DEQ Life Cycle and Social Cost Estimation of Cascadia's Infrastructure Scenarios

August 13, 2020

This document provides supplemental materials associated with DEQ's assessment of environmental impacts and social costs, developed for the Oregon Recycling Steering Committee on August 13, 2020. It is intended to provide background information for RSC members.

Descriptions of all scenarios

For detailed descriptions of all infrastructure scenarios, please see the document titled "Alternative Scenario Selection (Phase 2 Task 6)."

Summary results of Cascadia's models

A high-level summary of Cascadia Consulting Group's models of material flows and transactional costs can be found on the project website.

Please note that all of Cascadia's financial estimates are for the year 2025 and are expressed in 2025 dollars. In order to align with damage cost factors (which are expressed in 2019 dollars), transactional costs expressed on the same table or context as social costs are converted to 2019 dollars using the same factors that Cascadia used to estimate 2025 costs in the first place.

Environmental Impacts

Environmental impacts were modeled using the tonnages generated by the Cascadia models and multiplying them by the environmental factors by material type and disposition using the DEQ Waste Impact Calculator, showing the results below. Results are shown (next page) using exponential notation due to limited space in this document (6.16E+06 = 6,160,000).

Recycling Steering Committee

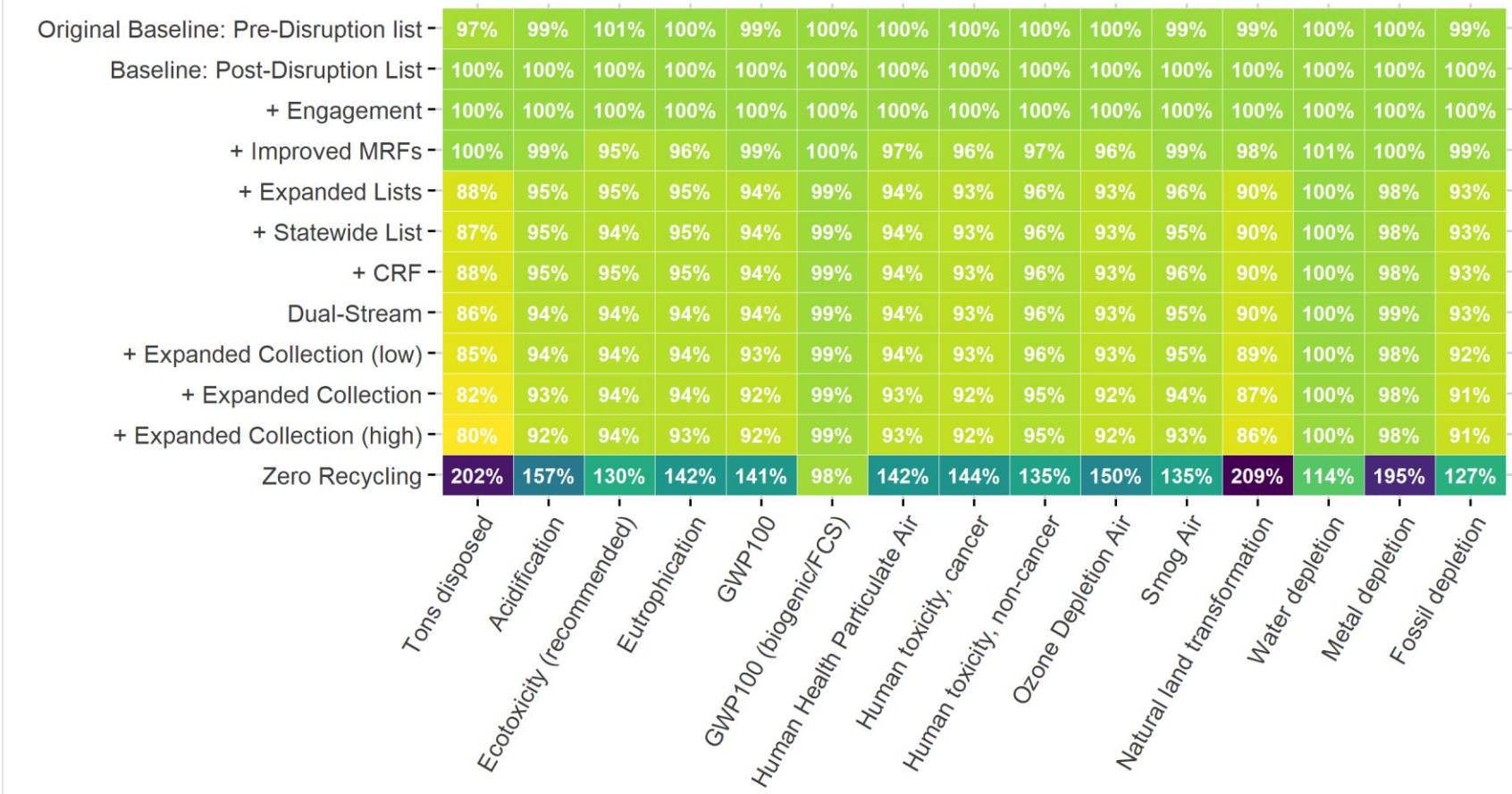
Modernizing Oregon's recycling system with support from Oregon Consensus

