



County-Wide Solid Waste System Feasibility Study & Site Analysis



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Presentation to the
Marion County Solid Waste Management Advisory Committee
December 12, 2019



Marion County Integrated Solid Waste Program

County 2017
Recovery Rate
49.1%

One of highest
in Oregon

- Energy-from-Waste Facility
- Marion Resource Recovery Facility
- Salem-Keizer Transfer Station
- North Marion County Disposal Facility
- Brown's Island Demolition Waste Landfill
- Garten Foundation

2025 Goal

64%

GBB

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50-Year Projections: Population / Waste Stream

	Population	Waste Generation (tons)
2019	341,217	330,141
2020	350,125	342,213
2030	388,420	379,643
2040	421,508	411,983
2050	453,978	443,720
2060	488,126	477,096
2070	522,899	511,084



- ✓ Aggressive population growth
- ✓ Projections factored into study's system needs & recommendations

• Population: Estimated from the 2017 Population Research Center Report and US Census data.
 • Waste Generation: Estimated from data found in the MCES Category Summary Verification for GBB, provided by Marion County Public Works.



Status of County's Programs

State Requirements		Status of Marion County's Programs	
A	Provide curbside recycling container	✓	
B	Provide weekly curbside recycling	✗	Every other week
C	Expanded recycling education & promotion program	✓	
D	Provide multi-family recycling to apartment complexes that request it	✗	
E	Curbside yard debris collection is available	✓	For cities above 4,000 in population
F	Recycling is available to businesses and schools	✓	
G	Recycling depot available for every 25,000 residents	✓	For cities above 4,000 in population
H	Weight based collection rates	✗	
I	Food composting /anaerobic digestion available for businesses	✓	
J	NEW: Require businesses generating 4+ cubic yards/week of garbage to have recycling program in place	✗	
K	NEW: Curbside food composting /anaerobic digestion available for residents	✓	For cities above 4,000 in population
L	NEW: Cities require recycling program for construction/demolition	✗	
M	NEW: Cities require food waste program for large generators	✗	



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Assets Evaluation

Covanta Energy-from-Waste Facility



- Opened in March 1987
- 187,000 TPY capacity
- 168,348 tons handled in 2019
- Processes most of County's MSW
- Facility in good shape
- Efficient/environmentally safe technology for medical waste

Covanta EfWF Vehicle Data from 2016-2019					
Description		2016	2017	2018	2019
Tons	Route Trucks	99,497	90,944	108,047	107,840
	Transfer Stations	38,690	37,336	13,731	242
	Drop Boxes	33,196	30,990	36,076	34,690
	Supplemental Waste	4,779	6,102	7,068	6,185
	Medical Waste	1,110	6,958	10,073	11,650
	Liquid Waste	-	-	365	4,824
	MRRF Residue	4,694	45	-	2,849
	Other	416	115	85	68
	Total Tons	182,381	172,491	175,446	168,348
	Vehicles	Total Vehicles	23,019	22,533	24,874
Tons per Vehicle		7.92	7.66	7.05	7.00

Assets Evaluation

North Marion Recycling/Transfer Station



- Owned/operated by County
- Serving northern portion of County
- Waste dumped into drop boxes sent to MRRF
- Ash mono-fill and old MSW landfill
- Areas for improvements
- Tonnage increased 65% in 3 years

North Marion Transfer Station Tonnage and Vehicle Data from 2016 to 2019					
Description		2016	2017	2018	2019
Tons	Public	8,917	10,459	12,704	15,823
	Contractors	2,513	2,696	3,102	4,177
	Yard Debris	866	970	1,100	863
	Industrial	368	193	5	23
	Other	1	15	19	3
	Total Tons	12,665	14,333	16,927	20,889
Vehicles	Total Vehicles	29,209	31,000	35,726	40,268
	Tons per Vehicle	0.43	0.46	0.47	0.52

Assets Evaluation

Brown's Island Demolition Waste Landfill



- Owned/operated by County
- Permitted for inert demo waste
- 10 to 14 landfill life remaining
- Proximity to Willamette River potential liability
- Access road prone to flooding
- Also composting operation

Brown's Island Demolition Tonnage and Vehicle Data 2016-2019					
Description		2016	2017	2018	2019
Tons	C&D	6,611	27,828	32,379	23,716
	Sheetrock	1,848	1,925	995	-
	Asbestos	5	6	5	9
	Other C&D	28	51	23	36
	Total Tons	8,493	29,809	33,403	23,761
Vehicles	Total Vehicles	7,997	8,838	10,465	8,674
	Tons per Vehicle	1.06	3.37	3.19	2.74

