Summary

In the Columbia Gorge, the existing infrastructure for processing organic materials diverted from the municipal solid waste stream is limited. Stakeholder interviews identified a handful of potentially interested parties in building, expanding, or operating organics processing facilities in the Columbia Gorge. (*Appendix D, List of Interviewees*, shows the individuals and organizations that Cascadia interviewed in the course of this research.) A public process to invite formal written expressions of interest and preliminary explanation of capabilities, experience, plans, and needs is a useful step to take in early 2010.

Meanwhile, excess capacity exists at composting facilities along the Interstate-5 corridor, about 90 to 240 miles from The Dalles, or 65 to 220 miles from Hood River. Trucking along the major highways appears to be the most appropriate transport method to facilities along Interstate 5. Such transport to distant facilities adds to the overall collection and processing system cost. These costs should be weighed against the estimated costs of local processing options.

Generally, permit requirements for composting facilities appear somewhat less stringent in Oregon than Washington in terms of leachate management, odor regulations, and testing. However, land use permitting may be more difficult in Oregon. In terms of organics generated as part of the municipal solid waste system, various means exist to process these materials. In some cases, yard trimmings, especially the woody fraction of it, may best be handled separately from food scraps. In other cases, these materials can be processed together.

Based on local stakeholder input, it is important to choose an organics management strategy that supports a sustainable local economy. The economics of a local organics processing facility or facilities depends on a secured supply of feedstock, a market for the finished product, technology, site improvements, facility size, transportation distances to feedstock and product markets, and financing.

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5. Organics Management Options and Evaluation Criteria

After conducting an inventory of organic materials and infrastructure in the Columbia Gorge region, assessing and permitting issues, and obtaining stakeholder input, we developed eight potential scenarios for future management of organics in the region. We developed evaluative criteria for ratings these scenarios and identified the top three options that hold greatest promise. This chapter summarizes the scenarios, the criteria and assessment process, and top options.

Key Findings

- The evaluation team identified and weighted criteria in these six categories: diversion, collection, transfer, processing, environmental impact, and overall.

- Based on the evaluation using the scoring criteria, the top three organics management options were **Local, Centralized Grinding** (Scenario D), **Local Niches** (Scenario A), and **Export by Material Type** (Scenario B). Table 19 presents a summary of the rankings. *Appendix C*, *Evaluation Criteria Matrices*, includes complete scoring matrices for each scenario.

- In **Scenario D (Local, Centralized Grinding)**, franchised haulers collect yard trimmings and scrap wood from residential curbside participants and self-haul customers. (Curbside "clean green" collection could be provided by subscription or citywide.) Woody material is ground at a local, centralized facility, while leaves and grass are exported to a composting facility outside the five-county region. In rural areas, mobile equipment chips woody material on-site.

- In **Scenario A (Local Niches)**, franchised haulers collect yard trimmings and scrap wood in curbside containers from all residential customers, and they accept similar material from self-haulers. A local, centralized facility composts yard trimmings and grinds woody material. In rural areas, mobile equipment chips woody yard trimmings and commercial scrap wood on-site.

- In **Scenario B (Export by Material Type)**, franchised haulers collect yard trimmings and wood scraps in curbside containers from all residential customers, and they accept similar material from self-haulers. Other organics, such as food scraps, are collected separately from commercial customers. Yard trimmings are exported to a lower-cost composting facility, while other organics are exported to an organics processing facility that accepts all food scraps. In rural areas, mobile equipment chips woody yard trimmings and commercial scrap wood on-site.

Methods

For the Tri-County area, Cascadia Consulting Group developed eight organics management system scenarios ranging from maintaining the status quo to processing organics locally or through export to recovering energy from organics. To evaluate feasibility, the evaluation team, consisting of staff members from Cascadia and the Tri-County Hazardous Waste and Recycling Program, developed a fixed set of technical criteria in six categories: diversion, collection, transfer, processing, environmental impact, and overall. For each criterion, every scenario was scored on a scale from zero to five points, with five being the best. Recognizing that some criteria are more important than others, each criterion received a weighting (between zero and fifteen, with fifteen indicating the highest importance) set

according to priorities identified by the evaluation team. For example, in the diversion category, the criterion "amount of material diverted from disposed municipal solid waste (MSW)" received a weighting of 14 while the criterion "ability to include materials other than municipal solid waste" received a weighting of 4. The scoring template is presented in Table 20, below.

The evaluation team deemed the following individual criteria to be the most important: financial feasibility (weighting of 15), environmental impacts (15), and amount diverted from disposed municipal solid waste (14). The total weighting for each category depends on weightings accorded to the individual criteria components and to the number of components in each category. Consequently and deliberately, the overall and processing categories affect the total score disproportionately compared to the other categories. To emphasize the importance of environmental impacts, the evaluation team included both an environmental impacts category and a separate environmental impacts criterion in the overall category.

Total scores for the scenarios were calculated by multiplying each criterion's score by its respective weighting and summing the total. These total scores were then used to rank the scenarios from highest to lowest, with the top three scenarios recommended for further evaluation.

The criteria were scored and weighted using information gathered during the earlier phases of the project, the consultant's experience, and the client's project goals and input. These weightings and scores reflect the evaluation team's knowledge and judgment prior to the stakeholder meeting on January 20, 2010. These weightings and scores reflect judgments made at a certain point in time, and they should be viewed in that context. The components of the ranking process and the assigned values could be modified as additional information and community priorities arise.

Organics Management Options

Cascadia Consulting Group identified eight organics management options for the Tri-County area. This section briefly describes each of the scenarios.

Scenario A. Local Niches

Franchised haulers collect yard trimmings in curbside containers from all residential customers they currently serve; service is provided universally rather than only by subscription. Franchised haulers also accept yard trimmings and scrap wood self-hauled by customers to transfer stations. Yard trimmings are composted in a local, centralized facility, and no material is imported from outside the five-county region. Woody yard trimmings and commercial scrap wood are ground for use as mulch or boiler fuel, also at a local, centralized facility. In rural areas, woody yard trimmings and commercial scrap wood are chipped on-site using mobile equipment.

Scenario B. Export by Material Type

Franchised haulers collect yard trimmings in curbside containers from all residential customers they currently serve; service is provided universally rather than only by subscription. Franchised haulers also accept yard trimmings and scrap wood self-hauled by customers to transfer stations. Yard trimmings and scrap wood are exported to a composting facility outside the five-county region, likely one that accepts only vegetative materials. Organics processing facilities that accept only vegetative materials

tend to charge lower tip fees than facilities that accept both yard trimmings and all food scraps. In rural areas, woody yard trimmings and commercial scrap wood are chipped on-site using mobile equipment.

By subscription, franchised haulers collect organics, including food scraps, from commercial customers. Commercial organics are exported separately from residential yard trimmings to an organics processing facility outside the five-county region that accepts yard trimmings and all food scraps.

Scenario C. General Export

Franchised haulers collect yard trimmings in curbside containers from all residential customers they currently serve; service areas and participation are significantly expanded from the current limited subscription service. Franchised haulers also accept yard trimmings and scrap wood self-hauled by customers to transfer stations. By subscription, franchised haulers collect organics, including food scraps, from commercial customers. Residential and self-hauled yard trimmings and commercial organics are exported jointly to an organics processing facility outside the five-county region that accepts both yard trimmings and all food scraps.

Scenario D. Local, Centralized Grinding

Franchised haulers collect yard trimmings in curbside containers from residential customers who subscribe to the service. Alternatively, service could be extended to all residents in Hood River and The Dalles through mandatory subscription or "free" organics service with costs embedded in garbage rates. Franchised haulers also accept yard trimmings and scrap wood self-hauled by customers to transfer stations. Woody yard trimmings and commercial scrap wood are ground at a local, centralized facility for use as mulch or boiler fuel. Leaves and grass are exported to a composting facility outside the five-county region. In rural areas, woody yard trimmings and commercial scrap wood are chipped on-site using mobile equipment. No material is imported from outside the five-county region. In the medium term, no new centralized composting facility is constructed in the Tri-County area.

Scenario E. Status Quo

The current organics management system is maintained. The franchised hauler in The Dalles collects yard trimmings in curbside containers from residential customers who subscribe to the service. Franchised haulers also accept yard trimmings and scrap wood self-hauled by customers to transfer stations. Yard trimmings and scrap wood accepted by franchised haulers are either ground for mulch or exported to a composting facility outside the five-county region.

Scenario F. Energy Recovery—Anaerobic Digestion

Food scraps are collected from commercial and industrial customers for anaerobic digestion. The digestate (material leftover at the end of anaerobic digestion) is composted at a local, centralized composting facility. The digester may also accept materials from beyond the Columbia Gorge counties.

Franchised haulers collect yard trimmings in curbside containers from residential customers. Franchised haulers also accept yard trimmings and scrap wood self-hauled by customers to transfer stations. Yard trimmings and scrap wood are composted at a local, centralized composting facility, along with the digestate from anaerobic digestion.

Scenario G. Energy Recovery—Emerging Technologies for MSW

A regional energy recovery system is developed that relies on emerging technology to process a broad spectrum of organics present in municipal solid waste, such as yard trimmings, scrap wood, food scraps, and compostable paper. Organic materials to be processed may or may not be collected separately from municipal solid waste, and the facility could large enough to accept materials from beyond the Columbia Gorge counties.

Scenario H. Energy Recovery—Non-MSW Sources

Additional processing capacity is developed to recover energy from forestry slash and from agricultural and food processing residuals. The facility could also accept these materials from beyond the Columbia Gorge counties. Organic materials that are currently sent to the landfill as municipal solid waste are managed under a separate processing plan (such as Scenarios A-G).

Top-Ranked Scenarios

From the evaluation process described in the remainder of this chapter, the evaluation team developed the ranking of scenarios shown in Table 19.