scenario	Acidification (kg SO2 eq.)	Ecotoxicity (recommended) (CTUe)	Eutrophication (kg N eq.)	GWP100 (kg CO2 eq.)	GWP100 (biogenic/FCS) (kg CO2 eq.)	Human Health Particulate Air (kg PM2.5 eq.)	Human toxicity, cancer (CTUh)	Human toxicity, non-cancer (CTUh)	Ozone Depletion Air (kg CFC 11 eq.)	Smog Air (kg O3 eq.)	Natural land transformation (m2)	Water depletion (m3)	Metal depletion (kg Fe eq.)	Fossil depletion (kg oil eq.)
Original Baseline: Pre-Disruption list	6.16E+06	2.59E+09	2.10E+06	1.57E+09	4.81E+09	9.74E+05	2.09E+01	3.62E+02	3.81E+01	8.05E+07	1.24E+05	5.79E+08	3.01E+08	6.10E+08
Baseline: Post-Disruption List	6.22E+06	2.57E+09	2.09E+06	1.58E+09	4.83E+09	9.72E+05	2.08E+01	3.62E+02	3.80E+01	8.11E+07	1.26E+05	5.80E+08	3.01E+08	6.15E+08
+ Engagement	6.22E+06	2.57E+09	2.09E+06	1.58E+09	4.83E+09	9.72E+05	2.08E+01	3.62E+02	3.80E+01	8.11E+07	1.27E+05	5.80E+08	3.03E+08	6.15E+08
+ Improved MRFs	6.16E+06	2.45E+09	2.01E+06	1.57E+09	4.85E+09	9.39E+05	2.00E+01	3.52E+02	3.67E+01	8.05E+07	1.24E+05	5.83E+08	3.01E+08	6.11E+08
+ Expanded Lists	5.91E+06	2.43E+09	1.98E+06	1.49E+09	4.77E+09	9.17E+05	1.95E+01	3.47E+02	3.56E+01	7.75E+07	1.14E+05	5.81E+08	2.96E+08	5.73E+08
+ Statewide List	5.90E+06	2.43E+09	1.98E+06	1.49E+09	4.77E+09	9.15E+05	1.94E+01	3.47E+02	3.54E+01	7.73E+07	1.13E+05	5.82E+08	2.96E+08	5.71E+08
CRF	5.91E+06	2.43E+09	1.98E+06	1.49E+09	4.77E+09	9.17E+05	1.95E+01	3.47E+02	3.56E+01	7.75E+07	1.14E+05	5.81E+08	2.96E+08	5.73E+08
Dual-Stream	5.88E+06	2.42E+09	1.97E+06	1.48E+09	4.77E+09	9.14E+05	1.94E+01	3.46E+02	3.53E+01	7.71E+07	1.13E+05	5.82E+08	2.98E+08	5.70E+08
Expanded Collection (low)	5.85E+06	2.42E+09	1.97E+06	1.48E+09	4.76E+09	9.11E+05	1.93E+01	3.46E+02	3.52E+01	7.69E+07	1.12E+05	5.80E+08	2.97E+08	5.68E+08
Expanded Collection	5.78E+06	2.42E+09	1.96E+06	1.46E+09	4.77E+09	9.07E+05	1.92E+01	3.44E+02	3.51E+01	7.61E+07	1.10E+05	5.79E+08	2.95E+08	5.62E+08
Expanded Collection (high)	5.73E+06	2.42E+09	1.95E+06	1.45E+09	4.76E+09	9.03E+05	1.91E+01	3.44E+02	3.49E+01	7.56E+07	1.09E+05	5.78E+08	2.95E+08	5.58E+08
Zero Recycling	9.77E+06	3.35E+09	2.96E+06	2.23E+09	4.74E+09	1.38E+06	2.99E+01	4.87E+02	5.71E+01	1.09E+08	2.64E+05	6.60E+08	5.88E+08	7.83E+08

Recycling Steering Committee

Modernizing Oregon's recycling system with support from Oregon Consensus

Heat map of scenario impacts (as % of baseline)



The Recycling Steering Committee is a collaborative of representation from the Assoc. of Oregon Counties, Assoc. of Oregon Recyclers, Assoc. of Plastics Recyclers/Denton Plastics, EFI Recycling, Far West Recycling, Lane County, League of Oregon Cities, Metro, NORPAC, Oregon Department of Environmental Quality, Oregon Refuse & Recycling Assoc., City of Portland, The Recycling Partnership, Rogue Disposal & Recycling, Waste Connections, and Waste Management. **For more information, visit https://go.usa.gov/xmYYe**.