Brown's Island Yard Waste Tonnage and Vehicle Data 2016 – 2019					
Description		2016	2017	2018	2019
Tons	Yard Debris – Govt	2,017	1,809	1,867	1,464
	Yard Debris – TS	863	875	888	598
	Wood Chips	891	1,041	923	257
	Other	50	57	42	93
	Total Tons	3,821	3,783	3,719	2,412
Vehicles	Total Vehicles	2,661	3,093	2,996	2,369
	Tons per Vehicle	1.44	1.22	1.24	1.02

Assets Evaluation

Salem-Keizer Recycling & Transfer Station



- Owned by Republic and operated under franchise agreement expiring in 2022
- Full range of services
- Household hazardous facility
- 600 customers/day
- Convenient site with critical role
- Number of issues and deteriorating structures

Salem-Keizer Recycling and Transfer Station Tonnage and Vehicle Data from 2016 to 2019

Description		2016	2017	2018	2019
Tons	Public	26,038	29,683	33,647	36,868
	Contractor	9,240	10,416	11,030	12,043
	Yard Debris	2,995	2,876	2,866	2,648
	Wood	892	990	473	344
	Route Trucks	700	732	696	-
	Industrial	17	32	42	19
	Other	13	14	18	16
	Total Tons	39,894	44,743	48,771	51,938

Vehicles	Total Vehicles	108,017	114,257	127,616	137,077
	Tons per Vehicle	0.37	0.39	0.38	0.38

Assets Evaluation

Marion Resource Recovery Facility



- Opened in 2000 - 20-year franchise agreement
- Operated by cooperative of the 8 franchised haulers
- Receives material from 11 locations; 73% from 4
- Key component of system
- Not designed to be central processing center
- Plans for new facility

MRRF Tonnage Data 2016 – 2019				
Description	2016*	2017	2018	2019
Reported MRRF Total	62,097	149,425	158,849	180,503
Outbound Reported Total	61,247	148,395	168,479	179,703
<i>Commingled Recyclables</i>	5,793	18,674	17,195	13,127



Assets Evaluation

Garten Services



- Non-profit - Materials Recovery Facility
- Processes paper, cardboard, plastics, aluminum, steel metals & electronics
- 100 tons per day total throughput capabilities
- Operating near full capacity
- Material taken to Garten decreased in past 3 years for unknown reasons

MRRF Commingled Tonnage by Year

	2017	2018	2019
Commingle - Pioneer – Direct	4,927	4,360	4,350
Commingle – Garten	11,856	9,696	6,491
Commingle - Pioneer + Rockwest	8,810	7,773	8,999
Total	25,593	21,829	19,840

Assets Evaluation

External Sites

External sites must be considered as Marion County plans for future

Issues faced by external sites:

- ✓ Contamination
- ✓ Limited landfill capacity
- ✓ Increases waste streams
- ✓ Changes to Portland Metro Code

Pacific Region Compost

- Wood and yard waste in mid-Willamette Valley
- Processes 104,000 tons/year in surrounding counties
- Largest organics facility in Oregon

Recology Aumsville

- **Recology:**
 - Collects and processes municipal solid waste
 - 15 transfer stations, 12 MRFs, 9 organics facilities, 3 landfills, renewable energy
 - Largest organics compost facility by volume in USA
- **Recology Aumsville**
 - 12 years of operations
 - 20,000 tons per year of yard trimming, municipal organics, land clearing material

Coffin Butte Landfill

- Accepts waste from 12 western Oregon counties
- Reported capacity = 36 years
- Most waste from Marion County



Assets Evaluation

External Sites

Riverbend Landfill

- Subtitle D landfill in McMinnville, Yamhill County
- Accepts MSW, industrial waste & C&D
- 87-acre; 17 acres capped; 26 acres to be capped soon
- Court ruled against 29-acre expansion

Portland MRFs

- 7 MRFs operating in Portland and southwest Washington
- MRRF reported taking Marion County source-separated recyclables to 2 of those MRFs

Incoming materials from outside the County (not including the EfWF Facility)

- All County facilities receive materials from outside of County
- Little under 20% of tonnage received is from out-of-County



System Improvement Priorities

Find best value, best service for residents & businesses

Follow state requirements

Expand existing facilities where efficient

Consider new sites/campus concept

Value decisions that advance flexible solutions

Prioritize recession-proof, durable options

Emerging Technologies

Many options
to evaluate
under varying
potential
commercial
arrangements

Mixed Waste - Mechanical Biological Treatment

- Beneficial with low recycling rates, zero waste targets & landfill bans on organics
- Flexibility to adapt to market requirements
- Lower quality of recovered recyclables; High capital / operating costs

Mixed Waste Composting and Anaerobic Digestion

- Composting: months
- Anaerobic digestion: Days/weeks; Similar end product regardless of technology

Waste-to-Biofuels

- Can be used for energy in a variety of applications
- End use determines amount of processing and cleaning the biofuel requires