Table 19. Summary of Organics Management Scenario Rankings

Scenario	Name	Rank
D	Local, centralized grinding	1
A	Local niches	2 (tie)
B	Export by material type	2 (tie)
E	Status quo	4
C	General export	5
H	Energy recovery—non-MSW sources	6
F	Energy recovery—anaerobic digestion	7
G	Energy recovery—emerging technologies for municipal solid waste	8

Evaluation Criteria

Evaluation criteria were identified in six categories: diversion, collection, transfer, processing, environmental impact, and overall. The criteria are presented below with the preferred conditions that received higher scores indicated in italics.

Diversion

1. Amount diverted from municipal solid waste (MSW). *More organic material is diverted.*

2. Ability to include materials other than municipal solid waste, such as agricultural residues and forestry slash. *More other organics are diverted*.

Collection

3. Operating costs. *Low operating costs*.

4. Service to population centers versus rural areas. *Option supports geographic equity and balances service across both population centers and rural areas*.

Transfer

5. Distance to processor. *Shorter distance, ideally located in the Tri-County area*.

6. Import feedstock from outside region. *Does not import materials from beyond the Columbia Gorge counties*.

7. Export feedstock from region. *Does not export materials to locations outside the Columbia Gorge counties*.

Processing

8. Technical feasibility and track record in the U.S. *Highly feasible with a strong track record*.

9. Operational flexibility. *Accommodates different types of feedstocks and varying amounts of materials, including large pulses; ability expand throughput and materials handled over time.*

10. End products. *Ability to produce high-quality, weed-free, pathogen-free end products that are highly valued by potential customers, such as compost sought by urban gardeners*.

11. Capital costs. *Low capital costs*.

12. Operating costs. *Low operating costs*.

13. Local jobs creation. *More jobs created*.

Environmental Impact

14. Greenhouse gas emissions impact. *Reduces greenhouse gas emissions*.

15. Other environmental impacts, such as health, safety, congestion, and visual. *Minimizes other environmental impacts*.

Overall

16. Financial feasibility. *Income likely equal to or greater than costs*.

17. Time and ease of implementation. *Option can be implemented quickly and easily*.

18. Environmental impacts. *Overall environmental impacts are low or beneficial*.

19. Degree of public sector risk. *Low risk of unexpected costs or liabilities to local governments*.

Table 20. Evaluation Criteria Matrix

	WEIGHT	SCORE	WEIGHTED SCORE
Diversion			**Up to 90 points**
1. Amount diverted from disposed municipal solid waste	13	0-5	Up to 65 points
2. Ability to include materials other than municipal solid waste	5	0-5	Up to 25 points
Collection			**Up to 90 points**
3. Operating costs	12	0-5	Up to 60 points
4. Service to population centers versus rural areas	6	0-5	Up to 30 points
Transfer			**Up to 90 points**
5. Distance to processor	10	0-5	Up to 50 points
6. Import feedstock from outside region	5	0-5	Up to 25 points
7. Export feedstock from region	3	0-5	Up to 15 points
Processing			**Up to 195 points**
8. Technical feasibility and track record in the U.S.	10	0-5	Up to 50 points
9. Operational flexibility	7	0-5	Up to 35 points
10. End products	5	0-5	Up to 25 points
11. Capital costs	5	0-5	Up to 25 points
12. Operating costs	10	0-5	Up to 50 points
13. Local jobs creation	2	0-5	Up to 10 points
Environmental Impact			**Up to 90 points**
14. Greenhouse gas emissions impact	8	0-5	Up to 40 points
15. Other environmental impacts	10	0-5	Up to 50 points
Overall			**Up to 270 points**
16. Financial feasibility	15	0-5	Up to 75 points
17. Time and ease of implementation	12	0-5	Up to 60 points
18. Environmental impacts	15	0-5	Up to 75 points
19. Degree of public sector risk	12	0-5	Up to 60 points
TOTAL SCORING			**Up to 825 points**

Summary

The three highest-ranking scenarios were **Local, Centralized Grinding** (Scenario D), **Local Niches** (Scenario A), and **Export by Material** (Scenario B). Chapter 7 discusses the top options further, and *Appendix C* provides completed evaluation criteria matrices for all eight scenarios. The three top-ranked organics management options all involve collecting residential yard trimmings and scrap wood and expanding mobile grinding for woody materials in rural areas. They differ in whether the yard trimmings and scrap wood are processed locally or exported out of the region and in whether food scraps are addressed. Based on the priorities identified through the evaluation process and results of the evaluation, Cascadia recommends refining an organics management strategy based on the top three scenarios that can be implemented in stages, as Chapter 7 describes.

6. Community Meeting on Organics Management Options

On January 20, 2010, the Tri-County Hazardous Waste and Recycling Program (TCHWRP) held a community meeting at the Mosier Grange on how to address how to manage organics materials in the Columbia Gorge. Community participants included local residents, agricultural growers, businesses, and organics management professionals from within the Columbia Gorge and elsewhere. Cascadia Consulting Group and the TCHWRP provided information from an organics inventory of the Columbia Gorge area, an assessment of the current organics management infrastructure, and interviews with local stakeholders and organics management professionals. Cascadia also presented potential organics management scenarios and the criteria used to score them. Stakeholders asked questions and provided comments during two discussion periods.

Community Meeting Participants

A total of 46 participants attended the Tri-County community meeting on organics management strategies. Attendees represented a broad array of stakeholder groups including the following:

- Current and potential organics processors.
- Waste management professionals.
- Farmers and orchard growers.
- Local businesses that generate food scraps and food processing residue.
- Local government officials who work on solid waste, health, economic development, and other issues.
- Members of the public.

Participants attended from Hood River County, Wasco County, Klickitat County, Skamania County, and western Washington.

New Information and Opportunities

A current organics processor reported that the Washington State Department of Natural Resources is supporting a pilot project Bingen, Washington, to produce renewable energy using woody biomass from forestry slash. According to WDNR, Parametrix plans to apply fast pyrolysis technology to convert forest biomass to liquid fuels and bio-char at the SDS Lumber plant. Its goal is to demonstrate the commercial viability of this conversion technology and its products. The pilot project is expected to be completed in 18 to 24 months, with a commercial facility starting operation within another 12 to 18 months. Along with SDS Lumber, the project partners include Renewable Oil International and Organix, Inc.

One local government representative noted that an organics management program could be implemented in stages. He suggested diverting source separated materials to a landfill with methane capture (as opposed to one without methane capture) as an interim step.

A firewood producer reported that he has several acres of log yard and is looking for help to manage the material. A local orchardist commented that most orchard trimmings may not currently be burned in open piles. She stated that most orchardists grind smaller pieces and use larger pieces as firewood.

A Natural Resources Conservation Service (NRCS) staff person from The Dalles mentioned a federal cost-share program that pays growers to chip rather than burn woody debris and suggested finding a way to leverage the funds more locally. The federal NRCS Conservation Stewardship Program essentially provides an "air quality payment" to farmers that adopt conservation practices, including avoiding on-site burning.[17] Except for large tree trunks and stumps, most woody materials are expected to be handled on-site, rather than diverted to a facility for processing.

A similar federal conservation program, the Environmental Quality Incentives Program (EQIP), currently offers a cost-share of about 50% for forestry slash treatment, or thinning. Under this program, the woody material can go to a local composting site, waste-to-energy facility, or other option, as long as open burning is avoided.[18] Additionally, the federal Biomass Crop Assistance Program (BCAP) would potentially match the EQIP cost-share for the costs of collecting the woody material that goes to "waste-to-energy" (but not to composting or elsewhere).[19] The combination of conservation payments from EQIP and BCAP could cover much of the collection costs for delivering forest slash to a waste-to-energy facility, which could include the SDS Lumber pilot project. Current and pending federal subsidies are creating incentives that favor handling larger woody materials at biomass waste-to-energy facilities, rather than composting operations.

At the state level, the Oregon Watershed Enhancement Board and other watershed programs have supported the development of on-farm manure composting facilities to address problem areas.

Stakeholder Questions and Concerns

Organics Collection and Transportation

Two participants asked how well the current yard waste collection program is working. One participant asked whether residents would subscribe to curbside collection. A representative of Hood River Garbage Service and The Dalles Disposal reported that the quantities delivered to the Hood River Transfer Station for mulching are manageable and that between 5 and 20 percent of curbside solid waste customers in The Dalles are also subscribed to regular curbside yard waste collection.

One organics management scenario includes importing organic material to a local composting facility. Some participants expressed concerns about additional traffic on Interstate 84 (unless material is back-hauled on trucks already returning from eastern Oregon or Washington), about the costs and environmental footprint of trucking materials, and about spreading pests and diseases to local orchards. After a question on transport costs for back-hauling material, one participant suggested that trucking

[17] Natural Resources Conservation Service, U.S. Department of Agriculture, "FY 2010 Conservation Stewardship Program," http://www.or.nrcs.usda.gov/programs/csp/index.html.
[18] Natural Resources Conservation Service, U.S. Department of Agriculture, "Environmental Quality Incentives Program," http://www.nrcs.usda.gov/PROGRAMS/EQIP/.
[19] Farm Service Agency, U.S. Department of Agriculture, "Biomass Crop Assistance Program," http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap.

companies rarely discount prices for back-hauling; rather, both customers pay the front-haul price. One participant stated that his feeling about importing material would depend on the material type, noting that importing needed materials (such as those rich in carbon) may make sense.

Organics Processing Options

A local public works director asked about a minimum size for viable composting facilities. One facility operator stated his opinion that a facility in Washington must be able to obtain about 40,000 tons of organics per year, although he noted that the minimum required materials depends on many variables including composting regulations and technologies. The consultant team, however, provided two examples of viable facilities in Everett, Washington, that compost approximately 20,000 tons each as well as other viable facilities composting fewer than 20,000 tons per year.

Feedstocks and Markets

Participants raised questions regarding the percentage of the organic material identified in the inventory that is available for composting. The inventory identified 28,000 tons of yard trimmings, food scraps, and compostable paper in municipal solid waste. An organics processor asked about diversion programs in similar areas elsewhere and how diversion efforts in the Columbia Gorge could reach critical mass.