Externalized (social) costs

Externalized social costs are estimated by multiplying environmental impacts (in physical units) against damage cost factors generated by Sound Resource Management Group and TruCost. For nine of the 13 impact categories, both low and high damage cost factors are applied. All damage costs are expressed in 2019 dollars, although the damages themselves are based on material flows (recycling) projected for calendar year 2025.

Two different methods are used to estimate greenhouse gas impacts. In estimating monetized damages, the smaller result of these two methods is multiplied by the smaller damage cost factor when estimating "low" damage costs; and the larger result of the two methods is multiplied by the larger damage cost factor when estimating "high" damage costs. When considering marginal costs between scenarios, the larger of the two margins (two methods) is used for the "worst case" and the smaller of the two margins (two methods) is used for the "best case".

Low and high damage costs are provided in the following two tables. Unlike the estimates of transactional costs, these damage costs include damages across the entire life cycle (including production), not only at end of life.

Low estimates of damage costs (millions 2019$)

	Acidification	Ecotoxicity	Eutrophication	GWP100	GWP100 (biogenic/FCS)	Human Health Particulate Air	Human toxicity, cancer	Human toxicity, non-cancer	Ozone Depletion Air	Smog Air	Natural land transformation	Water depletion	Metal depletion	Fossil depletion	**Total (low)**
Original Baseline: Pre-Disruption List	$1.5	$4.8	$42.1	$178.6	$548.7	$535.9	$79.9	$842.3	$0.0	$0.5	$0.0	$40.4	$6.2	$87.6	**$1,819.8**
Baseline: Post-Disruption List	$1.5	$4.7	$42.0	$180.4	$550.3	$534.7	$79.7	$841.8	$0.0	$0.5	$0.0	$40.4	$6.2	$88.5	**$1,820.3**
+ Customer Engagement (A-)	$1.5	$4.7	$42.0	$180.4	$550.3	$534.8	$79.7	$842.0	$0.0	$0.5	$0.0	$40.5	$6.2	$88.5	**$1,820.8**
+ Improved MRFs (A)	$1.5	$4.5	$40.4	$179.1	$553.0	$516.7	$76.6	$819.9	$0.0	$0.5	$0.0	$40.7	$6.2	$87.9	**$1,774.0**
+ Expanded Lists (A+)	$1.4	$4.5	$39.8	$170.1	$544.0	$504.4	$74.5	$808.8	$0.0	$0.5	$0.0	$40.5	$6.1	$82.4	**$1,733.0**
+ Statewide List (A++)	$1.4	$4.5	$39.8	$169.7	$543.4	$503.0	$74.2	$807.0	$0.0	$0.5	$0.0	$40.5	$6.1	$82.1	**$1,728.7**
CRF (B)	$1.4	$4.5	$39.8	$170.1	$544.0	$504.4	$74.5	$808.8	$0.0	$0.5	$0.0	$40.5	$6.1	$82.4	**$1,733.0**
Dual Stream (C)	$1.4	$4.5	$39.6	$169.2	$543.8	$502.5	$74.1	$806.1	$0.0	$0.5	$0.0	$40.6	$6.1	$82.0	**$1,726.4**
Expanded Collection (D low)	$1.4	$4.5	$39.6	$168.6	$543.1	$501.1	$73.9	$805.1	$0.0	$0.5	$0.0	$40.5	$6.1	$81.6	**$1,722.7**
Expanded Collection (D mid)	$1.4	$4.5	$39.3	$166.7	$543.3	$498.6	$73.5	$802.0	$0.0	$0.5	$0.0	$40.4	$6.1	$80.8	**$1,713.7**
Expanded Collection (D high)	$1.4	$4.5	$39.2	$165.5	$542.9	$496.7	$73.2	$800.0	$0.0	$0.5	$0.0	$40.3	$6.1	$80.2	**$1,707.4**
Zero Recycling	$2.3	$6.2	$59.4	$254.0	$540.2	$760.6	$114.6	$1,134.0	$0.0	$0.7	$0.0	$46.0	$12.0	$112.5	**$2,502.4**

High estimates of damage costs (millions 2019$)