Chemical Recycling of Plastic Waste

- New solutions targeting plastic waste unsuitable for traditional methods
- Experimental phase – not scaled yet

Conversion to Electricity

- Simplest end use for biogas



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Materials Management Campus



Image courtesy of the European Parliament

WHAT WE DO NOW

KENT COUNTY
DEPARTMENT OF PUBLIC WORKS
PROCESSES OVER
525,000 TONS
= 1 BILLION LBS
OF WASTE EACH YEAR

6% METAL 2% GLASS

13% PLASTIC

22% PAPER

23% OTHER

34% ORGANICS

ONLY 6-8% IS RECYCLED

WHAT WE *COULD* BE DOING

OUR GOAL: REDUCE LANDFILL WASTE
20% by 2020 | 90% by 2030

250-ACRE SUSTAINABLE BUSINESS PARK

REUSED
RECYCLED
CONVERTED

~75% of KENT COUNTY waste can be:

POTENTIAL USES:

- COMPOST: soil for farms
- WASTE CONVERSION: plastic flake | aggregate
- REUSE & REPURPOSE: salvage
- ENERGY RECOVERY: biogas | electricity | fuel pellets | biofuels

Potential Public, Private and Nonprofit Partners of the Proposed Sustainable Business Park

- MANUFACTURERS
- AGRICULTURE
- EDUCATION & RESEARCH
- RECREATION & HEALTH
- STARTUPS & ENTREPRENEURS

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Recommendations



1 - Initiate Contingency Planning



2 - Increase Transfer Capacity



3 – Take Administrative Action regarding Existing Authority for C&D Waste Recycling



4 - Evaluate Materials Management Campus Option



5 - Continue with Private Sector Composting Capacity

Existing Facilities Improvements

✓ Functionality of current facilities can be improved



Energy-from-Waste Facility

- Capacity is set
- More garbage will go to landfill when MSW increases
- Short-term solution because of age

✓ Additional infrastructures are needed to handle waste from population growth



Marion Resource Recovery Facility

- Expansion + new equipment will allow processing of more material
- Limited to C&D



Salem-Keizer Recycling & Transfer Station

- Improvement to increase safety and easy of use
- Difficult to expand
- Limited number of vehicles

Existing Facilities Improvements



North Marion Recycling & Transfer Station

- Changing roll-off containers cumbersome
- Vehicle traffic not at capacity
- Major infrastructure changes needed but accessibility and footprint issues



Brown's Island Demolition Waste Landfill

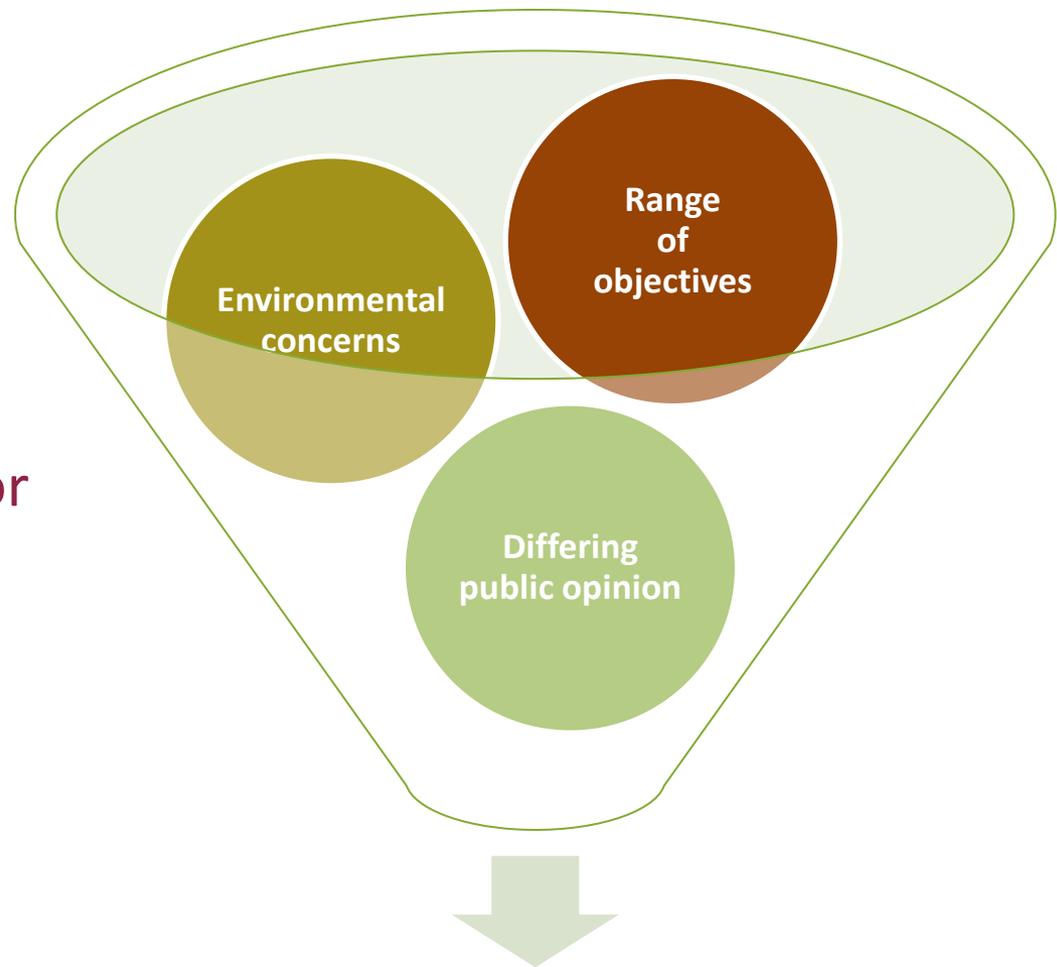
- Space available but prone to flooding
- Increasing tonnage not recommended for demo
- Continue yard debris compost and consider convenient center location