A ski resort staff person asked whether compostables include paper and bioplastics from food service products. One participant stated that materials accepted by composting facilities depend on the processor and processing method. Noting that materials vary in how well they break down during composting, a composting facility operator stated that compostable plastic forks tend to take longer to compost and to reduce the value of the end product if not properly composted.

A local government participant asked about the market for chipping. A local operator, D&Z Grinding, reported that SDS Lumber in Bingen, Washington, pays approximately $25 to $35 per bone dry ton if delivered to the facility. He also mentioned that drop-off sites for wood waste in Klickitat County receive approximately 1,500 tons per year, with relatively few contaminants, and could collect more if the sites were larger. Another participant reported that a large chipping facility in Portland pays about $10 to $12 per green ton.

A question arose regarding whether composting would destroy pathogens and weed seeds. If the composting operation satisfies federal standards (under 40 CFR Part 503), the Process to Further Reduce Pathogens (PFRP) involves compost temperatures sufficient to destroy weed seeds and pathogens. The U.S. Composting Council's testing assurance program relies on PFRP for assurance of weed seed and pathogen destruction, and industry experience has shown these standards to be effective.

Costs

When asked to consider the potential cost of an organic diversion program, an Oregon Department of Environmental Quality representative noted that local residents voted to pay monthly solid waste fees equivalent to approximately $0.50 per household to support the Tri-County Hazardous Waste and Recycling Program. He added that a potential cost of $5 per household per month may be too much. A private organics processor stated that the potential cost to subscribe to curbside service should not be considered to be the total additional cost because customers can also reduce their garbage costs by reducing garbage service.

Another participant asked about the actual costs of current and alternative organics management methods. She noted that part of the value of organics processing is cost savings compared to alternative methods, which may be negligible for orchard trimmings that are currently chipped and left on site.

Air Quality

A local farmer asked whether the study identified the source of air pollutants in the Columbia Gorge. The chair of the Columbia River Gorge Commission participated in the meeting, and she stated that studies have found that the Columbia Gorge airshed may have worse air quality than Los Angeles. According to the studies, major contributors to haze in the Gorge include a feedlot in Boardman, PGE's coal-fired power plant in Boardman (which is facing increased pollution controls, possible shutdown, or conversion to biomass), and pollution from airsheds adjacent to the area such as the Willamette Valley.

The U.S. Environmental Protection Agency is currently developing more stringent air quality standards for sulfur dioxide and nitrogen dioxide, which are likely to affect emissions generators in and around the Gorge. Additionally, a new USEPA greenhouse gas emissions rule calls for facilities that release at least 25,000 metric tons of carbon dioxide equivalents annually to report those emissions starting in 2010. The rule goes beyond industrial generators and landfills to include livestock facilities with manure management systems, such as the Boardman feedlot. Congress has currently restricted EPA from applying the rule to agricultural sources (subpart JJ), though future regulations may address this sector.

Summary

Based on Cascadia's observations, participants were interested in the effort to identify organics management strategies, received the consultant's presentation well, and had several questions and comments on the findings and scenarios. Most of the questions were answered during the meeting; the remaining questions addressed further details on feedstock availability including through a future diversion program, the costs of current organics management methods, and the cost of backhauling material. In addition, the community meeting appeared to serve as a networking event for the participants, which may create new opportunities as connections increase among feedstock generators, collectors, processors, and end users.

Participants did not express a preference for or opposition to any of the scenarios presented. Some participants raised issues about importing or exporting organic materials and about public acceptance of the cost of a new collection and processing method.

7. Recommendations and Next Steps

Based on the evaluation process, the three highest-ranking scenarios were **Local, Centralized Grinding** (Scenario D), **Local Niches** (Scenario A), and **Export by Material** (Scenario B). Local, Centralized Grinding (D) earned high ratings in the categories of *Collection*, *Transfer*, and *Overall* and scored well in the remaining categories. Local Niches (A) scored very well in the categories of *Collection*, *Transfer*, *Diversion*, and *Processing* and well in the *Overall* category. Export by Material Type (B) scored very well in the categories of *Diversion* and *Processing* and well in the remaining categories. Complete scoring matrices for each scenario are presented in *Appendix C. Evaluation Criteria Matrices*.

The three top-ranked organics management options all involve collecting residential yard trimmings and scrap wood and expanding mobile grinding for woody materials in rural areas. They differ in whether the yard trimmings and scrap wood are processed locally or exported out of the region and in whether food scraps are addressed.

Based on the priorities identified through the evaluation process and results of the evaluation, Cascadia recommends refining an organics management strategy based on the top three scenarios that can be implemented in stages.

In the **near term**, the system should be **moderately sized, easy to implement, low-cost, and low-risk**. Elements to set up immediately include the following:

- Enhancing **mobile chipping** of woody yard debris and commercial scrap wood in rural areas.
- Supporting **centralized grinding** of woody yard debris and scrap wood for mulch or boiler fuel.
- Fostering **home composting** through the Master Gardener and Master Recycler/Composter programs as well as offering resources such as low-cost bins or bin-construction workshops.
- Increasing **curbside collection of residential curbside leaves and grass** by franchised haulers (via voluntary subscription with reduced garbage costs, mandatory subscription, or universal service at embedded rates) with local composting or export to a low-cost composting facility nearby.
- Encouraging **private haulers and large commercial generators** to communicate with each other to make their own arrangements to handle organic materials for beneficial use.

In the **medium term**, the Tri-County area could **expand the system** through the following efforts:

- Maximizing the **diversion of yard trimmings**.
- Piloting a **commercial vegetative food scraps collection** program.
- Developing a **local composting and grinding facility**. Adding “local composting facility” to Wasco County’s existing *Needs and Issues Inventory List* would help support development of such a facility and help attract funding support. Federal grants and cost-share programs may help support such an effort. The Small Business Development Center at the Columbia Gorge College may be able to assist the development of a new facility.

- Securing a **long-term agreement** with out-of-area composting facility for yard trimmings and commercial food scraps. (Tip fees under long-term agreements tend to be lower than the gate fees that composting facilities charge customers who do not have long-term contracts.)
- Considering **modification of franchise and collection agreements** (as they come up for renewal or renegotiation) to share costs of organics collection across a broader rate base, rather than the current subscription model that has relatively low participation.

In the **longer term**, the Tri-County area could build a **comprehensive organics management system**:

- Developing infrastructure to **collect and process all types of residential and commercial organics**, including yard trimmings, scrap wood, food scraps of all types, and soiled paper.
- Potentially expanding the system to address organics outside the municipal solid waste stream, such as **forestry slash and agricultural residues**.

As a follow-up the January 2010 stakeholders' meeting, **creating a local working group of stakeholders** will help the region identify and advance local solutions that begin to capture the opportunities associated with improved management of organics. Potential stakeholders could include waste service providers, the local landfill owner, cities and counties, the state, Tri-County staff, neighboring counties, and interested processors. The group should draw on this study, Wasco County's previous *Wasteshed Recovery Plan Update 2007-2009*, and stakeholder input to clarify shared goals, identify challenges and solutions, and recommend strategies to the Tri-County program's Steering Committee. As the Tri-County Hazardous Waste and Recycling Program develops its detailed implementation strategy for organics management, the working group and the Steering Committee should return to and refine the evaluation criteria matrix to ensure the emerging plan best serves the Tri-County area's needs and priorities.

In January 2010, the Tri-County Hazardous Waste and Recycling Program issued a ***Request for Expression of Interest*** regarding organics management activities in the region, including current or potential producers (large suppliers of feedstock), processors, haulers (collectors and transporters), product sellers, and product users (wholesalers, retailers, and agricultural producers). *Appendix F* includes a copy of the Tri-County's *Request for Expression of Interest*. The Program will be evaluating those responses in the spring and may conduct follow-up efforts with stakeholders as part of the decision-making process on how to move forward with a selected strategy. A stepwise approach will enable the region to begin with lower-cost, low-risk, smaller-scale solutions first and expand the materials and quantities handled over time, building on the initial successes.

Appendix A. List of Materials and Definitions

This appendix describes and defines the categories of materials covered in the studies of municipal waste composition summarized in the report.

ORGANICS

1. **Food** means food material resulting from the processing, storage, preparation, cooking, handling, or consumption of food. Examples include discarded meat scraps, dairy products, egg shells, fruit or vegetable peels, and other food items. This type includes grape pomace and other processed residues or material from canneries, wineries, or other industrial sources.

2. **Leaves and Grass** means plant material, except woody material, from any public or private landscapes. Examples include leaves, grass clippings, and plants. This type does not include woody material or material from agricultural sources.

3. **Prunings and Trimmings** means woody plant material up to four inches in diameter from any public or private landscape. Examples include prunings, shrubs, and small branches with branch diameters that do not exceed four inches. This type does not include stumps, tree trunks, or branches exceeding four inches in diameter. This type does not include material from agricultural sources.

4. **Branches and Stumps** means woody plant material, branches, and stumps that exceed four inches in diameter from any public or private landscape.

5. **Agricultural Crop Residues** means plant material from agricultural sources. Examples include vegetable by products from farming, residual fruits, vegetables, and other crop remains after usable crop is harvested. This type does not include processed residues from canneries, wineries, or other industrial sources.

6. **Manures** means manure and soiled bedding materials from domestic, farm, or ranch animals. Examples include manure and soiled bedding from animal production operations, racetracks, riding stables, animal hospitals, and other sources.

7. **Textiles** means items made of thread, yarn, fabric, or cloth. Examples include clothes, fabric trimmings, draperies, and all natural and synthetic cloth fibers. This type does not include cloth-covered furniture, mattresses, leather shoes, leather bags, or leather belts.

8. **Tires** means vehicle tires. Examples include tires from trucks, automobiles, motorcycles, heavy equipments, and bicycles.

9. **Remainder/ Composite Organics** means organic material that cannot be put in any other type or subtype. This type includes items made mostly of organic materials but combined with other materials. Examples include leather items, cork, hemp rope, garden hoses, rubber items, hair, cigarette butts, diapers, feminine hygiene products, wood products (popsicle sticks and toothpicks), sawdust, and animal feces.

10. **MSW** means disposed municipal solid waste.

PAPER

11. **Unwaxed OCC/Kraft Paper Bags** means a paper product typically used for packaging and that has three layers. The center wavy layer is sandwiched between the two outer layers. It does not have any wax coating on the inside or outside. Examples include entire cardboard containers, such as shipping and moving boxes, computer packaging cartons, and sheets and pieces of boxes and cartons. This category also includes brown kraft paper bags and packaging paper.

12. **Newspaper** means paper used in newspapers. Examples include newspaper and glossy inserts, and all items made from newsprint, such as free advertising guides, election guides, plain news packing paper, stapled college schedules of classes, and tax instruction booklets.

13. **Mixed Recyclable Paper** means all recyclable paper with the exception of high grade paper. This category includes magazines and catalogs, phone books and directories, office paper, polycoated paper, computer paper, chipboard, boxboard, and groundwood paper. Other examples include continuous feed printer paper, colored photocopy and letter paper, envelopes, manila folders, junk mail, cereal/food boxes, milk cartons, ice cream containers, egg cartons, and soft-cover books.

14. **High Grade Paper** means uncolored bond, rag, or stationary grade paper. It may have colored ink on it. When the paper is torn, the fibers are white. Examples include white photocopy, white laser print, and letter paper.

15. **Compostable Paper** means paper that can be composted. Examples include pizza boxes, waxed cardboard boxes, fast food wrappers, paper towels and tissues, and paper cups and plates.

16. **Remainder/ Composite Paper** means non-recyclable/non-compostable paper items made mostly of paper but combined with large amounts of other materials such as plastic, glues, or foil. Examples include plastic-lined or metal handled take-out containers, hard cover books, carbon paper, and any other composite material containing primarily paper but mixed with metal or plastic parts.

PLASTIC

17. **PETE Containers** means clear or colored PETE (polyethylene terephthalate) bottles and containers. When marked for identification, they bear the number 1 in the center of the triangular recycling symbol and may also bear the letters PETE or PET. The color is usually transparent green, clear or amber. Examples include soft drink and water bottles, some liquor bottles, cooking oil bottles, and aspirin bottles, some food jars such as peanut-butter and pastry containers, oven-ready meal trays, some clamshells, and other packaging bearing the #1.

18. **HDPE Containers** means natural HDPE (high-density polyethylene) bottles and containers. This plastic can be cloudy white or colored. When marked for identification, it bears the number 2 in the triangular recycling symbol. Examples include milk jugs, water jugs, and some juice bottles, detergent bottles, some hair care product bottles, some margarine, cottage cheese, yogurt tubs, and 5 gallon buckets.

19. **Miscellaneous Plastic Containers** means plastic containers made of types of plastic other than HDPE (high-density polyethylene) or PETE (polyethylene terephthalate). Items may be made of PVC (polyvinyl chloride), LDPE (low-density polyethylene), PP (polypropylene), PS (polystyrene), or mixed resins. When marked for identification, these items bear the number 3, 4, 5, 6, or 7 in the triangular recycling symbol. Examples include food containers such as flexible and brittle yogurt cups, some margarine tubs, microwave food trays, clamshell-shaped fast food or muffin containers, shampoo bottles and vitamin bottles. This material does not include items made from EPS (expanded polystyrene) or "Styrofoam."

20. **Film Plastic** means all types of packaging and non-packaging film, whether clean or soiled. Examples include all grocery, shopping, and merchandise bags, bubble wrap and shrink wrap, agricultural film and any other packaging film used in a typically industrial manner.

21. **Remainder/ Composite Plastic** means plastic that cannot be put in any other type. This type includes items made mostly of plastic but combined with other materials. Examples include auto parts made of plastic attached to metal, plastic drinking straws, Styrofoam drinking cups, produce trays, meat and pastry trays, Styrofoam packing blocks, packing peanuts, or Styrofoam plates and bowls. Also includes plastic strapping, plastic lids, some kitchen ware, toys, new plastic laminate (e.g., Formica), vinyl, linoleum, plastic lumber, insulating foams, imitation ceramics, handles and knobs, plastic string (such as is used for hay bales), and plastic rigid bubble/foil packaging (as for medications).

METAL

22. **Tin/Steel Cans** means rigid containers made mainly of steel. These items will stick to a magnet and may be tin-coated. This type is used to store food, beverages, paint, and a variety of other household and consumer products. Examples include canned food and beverage containers, empty metal paint cans, empty spray paint and other aerosol containers, and bimetal containers with steel sides and aluminum ends.

23. **Major Appliances** means discarded major appliances of any color. These items are often enamel-coated. Examples include washing machines, clothes dryers, hot water heaters, stoves, and refrigerators. This type does not include electronics, such as televisions and stereos.

24. **Other Ferrous** means any iron or steel that is magnetic or any stainless steel item. This type does not include "tin/steel cans". Examples include structural steel beams, metal clothes hangers, metal pipes, stainless steel cookware, security bars, used oil filters, and scrap ferrous items.

25. **Aluminum Cans** means any food or beverage container made mainly of aluminum. Examples include aluminum soda or beer cans, and some pet food cans. This type does not include bimetal containers with steel sides and aluminum ends.

26. **Other Non-Ferrous** means any metal item, other than aluminum cans, that is not stainless steel and that is not magnetic. These items may be made of aluminum, copper, brass, bronze, lead, zinc, or other metals. Examples include aluminum window frames, aluminum siding, copper wire, shell casings, brass pipe, and aluminum foil.

27. **Remainder/ Composite Metal** means metal that cannot be put in any other type. This type includes items made mostly of metal but combined with other materials and items made of both ferrous metals and non-ferrous metal combined. Examples include small non-electronic appliances such as toasters and hair dryers, motors, insulated wire, and finished products that contain a mixture of metals, or metals and other materials, whose weight is derived significantly from the metal portion of its construction.

GLASS

28. **Recyclable Glass Bottles/ Containers** means clear and colored glass beverage and food containers. Examples include whole or broken clear soda, wine, and beer bottles, fruit juice bottles, peanut butter jars, and mayonnaise jars.

29. **Remainder/ Composite Glass** means glass that cannot be put in any other type. It includes items made mostly of glass but combined with other materials. Examples include flat glass as used in windows and table tops, Pyrex, Corningware, crystal and other glass tableware, mirrors, non-fluorescent light bulbs, and auto windshields.

CONSTRUCTION AND DEMOLITION (C&D)

30. **Concrete** means a hard material made from sand, gravel, aggregate, cement mix, and water. Examples include pieces of building foundations, concrete paving, and cinder blocks. This category also contains bricks means a black or brown, tar-like material mixed with aggregate used as a paving material.

31. **Asphalt Roofing** means roofing material made with layers of felt, asphalt, aggregates, and attached roofing tar and tar paper. Includes three-tab roofing and roofing materials normally used on flat/low pitched roofs and commercial buildings.

32. **Clean Wood Waste** means unpainted new or demolition dimensional lumber and engineered wood and pallets and crates. Includes materials such as 2 x 4s, 2 x 6s, 2 x 12s, plywood, particleboard, wafer board, oriented strand board, and other residual materials used for sheathing and related construction uses. Also includes intact or broken pallets and crates. May contain nails or other trace contaminants but not paint or stain.

33. **Other Wood Waste** means wood treated with preservatives, paints, or stains such as creosote, CCA and ACQ. This includes dimensional lumber and posts if treated, painted, stained or varnished wood. Also includes painted/stained cabinets, wooden furniture, railroad ties, and telephone poles.

34. **Gypsum Board** means painted or unpainted gypsum wallboard or interior wall covering made of a sheet of gypsum sandwiched between paper layers. Examples: This category includes used or unused, broken or whole sheets. Gypsum board may also be called sheetrock, drywall, plasterboard, gypboard, gyproc, or wallboard.

35. **Rock, Soil and Fines** means rock, gravel, stones, sand, soil, sand and similar naturally-occurring materials as well as any fine particles, or “fines,” that remain on the sorting table after all the materials that can practicably be removed have been sorted out.

36. **Remainder/ Composite C&D** means construction and demolition material that cannot be put in any other category. This category may include items from different categories combined, which would be very hard to separate. This category may also include demolition debris that is a *mixture* of materials such as non-porcelain sinks, synthetic counter tops, fiber or composite acoustic ceiling tiles, plate glass, wood, tiles, gypsum board, and aluminum scrap. Also includes carpeting and carpet padding, and fiberglass insulation.

OTHER

37. **HHW** means household hazardous material such as paint, vehicle and equipment fluids, used motor oil, as well as dry and wet cell batteries. Also includes household hazardous waste which if improperly put in the solid waste stream may present handling problems or other hazards, such as treated medical waste, pesticides, caustic cleaners, and fluorescent light bulbs.

38. **Industrial** means residual solids and semi-solids resulting from industrial processes. Examples include sewage sludge, water treatment sludge, paper pulp sludge, and ash.

39. **Bulky** means large hard to handle items that are not defined separately, including furniture, mattresses, and other large items. Examples include all sizes and types of furniture (if not 100% wood), mattresses, box springs, and base components.

40. **Remainder/ Composite Special Waste** means special waste that cannot be put in any other type. Examples include asbestos-containing materials, such as certain types of pipe insulation and floor tiles, auto fluff, auto-bodies, trucks, trailers, truck cabs, untreated medical waste/pills/hypodermic needles, and artificial fireplace logs.

41. **Mixed Residue** means material that cannot be put in any other type in the other categories. This type includes mixed residue that cannot be further sorted. Examples include clumping kitty litter and residual material from a materials recovery facility or other sorting process that cannot be put in any of the previous remainder/composite types.

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Appendix B. Detailed Waste Composition Data

List of Tables in Appendix B

Waste composition estimates in this memo were calculated using the following sources.