Garten Foundation

- Near full capacity
- Limited room to expand
- Less recyclables to come from County as more continues to flow in from out-of-county

With increasing need for
processing capacity
& **landfill space**,
the importance of
selecting the right
technology
& **site location**
increases



New Facility Siting



OREGON

Possible New Locations

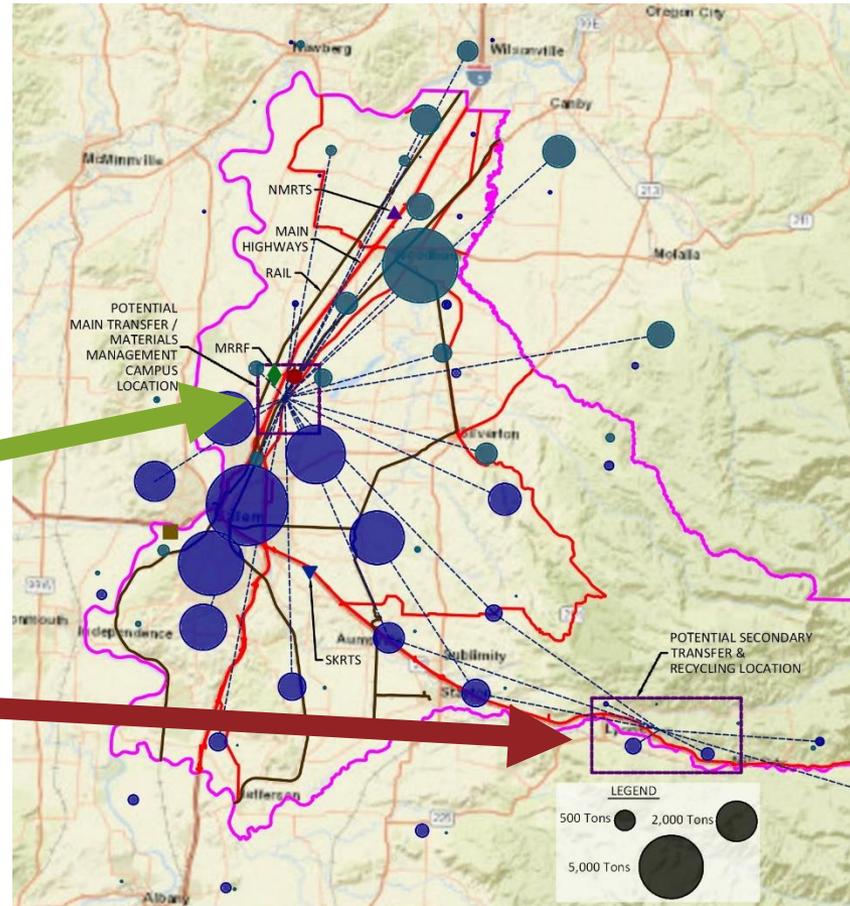
New facilities should be close to population & near major infrastructure (highways & railroad)

Main Transfer / MMC

- North of Keizer (off Chemawa / Brooks exits)
- Synergistic coordination with MRRF and new processing facility

Secondary Transfer & Recycling

- Revamped SKRTS location
- New location around Lyons/Mill City area



Possible New Locations

Site Scoring Criteria

- Community Impact
- Environmental Impact
- Transportation
- Land Use
- Site Availability
- Land Area
- Economic Considerations
- Engineering Considerations

Waste Reduction Model (WARM)

- Tool created by the US EPA
- Calculates greenhouse gas emissions reductions, energy savings, and economic impacts from several different waste management practices

Questions & Answers

Thank You!

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