- Commercial waste composition data profiles for Oregon counties were modeled on data reflecting numbers of employees by industry group for 2009 as obtained from a business list service, as well as on composition data from over 900 samples of disposed waste from specific types of businesses previously conducted by Cascadia Consulting Group.
- Oregon self-haul and residential sector composition data were based on the "Rest of Oregon" profile in Oregon's 2002 *Statewide Waste Composition Study*.[20]
- Klickitat County waste profiles were based on samples from Yakima County for Washington's statewide waste characterization study that is currently being conducted by Cascadia Consulting Group for the Washington State Department of Ecology. Skamania County waste profiles were based on samples from Clark County, Washington, from the same study.
- Quantities for Oregon waste sectors were based on the sector ratios from Oregon's 2002 *Statewide Waste Composition Study* and on individual county tonnages for 2007.[21]
- Quantities for Washington county waste sectors were based on facility surveys conducted for the current Washington statewide waste characterization study as well as Washington landfill tonnage reports for 2007.[22]

[20] *2002 Oregon Solid Waste Characterization and Composition*. State of Oregon Department of Environmental Quality, Land Quality Division. April 20, 2004.
http://www.deq.state.or.us/lq/sw/disposal/wastecompositionstudy.htm
[21] Oregon landfill tonnages are available in the following report:
http://www.deq.state.or.us/lq/pubs/docs/sw/2007MRWGRatesReport.pdf
[22] Washington landfill tonnage report is available online at:
http://www.ecy.wa.gov/programs/swfa/solidwastedata/disposal/LandfillReports2007.pdf

Table 21. Detailed Waste Composition, Hood River County Residential Waste

Material	Tons	Pct.
Organics	**2,273.5**	**39.7%**
Food	1,334.1	23.3%
Leaves and Grass	549.9	9.6%
Prunings and Trimmings	118.6	2.1%
Branches and Stumps	1.7	0.0%
Agricultural Crop Residues	-	0.0%
Manures	-	0.0%
Textiles	171.3	3.0%
Tires	17.2	0.3%
Other/Remainder Composite Organics	80.8	1.4%
Paper	**1,504.2**	**26.3%**
Unwax OCC/Kraft paper bags	122.6	2.1%
Newspaper	177.6	3.1%
Mixed Recyclable Paper	738.4	12.9%
High Grade Paper	126.0	2.2%
Compostable Paper	252.2	4.4%
Other/Remainder Composite Paper	87.5	1.5%
Plastic	**668.5**	**11.7%**
PETE Containers	-	0.0%
HDPE Containers	-	0.0%
Misc. Plastic Containers	157.0	2.7%
Film Plastic	334.0	5.8%
Other/Remainder Composite Plastics	177.6	3.1%
Metal	**312.8**	**5.5%**
Tin/Steel Cans	102.5	1.8%
Major Appliances	-	0.0%
Other Ferrous	22.3	0.4%
Aluminum Cans	10.3	0.2%
Other Non-Ferrous	24.6	0.4%
Other/Remainder Composite Metal	152.9	2.7%
Glass	**200.5**	**3.5%**
Recyclable Glass Bottles/Containers	159.2	2.8%
Other/Remainder Composite Glass	41.2	0.7%
C&D	**264.6**	**4.6%**
Concrete	76.8	1.3%
Asphalt Paving	-	0.0%
Asphalt Roofing	0.6	0.0%
Clean Wood Waste	52.7	0.9%
Other Wood Waste	63.6	1.1%
Gypsum Board	2.3	0.0%
Rock, Soil and Fines	11.5	0.2%
Other/Remainder Composite C&D	57.3	1.0%
Other	**504.1**	**8.8%**
HHW	259.5	4.5%
Industrial	-	0.0%
Bulky	41.8	0.7%
Other/Remainder Composite Special Waste	-	0.0%
Mixed Residue	202.8	3.5%
Total	**5,728.2**	**100.0%**

Table 22. Detailed Waste Composition, Hood River County Commercial Waste

Material	Tons	Pct.
Organics	**5,188.9**	**35.6%**
Food	3,432.9	23.6%
Leaves and Grass	535.3	3.7%
Prunings and Trimmings	90.7	0.6%
Branches and Stumps	0.3	0.0%
Agricultural Crop Residues	-	0.0%
Manures	-	0.0%
Textiles	546.5	3.8%
Tires	60.3	0.4%
Other/Remainder Composite Organics	522.8	3.6%
Paper	**4,925.1**	**33.8%**
Unwax OCC/Kraft paper bags	961.0	6.6%
Newspaper	503.8	3.5%
Mixed Recyclable Paper	496.5	3.4%
High Grade Paper	537.3	3.7%
Compostable Paper	1,858.0	12.8%
Other/Remainder Composite Paper	568.5	3.9%
Plastic	**1,628.9**	**11.2%**
PETE Containers	81.2	0.6%
HDPE Containers	89.6	0.6%
Misc. Plastic Containers	90.5	0.6%
Film Plastic	723.7	5.0%
Other/Remainder Composite Plastics	644.0	4.4%
Metal	**735.4**	**5.0%**
Tin/Steel Cans	108.9	0.7%
Major Appliances	2.8	0.0%
Other Ferrous	242.4	1.7%
Aluminum Cans	27.2	0.2%
Other Non-Ferrous	29.2	0.2%
Other/Remainder Composite Metal	324.8	2.2%
Glass	**497.4**	**3.4%**
Recyclable Glass Bottles/Containers	388.2	2.7%
Other/Remainder Composite Glass	109.2	0.7%
C&D	**1,275.5**	**8.8%**
Concrete	79.6	0.5%
Asphalt Paving	21.7	0.1%
Asphalt Roofing	23.2	0.2%
Clean Wood Waste	619.8	4.3%
Other Wood Waste	194.6	1.3%
Gypsum Board	74.0	0.5%
Rock, Soil and Fines	79.9	0.5%
Other/Remainder Composite C&D	182.8	1.3%
Other	**319.6**	**2.2%**
HHW	62.2	0.4%
Industrial	5.1	0.0%
Bulky	57.1	0.4%
Other/Remainder Composite Special Waste	120.1	0.8%
Mixed Residue	75.1	0.5%
Total	**14,570.7**	**100.0%**

Table 23. Detailed Waste Composition, Hood River County Self-haul Waste

Material	Tons	Pct.
Organics	**1,205.5**	**18.6%**
Food	364.8	5.6%
Leaves and Grass	535.5	8.3%
Prunings and Trimmings	38.9	0.6%
Branches and Stumps	18.8	0.3%
Agricultural Crop Residues	-	0.0%
Manures	-	0.0%
Textiles	124.0	1.9%
Tires	27.9	0.4%
Other/Remainder Composite Organics	95.4	1.5%
Paper	**578.4**	**8.9%**
Unwax OCC/Kraft paper bags	152.5	2.4%
Newspaper	65.6	1.0%
Mixed Recyclable Paper	248.6	3.8%
High Grade Paper	42.8	0.7%
Compostable Paper	47.7	0.7%
Other/Remainder Composite Paper	21.1	0.3%
Plastic	**389.5**	**6.0%**
PETE Containers	-	0.0%
HDPE Containers	-	0.0%
Misc. Plastic Containers	44.1	0.7%
Film Plastic	107.1	1.7%
Other/Remainder Composite Plastics	238.2	3.7%
Metal	**394.0**	**6.1%**
Tin/Steel Cans	24.7	0.4%
Major Appliances	12.3	0.2%
Other Ferrous	72.7	1.1%
Aluminum Cans	2.6	0.0%
Other Non-Ferrous	23.4	0.4%
Other/Remainder Composite Metal	258.4	4.0%
Glass	**154.5**	**2.4%**
Recyclable Glass Bottles/Containers	35.7	0.6%
Other/Remainder Composite Glass	118.8	1.8%
C&D	**3,496.3**	**53.9%**
Concrete	401.2	6.2%
Asphalt Paving	-	0.0%
Asphalt Roofing	846.5	13.0%
Clean Wood Waste	459.6	7.1%
Other Wood Waste	423.2	6.5%
Gypsum Board	779.0	12.0%
Rock, Soil and Fines	159.7	2.5%
Other/Remainder Composite C&D	427.1	6.6%
Other	**273.3**	**4.2%**
HHW	42.8	0.7%
Industrial	-	0.0%
Bulky	111.0	1.7%
Other/Remainder Composite Special Waste	-	0.0%
Mixed Residue	119.4	1.8%
Total	**6,491.4**	**100.0%**

Table 24. Detailed Waste Composition, Wasco County Residential Waste

Material	Tons	Pct.
Organics	**2,533.7**	**39.7%**
Food	1,486.8	23.3%
Leaves and Grass	612.8	9.6%
Prunings and Trimmings	132.1	2.1%
Branches and Stumps	1.9	0.0%
Agricultural Crop Residues	-	0.0%
Manures	-	0.0%
Textiles	190.9	3.0%
Tires	19.2	0.3%
Other/Remainder Composite Organics	90.0	1.4%
Paper	**1,676.4**	**26.3%**
Unwax OCC/Kraft paper bags	136.6	2.1%
Newspaper	197.9	3.1%
Mixed Recyclable Paper	822.9	12.9%
High Grade Paper	140.4	2.2%
Compostable Paper	281.1	4.4%
Other/Remainder Composite Paper	97.5	1.5%
Plastic	**745.0**	**11.7%**
PETE Containers	-	0.0%
HDPE Containers	-	0.0%
Misc. Plastic Containers	174.9	2.7%
Film Plastic	372.2	5.8%
Other/Remainder Composite Plastics	197.9	3.1%
Metal	**348.6**	**5.5%**
Tin/Steel Cans	114.3	1.8%
Major Appliances	-	0.0%
Other Ferrous	24.9	0.4%
Aluminum Cans	11.5	0.2%
Other Non-Ferrous	27.5	0.4%
Other/Remainder Composite Metal	170.4	2.7%
Glass	**223.4**	**3.5%**
Recyclable Glass Bottles/Containers	177.5	2.8%
Other/Remainder Composite Glass	46.0	0.7%
C&D	**294.9**	**4.6%**
Concrete	85.5	1.3%
Asphalt Paving	-	0.0%
Asphalt Roofing	0.6	0.0%
Clean Wood Waste	58.7	0.9%
Other Wood Waste	70.9	1.1%
Gypsum Board	2.6	0.0%
Rock, Soil and Fines	12.8	0.2%
Other/Remainder Composite C&D	63.8	1.0%
Other	**561.8**	**8.8%**
HHW	289.2	4.5%
Industrial	-	0.0%
Bulky	46.6	0.7%
Other/Remainder Composite Special Waste	-	0.0%
Mixed Residue	226.0	3.5%
Total	**6,383.8**	**100.0%**

Table 25. Detailed Waste Composition, Wasco County Commercial Waste

Material	Tons	Pct.
Organics	**4,310.5**	**36.6%**
Food	2,848.2	24.2%
Leaves and Grass	428.5	3.6%
Prunings and Trimmings	83.1	0.7%
Branches and Stumps	0.0	0.0%
Agricultural Crop Residues	-	0.0%
Manures	-	0.0%
Textiles	402.6	3.4%
Tires	49.1	0.4%
Other/Remainder Composite Organics	498.9	4.2%
Paper	**3,933.8**	**33.4%**
Unwax OCC/Kraft paper bags	780.6	6.6%
Newspaper	392.2	3.3%
Mixed Recyclable Paper	380.6	3.2%
High Grade Paper	426.0	3.6%
Compostable Paper	1,496.5	12.7%
Other/Remainder Composite Paper	457.9	3.9%
Plastic	**1,209.2**	**10.3%**
PETE Containers	66.5	0.6%
HDPE Containers	74.6	0.6%
Misc. Plastic Containers	79.2	0.7%
Film Plastic	568.7	4.8%
Other/Remainder Composite Plastics	420.3	3.6%
Metal	**616.9**	**5.2%**
Tin/Steel Cans	98.8	0.8%
Major Appliances	3.0	0.0%
Other Ferrous	197.6	1.7%
Aluminum Cans	23.0	0.2%
Other Non-Ferrous	25.7	0.2%
Other/Remainder Composite Metal	268.8	2.3%
Glass	**383.7**	**3.3%**
Recyclable Glass Bottles/Containers	306.1	2.6%
Other/Remainder Composite Glass	77.6	0.7%
C&D	**1,095.3**	**9.3%**
Concrete	93.8	0.8%
Asphalt Paving	25.4	0.2%
Asphalt Roofing	32.3	0.3%
Clean Wood Waste	473.3	4.0%
Other Wood Waste	148.6	1.3%
Gypsum Board	67.8	0.6%
Rock, Soil and Fines	65.1	0.6%
Other/Remainder Composite C&D	189.0	1.6%
Other	**212.0**	**1.8%**
HHW	71.0	0.6%
Industrial	3.0	0.0%
Bulky	47.4	0.4%
Other/Remainder Composite Special Waste	40.6	0.3%
Mixed Residue	50.0	0.4%
Total	**11,761.4**	**100.0%**

Table 26. Detailed Waste Composition, Wasco County Self-haul Waste

Material	Tons	Pct.
Organics	**1,343.4**	**18.6%**
Food	406.6	5.6%
Leaves and Grass	596.8	8.3%
Prunings and Trimmings	43.4	0.6%
Branches and Stumps	21.0	0.3%
Agricultural Crop Residues	-	0.0%
Manures	-	0.0%
Textiles	138.2	1.9%
Tires	31.1	0.4%
Other/Remainder Composite Organics	106.3	1.5%
Paper	**644.6**	**8.9%**
Unwax OCC/Kraft paper bags	170.0	2.4%
Newspaper	73.1	1.0%
Mixed Recyclable Paper	277.1	3.8%
High Grade Paper	47.7	0.7%
Compostable Paper	53.2	0.7%
Other/Remainder Composite Paper	23.5	0.3%
Plastic	**434.1**	**6.0%**
PETE Containers	-	0.0%
HDPE Containers	-	0.0%
Misc. Plastic Containers	49.2	0.7%
Film Plastic	119.4	1.7%
Other/Remainder Composite Plastics	265.5	3.7%
Metal	**439.1**	**6.1%**
Tin/Steel Cans	27.5	0.4%
Major Appliances	13.7	0.2%
Other Ferrous	81.0	1.1%
Aluminum Cans	2.9	0.0%
Other Non-Ferrous	26.0	0.4%
Other/Remainder Composite Metal	287.9	4.0%
Glass	**172.2**	**2.4%**
Recyclable Glass Bottles/Containers	39.8	0.6%
Other/Remainder Composite Glass	132.4	1.8%
C&D	**3,896.4**	**53.9%**
Concrete	447.1	6.2%
Asphalt Paving	-	0.0%
Asphalt Roofing	943.4	13.0%
Clean Wood Waste	512.2	7.1%
Other Wood Waste	471.7	6.5%
Gypsum Board	868.1	12.0%
Rock, Soil and Fines	178.0	2.5%
Other/Remainder Composite C&D	476.0	6.6%
Other	**304.6**	**4.2%**
HHW	47.7	0.7%
Industrial	-	0.0%
Bulky	123.7	1.7%
Other/Remainder Composite Special Waste	-	0.0%
Mixed Residue	133.1	1.8%
Total	**7,234.3**	**100.0%**

Table 27. Detailed Waste Composition, Sherman County Residential Waste

Material	Tons	Pct.
Organics	**138.8**	**39.7%**
Food	81.4	23.3%
Leaves and Grass	33.6	9.6%
Prunings and Trimmings	7.2	2.1%
Branches and Stumps	0.1	0.0%
Agricultural Crop Residues	-	0.0%
Manures	-	0.0%
Textiles	10.5	3.0%
Tires	1.0	0.3%
Other/Remainder Composite Organics	4.9	1.4%
Paper	**91.8**	**26.3%**
Unwax OCC/Kraft paper bags	7.5	2.1%
Newspaper	10.8	3.1%
Mixed Recyclable Paper	45.1	12.9%
High Grade Paper	7.7	2.2%
Compostable Paper	15.4	4.4%
Other/Remainder Composite Paper	5.3	1.5%
Plastic	**40.8**	**11.7%**
PETE Containers	-	0.0%
HDPE Containers	-	0.0%
Misc. Plastic Containers	9.6	2.7%
Film Plastic	20.4	5.8%
Other/Remainder Composite Plastics	10.8	3.1%
Metal	**19.1**	**5.5%**
Tin/Steel Cans	6.3	1.8%
Major Appliances	-	0.0%
Other Ferrous	1.4	0.4%
Aluminum Cans	0.6	0.2%
Other Non-Ferrous	1.5	0.4%
Other/Remainder Composite Metal	9.3	2.7%
Glass	**12.2**	**3.5%**
Recyclable Glass Bottles/Containers	9.7	2.8%
Other/Remainder Composite Glass	2.5	0.7%
C&D	**16.2**	**4.6%**
Concrete	4.7	1.3%
Asphalt Paving	-	0.0%
Asphalt Roofing	0.0	0.0%
Clean Wood Waste	3.2	0.9%
Other Wood Waste	3.9	1.1%
Gypsum Board	0.1	0.0%
Rock, Soil and Fines	0.7	0.2%
Other/Remainder Composite C&D	3.5	1.0%
Other	**30.8**	**8.8%**
HHW	15.8	4.5%
Industrial	-	0.0%
Bulky	2.6	0.7%
Other/Remainder Composite Special Waste	-	0.0%
Mixed Residue	12.4	3.5%
Total	**349.7**	**100.0%**

Table 28. Detailed Waste Composition, Sherman County Commercial Waste

Material	Tons	Pct.
Organics	**291.2**	**36.2%**
Food	217.5	27.0%
Leaves and Grass	26.5	3.3%
Prunings and Trimmings	6.9	0.9%
Branches and Stumps	-	0.0%
Agricultural Crop Residues	-	0.0%
Manures	-	0.0%
Textiles	18.8	2.3%
Tires	4.2	0.5%
Other/Remainder Composite Organics	17.2	2.1%
Paper	**280.4**	**34.8%**
Unwax OCC/Kraft paper bags	47.6	5.9%
Newspaper	26.6	3.3%
Mixed Recyclable Paper	24.6	3.1%
High Grade Paper	25.7	3.2%
Compostable Paper	119.5	14.8%
Other/Remainder Composite Paper	36.5	4.5%
Plastic	**93.0**	**11.6%**
PETE Containers	7.8	1.0%
HDPE Containers	4.2	0.5%
Misc. Plastic Containers	6.9	0.9%
Film Plastic	44.0	5.5%
Other/Remainder Composite Plastics	30.2	3.8%
Metal	**35.2**	**4.4%**
Tin/Steel Cans	6.0	0.8%
Major Appliances	0.2	0.0%
Other Ferrous	13.0	1.6%
Aluminum Cans	2.2	0.3%
Other Non-Ferrous	1.5	0.2%
Other/Remainder Composite Metal	12.3	1.5%
Glass	**35.7**	**4.4%**
Recyclable Glass Bottles/Containers	29.5	3.7%
Other/Remainder Composite Glass	6.3	0.8%
C&D	**60.3**	**7.5%**
Concrete	6.1	0.8%
Asphalt Paving	1.0	0.1%
Asphalt Roofing	1.7	0.2%
Clean Wood Waste	26.5	3.3%
Other Wood Waste	8.3	1.0%
Gypsum Board	3.6	0.4%
Rock, Soil and Fines	3.5	0.4%
Other/Remainder Composite C&D	9.7	1.2%
Other	**9.1**	**1.1%**
HHW	1.9	0.2%
Industrial	0.1	0.0%
Bulky	2.3	0.3%
Other/Remainder Composite Special Waste	2.3	0.3%
Mixed Residue	2.5	0.3%
Total	**805.0**	**100.0%**

Table 29. Detailed Waste Composition, Sherman County Self-haul Waste

Material	Tons	Pct.
Organics	**73.6**	**18.6%**
Food	22.3	5.6%
Leaves and Grass	32.7	8.3%
Prunings and Trimmings	2.4	0.6%
Branches and Stumps	1.1	0.3%
Agricultural Crop Residues	-	0.0%
Manures	-	0.0%
Textiles	7.6	1.9%
Tires	1.7	0.4%
Other/Remainder Composite Organics	5.8	1.5%
Paper	**35.3**	**8.9%**
Unwax OCC/Kraft paper bags	9.3	2.4%
Newspaper	4.0	1.0%
Mixed Recyclable Paper	15.2	3.8%
High Grade Paper	2.6	0.7%
Compostable Paper	2.9	0.7%
Other/Remainder Composite Paper	1.3	0.3%
Plastic	**23.8**	**6.0%**
PETE Containers	-	0.0%
HDPE Containers	-	0.0%
Misc. Plastic Containers	2.7	0.7%
Film Plastic	6.5	1.7%
Other/Remainder Composite Plastics	14.5	3.7%
Metal	**24.1**	**6.1%**
Tin/Steel Cans	1.5	0.4%
Major Appliances	0.8	0.2%
Other Ferrous	4.4	1.1%
Aluminum Cans	0.2	0.0%
Other Non-Ferrous	1.4	0.4%
Other/Remainder Composite Metal	15.8	4.0%
Glass	**9.4**	**2.4%**
Recyclable Glass Bottles/Containers	2.2	0.6%
Other/Remainder Composite Glass	7.3	1.8%
C&D	**213.4**	**53.9%**
Concrete	24.5	6.2%
Asphalt Paving	-	0.0%
Asphalt Roofing	51.7	13.0%
Clean Wood Waste	28.1	7.1%
Other Wood Waste	25.8	6.5%
Gypsum Board	47.5	12.0%
Rock, Soil and Fines	9.7	2.5%
Other/Remainder Composite C&D	26.1	6.6%
Other	**16.7**	**4.2%**
HHW	2.6	0.7%
Industrial	-	0.0%
Bulky	6.8	1.7%
Other/Remainder Composite Special Waste	-	0.0%
Mixed Residue	7.3	1.8%
Total	**396.2**	**100.0%**

Appendix C. Evaluation Criteria Matrices

Scenario A. Local Niches

	WEIGHTING	SCORE	WEIGHTED SCORE
Diversion			**72**
Amount diverted from disposed municipal solid waste	13	4	56
Ability to include materials other than municipal solid waste	5	4	16
Collection			**90**
Operating costs	12	5	60
Service to population centers versus rural areas	6	5	30
Transfer			**90**
Distance to processor	10	5	50
Import feedstock from outside region	5	5	25
Export feedstock from region	3	5	15
Processing			**155**
Technical feasibility and track record in the U.S.	10	5	50
Operational flexibility	7	5	35
Ability to produce high-quality end products	5	5	25
Capital costs	5	1	5
Operating costs	10	3	30
Local jobs creation	2	5	10
Environmental Impact			**36**
Greenhouse gas emissions impact	8	2	16
Other environmental impacts	10	2	20
Overall			**150**
Financial feasibility	15	4	60
Time and ease of implementation	12	2	24
Environmental impacts	15	2	30
Degree of public sector risk	12	3	36
TOTAL SCORING			**593**

Scenario B. Export by Material Type

	WEIGHTING	SCORE	WEIGHTED SCORE
Diversion			**90**
Amount diverted from disposed municipal solid waste	13	5	70
Ability to include materials other than municipal solid waste	5	5	20
Collection			**54**
Operating costs	12	2	24
Service to population centers versus rural areas	6	5	30
Transfer			**58**
Distance to processor	10	3	30
Import feedstock from outside region	5	5	25
Export feedstock from region	3	1	3
Processing			**165**
Technical feasibility and track record in the U.S.	10	5	50
Operational flexibility	7	4	28
Ability to produce high-quality end products	5	5	25
Capital costs	5	4	20
Operating costs	10	4	40
Local jobs creation	2	1	2
Environmental Impact			**52**
Greenhouse gas emissions impact	8	4	32
Other environmental impacts	10	2	20
Overall			**174**
Financial feasibility	15	2	30
Time and ease of implementation	12	4	48
Environmental impacts	15	4	60
Degree of public sector risk	12	3	36
TOTAL SCORING			**593**

Scenario C. General Export

	WEIGHTING	SCORE	WEIGHTED SCORE
Diversion			**90**
Amount diverted from disposed municipal solid waste	13	5	70
Ability to include materials other than municipal solid waste	5	5	20
Collection			**36**
Operating costs	12	2	24
Service to population centers versus rural areas	6	2	12
Transfer			**25**
Distance to processor	10	0	0
Import feedstock from outside region	5	5	25
Export feedstock from region	3	0	0
Processing			**171**
Technical feasibility and track record in the U.S.	10	5	50
Operational flexibility	7	3	21
Ability to produce high-quality end products	5	5	25
Capital costs	5	5	25
Operating costs	10	5	50
Local jobs creation	2	0	0
Environmental Impact			**34**
Greenhouse gas emissions impact	8	3	24
Other environmental impacts	10	1	10
Overall			**123**
Financial feasibility	15	0	0
Time and ease of implementation	12	5	60
Environmental impacts	15	1	15
Degree of public sector risk	12	4	48
TOTAL SCORING			**479**

Scenario D. Local, Centralized Grinding

	WEIGHTING	SCORE	WEIGHTED SCORE
Diversion			**64**
Amount diverted from disposed municipal solid waste	13	4	56
Ability to include materials other than municipal solid waste	5	2	8
Collection			**90**
Operating costs	12	5	60
Service to population centers versus rural areas	6	5	30
Transfer			**90**
Distance to processor	10	5	50
Import feedstock from outside region	5	5	25
Export feedstock from region	3	5	15
Processing			**140**
Technical feasibility and track record in the U.S.	10	5	50
Operational flexibility	7	1	7
Ability to produce high-quality end products	5	3	15
Capital costs	5	4	20
Operating costs	10	4	40
Local jobs creation	2	4	8
Environmental Impact			**54**
Greenhouse gas emissions impact	8	3	24
Other environmental impacts	10	3	30
Overall			**231**
Financial feasibility	15	5	75
Time and ease of implementation	12	4	48
Environmental impacts	15	4	60
Degree of public sector risk	12	4	48
TOTAL SCORING			**669**

Scenario E. Status Quo

	WEIGHTING	SCORE	WEIGHTED SCORE
Diversion			**26**
Amount diverted from disposed municipal solid waste	13	1	14
Ability to include materials other than municipal solid waste	5	3	12
Collection			**60**
Operating costs	12	5	60
Service to population centers versus rural areas	6	0	0
Transfer			**64**
Distance to processor	10	3	30
Import feedstock from outside region	5	5	25
Export feedstock from region	3	3	9
Processing			**146**
Technical feasibility and track record in the U.S.	10	4	40
Operational flexibility	7	2	14
Ability to produce high-quality end products	5	3	15
Capital costs	5	5	25
Operating costs	10	5	50
Local jobs creation	2	1	2
Environmental Impact			**48**
Greenhouse gas emissions impact	8	1	8
Other environmental impacts	10	4	40
Overall			**207**
Financial feasibility	15	5	75
Time and ease of implementation	12	5	60
Environmental impacts	15	4	60
Degree of public sector risk	12	1	12
TOTAL SCORING			**551**

Scenario F. Energy Recovery—Anaerobic Digestion

	WEIGHTING	SCORE	WEIGHTED SCORE
Diversion			**86**
Amount diverted from disposed municipal solid waste	13	5	70
Ability to include materials other than municipal solid waste	5	4	16
Collection			**18**
Operating costs	12	1	12
Service to population centers versus rural areas	6	1	6
Transfer			**80**
Distance to processor	10	5	50
Import feedstock from outside region	5	3	15
Export feedstock from region	3	5	15
Processing			**62**
Technical feasibility and track record in the U.S.	10	1	10
Operational flexibility	7	1	7
Ability to produce high-quality end products	5	5	25
Capital costs	5	0	0
Operating costs	10	1	10
Local jobs creation	2	5	10
Environmental Impact			**70**
Greenhouse gas emissions impact	8	5	40
Other environmental impacts	10	3	30
Overall			**96**
Financial feasibility	15	1	15
Time and ease of implementation	12	1	12
Environmental impacts	15	3	45
Degree of public sector risk	12	2	24
TOTAL SCORING			**412**

Scenario G. Energy Recovery—Emerging Technologies for MSW

	WEIGHTING	SCORE	WEIGHTED SCORE
Diversion			**90**
Amount diverted from disposed municipal solid waste	13	5	70
Ability to include materials other than municipal solid waste	5	5	20
Collection			**90**
Operating costs	12	5	60
Service to population centers versus rural areas	6	5	30
Transfer			**54**
Distance to processor	10	3	30
Import feedstock from outside region	5	3	15
Export feedstock from region	3	3	9
Processing			**47**
Technical feasibility and track record in the U.S.	10	3	30
Operational flexibility	7	0	0
Ability to produce high-quality end products	5	1	5
Capital costs	5	0	0
Operating costs	10	1	10
Local jobs creation	2	1	2
Environmental Impact			**24**
Greenhouse gas emissions impact	8	3	24
Other environmental impacts	10	0	0
Overall			**15**
Financial feasibility	15	1	15
Time and ease of implementation	12	0	0
Environmental impacts	15	0	0
Degree of public sector risk	12	0	0
TOTAL SCORING			**320**

Scenario H. Energy Recovery—Non-MSW Sources

	WEIGHTING	SCORE	WEIGHTED SCORE
Diversion			**34**
Amount diverted from disposed municipal solid waste	13	1	14
Ability to include materials other than municipal solid waste	5	5	20
Collection			**66**
Operating costs	12	3	36
Service to population centers versus rural areas	6	5	30
Transfer			**54**
Distance to processor	10	3	30
Import feedstock from outside region	5	3	15
Export feedstock from region	3	3	9
Processing			**127**
Technical feasibility and track record in the U.S.	10	5	50
Operational flexibility	7	1	7
Ability to produce high-quality end products	5	5	25
Capital costs	5	1	5
Operating costs	10	3	30
Local jobs creation	2	5	10
Environmental Impact			**54**
Greenhouse gas emissions impact	8	3	24
Other environmental impacts	10	3	30
Overall			**135**
Financial feasibility	15	2	30
Time and ease of implementation	12	2	24
Environmental impacts	15	3	45
Degree of public sector risk	12	3	36
TOTAL SCORING			**470**

Appendix D. List of Interviewees

Cascadia interviewed the following key contacts in the organics collection, transportation, processing, and regulatory sectors.

Stan Anderson, Bear Mountain Forest Products
Denise Bartlett, Cedar Grove Composting
Larry Calkins, Oregon Department of Environmental Quality Air Quality Program (Eastern Region)
Scott Campbell, West Van Materials Recovery Center (Waste Connections in Vancouver)
Gary Collins, SDS Lumber Company (marine supervisor)
The Dalles Disposal staff
Russ Davis, Organix (Three Mile Canyon Farm Compost Facility, Skyridge Farm Compost Facility)
Lissa Druback, Oregon Department of Environmental Quality Solid Waste Division (Eastern Region)
Braun Enterprises staff (trucking company)
Jennifer Erickson, Metro
Bill Fashing, Hood River Economic Development
Craig Ferguson, SDS Lumber Company
Marco Gonzales, Waste Management of Spokane
Phil Graham, Recology
Tanya Gray, City of Vancouver Solid Waste Services
Charlie Landman, Oregon Department of Environmental Quality Solid Waste Division
Kevin Liburdy, City of Hood River
Brian Litt, Columbia River Gorge Commission
Jeff Logosz, local business owner
Pierce Louis, entrepreneur
Bruce Lumper, Oregon Department of Environmental Quality Solid Waste Division (Eastern Region)
Brian May, Processing and Recovery Center (Allied)
Mike McHenry, Pendleton Transfer Station Compost Facility (Pendleton Sanitary Service)
Maui Meyer, Hood River County Commissioner
Rob Nielsen, Waste Connections Regional Manager
Babe O'Sullivan, City of Portland Office of Sustainable Development
Les Perkins, Hood River County Commissioner
Derek Pohle, Grant County, Washington
Hood River Garbage Service staff
Mel's Sanitary Service staff
Greg Schoenbachler, Silver Spring Organics (Waste Connections)
David Skakel, Tri-County Hazardous Waste & Recycling Program
Karen Skiles, City of The Dalles Public Works Department
Marni Solheim, Washington State Department of Ecology
Cheryl Stewart, Columbia Gorge Organic Fruit Compost Facility
Malcolm Stickley, Clackamas Compost Products
Rick Trumbull, Quality Compost
Pete Varberg, Oregon Cherry Growers Association
Brian Wilkins, Columbia Ridge Landfill
Josh Willis, Burlington Northern Santa Fe Railway
Kris Zorza, D&Z Grinding

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Appendix E. *Wasteshed Recovery Plan Update 2007-2009*

This appendix includes a verbatim excerpt from Wasco County's *Wasteshed Recovery Plan Update 2007-2009* (published October 2007) identifying barriers to increased recovery of yard trimmings in the area.

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Wasco County Wasteshed Recovery Plan Update

2007—2009

(Excerpted Version—relating only to yard debris)

Submitted by
Pat Bozanich
Tri-County Hazardous Waste & Recycling Program Manager
October 18, 2007

Barriers to Increased Yard Debris Recovery

Rural backyard burning
Most rural customers who do not hire out their gardening services burn their yard debris. This is an on-site solution that does not require a truck or out-of-pocket expense. Increased lot sizes often mean that rural yard waste has more woody waste and less grass waste than urban debris. This results in larger volumes and less weight than urban waste which means higher transportation costs per ton.

Disposal fees
At TDD transfer station yard debris receives a $5.33 discount over trash for a level pickup load (up to 3 cubic yards), but the cost is still $16.80 load. This fee serves as a disincentive for those who can burn their debris.

Perceived curbside participation penalty
Although there is weekly, curbside, yard debris pick-up in The Dalles, it is on a subscription-only basis and involves an additional monthly fee. No curbside yard debris collection is available in the rest of the county.

Hauled to Metro region
Yard debris is not composted in the local area. It is hauled to the Metro region for processing. This is an expensive and inefficient system.

Lack of collection and storage space
The Dalles Disposal transfer station has limited space for collecting yard debris, as does the Northern Wasco Landfill.

Tub grinders expensive to own and maintain
Pre-chipping debris before hauling to Metro region would decrease transportation costs, but would require additional space and capital investment.

Yard Debris Recovery Strategies

Backyard burning
Many urban jurisdictions have banned backyard burning: some as a way to address air pollution problems, others to encourage yard debris recycling programs. Banning backyard burning in a rural area is a much more complex issue. It would not be prudent to institute a burn ban unless feasible, low-cost alternatives were already in place.

Perceived curbside participation penalty
Only 6% of The Dalles residents participate in the curbside yard debris program. This means two things. It is an expensive and inefficient program to operate, and it is not diverting much material from the waste stream.

Many jurisdictions provide curbside yard debris recycling to all residents and build the program cost into the rate base. Participation in these programs is higher than in subscription-based programs because citizens do not perceive that there is a

participation penalty and they tend to feel that since they are paying for it, they should use it. More participants mean more cost-effective service (better truck and driver utilization) and more diversion from the waste stream.

Disposal fees
Material hauled to Metro region
Lack of collection and storage space
Tub grinders are expensive to own and maintain
Metro area composting programs may be reaching capacity

Hood River Garbage accepts household yard debris for free on Wednesdays. They have a much higher yard debris recycling rate than TDD. However, the debris is hauled to the Metro area for composting and increased fuel prices are threatening the continuation of that program. The drive from Wasco County is even longer. A free yard debris day at The Dalles Disposal would increase the amount of material received, but would not deal with a lack of storage space or the ability to grind material to increase transport efficiency. The same constraints presently apply to absorbing significant increases in The Dalles curbside program.

The ideal solution would be to have a local, commercial composting operation that could use our material. We briefly explored the option of starting a composting operation, but quickly ran into issues involving siting, cost, and expertise.

Possible yard debris recovery solutions

Increasing the number of home composters would decrease the waste stream without putting additional stress on the present yard debris infrastructure. The OSU Master Gardener Program started and helps staff the Hood River compost demonstration site. Wasco County also has an active Master Gardener Program. The Master Recycler/Composter Program may also produce compost enthusiasts who will help with such an educational effort.

As noted earlier, rural yard debris tends to include more limbs and less grass than urban programs. Some method of helping residents chip woody waste would improve the opportunity to home compost.

Establishing a composting demonstration site in northern Wasco County, and improving home composting education in the county presently look like the most cost-effective methods for handing yard debris waste. Increasing participation in The Dalles curbside yard debris program by switching from a subscription-based program and spreading costs over the rate base might prove to be a good choice in 2009 if we are still short of our goal. A decrease in fuel prices or the establishment of a local commercial composing operation would make this option more appealing. We should do what we can to encourage the development of a local commercial composting facility.

TDD currently offers free yard debris drop-off during the month of April and during one week in October—both of which are prime yard debris generation periods. These opportunities are not well publicized. Increasing promotion of these opportunities

could substantially improve participation, but as noted earlier, there are physical constraints at TDD that argue for moving with some caution in this direction.

Yard Debris Waste

Improve home composting education effort

Partner with Master Gardeners and others to develop a home composting demonstration site.

Create brochures and other educational resources.

Investigate a roving chipper program to help encourage home composting. Master Gardeners and Master Recyclers could help with education efforts, demonstration site development and classes. Materials for site development could be donated by local businesses.

Encourage the development of regional commercial composting facility

Get listed on the County Needs and Issues Inventory list(s)

No rate impact

Appendix F. Tri-County *Request for Expression of Interest (RFI)*

This appendix includes a copy of the Tri-County Hazardous Waste & Recycling Program's *Request for Expression of Interest* (RFI), issued in 2010 to seek expressions of interest from qualified vendors and identify any parties interested in providing solutions for managing organic materials from the five-county area of the Columbia Gorge (Hood River, Sherman, Wasco, Klickitat, and Skamania counties).

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Tri-County
Hazardous Waste & Recycling Program

Request for Expression of Interest (RFI)

Organic Materials Management

Tri-County Hazardous Waste & Recycling Program is seeking *Expressions of Interest* from qualified vendors and others with expertise in design, construction and operation of organic waste processing, composting, anaerobic digestion and or other beneficial re-use of organic materials from municipal waste streams, agricultural settings or forests, or otherwise interested in the removal or acquisition of same. The purpose of this request is to gather information to identify any parties interested in providing solution(s), either in part or in total, for managing organic materials from the five-county area of the Columbia Gorge (Hood River, Wasco, Sherman, Klickitat, and Skamania counties). Our program is not presently interested in owning or operating any facility relating to organics management. Whereas, we issue this Request in order to catalyze action in that regard.

This is not a solicitation for products or services

Information that any interested party wishes to submit will be done so voluntarily and with the understanding that this RFI is for information gathering purposes only; this is not a formal solicitation. Interested parties shall declare their interest individually by detailing the following:

Company name:
Contact information:

* Check any of these categories that apply to your proposal:

- □ Producer (of organic waste)
- □ Processor (composter, waste-to-energy, vermin-composting, etc…)
- □ Transporter (deliver of organic material to processing site)
- □ End-product seller (sell beneficial bi-product such as compost, worms, energy, etc…)
- □ End-product user (wholesalers, retailers, agricultural producers, etc...)

1. Describe your proposal in general (limit to 4 pages)
2. Describe project readiness (limit to 1 page)
3. Describe your needs or any impediments to your moving forward (limit to 1 page)

Next Steps

Send completed *Expression of Interest (*and any supporting documents*)* to:
Tri-County Hazardous Waste & Recycling Program
Attention: David Skakel
419 E. Seventh Street
The Dalles, Oregon 97058-2676
davids@co.wasco.or.us
(541)-506-2632