	Acidification	Ecotoxicity	Eutrophication	GWP100	GWP100 (biogenic/FCS)	Human Health Particulate Air	Human toxicity, cancer	Human toxicity, non-cancer	Ozone Depletion Air	Smog Air	Natural land transformation	Water depletion	Metal depletion	Fossil depletion	**Total (low)**
Original Baseline: Pre-Disruption List	$3.6	$20.4	$62.6	$487.3	$1,497.0	$647.0	$136.5	$1,737.3	$0.0	$38.9	$0.0	$40.4	$6.2	$87.6	**$4,277.3**
Baseline: Post-Disruption List	$3.6	$20.3	$62.3	$492.0	$1,501.2	$645.5	$136.1	$1,736.2	$0.0	$39.2	$0.0	$40.4	$6.2	$88.5	**$4,279.5**
+ Customer Engagement (A-)	$3.6	$20.3	$62.3	$492.2	$1,501.3	$645.6	$136.1	$1,736.7	$0.0	$39.2	$0.0	$40.5	$6.2	$88.5	**$4,280.3**
+ Improved MRFs (A)	$3.6	$19.3	$60.1	$488.6	$1,508.6	$623.8	$130.8	$1,691.1	$0.0	$38.9	$0.0	$40.7	$6.2	$87.9	**$4,210.9**
+ Expanded Lists (A+)	$3.5	$19.2	$59.2	$464.0	$1,484.1	$609.0	$127.2	$1,668.2	$0.0	$37.4	$0.0	$40.5	$6.1	$82.4	**$4,136.7**
+ Statewide List (A++)	$3.4	$19.1	$59.0	$462.9	$1,482.5	$607.3	$126.7	$1,664.4	$0.0	$37.3	$0.0	$40.5	$6.1	$82.1	**$4,128.5**
CRF (B)	$3.5	$19.2	$59.2	$464.0	$1,484.1	$608.9	$127.2	$1,668.2	$0.0	$37.4	$0.0	$40.5	$6.1	$82.4	**$4,136.7**
Dual Stream (C)	$3.4	$19.1	$58.9	$461.6	$1,483.6	$606.6	$126.6	$1,662.5	$0.0	$37.2	$0.0	$40.6	$6.1	$82.0	**$4,126.6**
Expanded Collection (D low)	$3.4	$19.1	$58.8	$459.9	$1,481.7	$605.0	$126.1	$1,660.4	$0.0	$37.1	$0.0	$40.5	$6.1	$81.6	**$4,119.9**
Expanded Collection (D mid)	$3.4	$19.1	$58.4	$454.8	$1,482.1	$602.0	$125.5	$1,654.0	$0.0	$36.8	$0.0	$40.4	$6.1	$80.8	**$4,108.6**
Expanded Collection (D high)	$3.3	$19.1	$58.2	$451.4	$1,481.0	$599.7	$125.0	$1,649.9	$0.0	$36.5	$0.0	$40.3	$6.1	$80.2	**$4,099.4**
Zero Recycling	$5.7	$26.5	$88.3	$692.9	$1,473.8	$918.3	$195.7	$2,338.9	$0.0	$52.7	$0.0	$46.0	$12.0	$112.5	**$5,270.5**

"Zero Recycling" cost estimate

A "Zero Recycling" scenario was added to show the full importance of the baseline scenario. It represents a hypothetical system with no recycling. To evaluate the transactional costs of a zero recycling scenario, DEQ generated both "low cost" and "high cost" estimates. These are drawn from the minimum and maximum of the following four values:

- Low-end estimate of full cost of the base case (post-disruption) recycling system (from Cascadia), reduced by one-third, to represent the ongoing costs that would be associated with collecting and disposing materials that are currently collected and recycled. This factor was recommended by Chris Bell of Bell & Associates, a solid waste industry professional with extensive experience in rate setting for waste and recycling programs in the Pacific Northwest.
- High-end estimate of full cost of the base case recycling system (from Cascadia), reduced by one-third (consistent with previous estimate).

- Partitioned and re-evaluated estimates of individual line items in Cascadia's model, assuming that in a "zero recycling" system, there will be zero costs for customer engagement and material processing, zero revenues, and zero avoided disposal costs. Other costs (collection and initial transfer/transport) are reduced by 20% (high cost) as a first-order estimate of the potential cost savings — and ongoing costs — associated with collecting previously recycled materials as garbage and transporting that material for disposal.
- Same as above, but reducing collection and initial transfer/transport costs by 50% (low cost) as a first-order estimate of the potential cost savings – and ongoing costs – associated with collecting previously recycled materials as garbage and transporting that material for disposal.

Integration (full cost accounting)

The next three tables show marginal costs of difference scenarios relative to three base cases:

- a "zero recycling" scenario,
- the post-disruption base case, and
- the same post-disruption base case but with the additional of generator-facing contamination reduction programming.

All costs are estimates for the year 2025 and are expressed in 2019 dollars.

Recycling Steering Committee

Modernizing Oregon's recycling system with support from Oregon Consensus

Marginal costs relative to "Zero Recycling" scenario

		Transactional Cost			Direct External Cost	**Full Social Cost**
		Gross	Revenue	Net		
Original Baseline: Pre-Disruption List	Worst Case	$ 142,551,876	$ 10,955,091	$ 131,596,785	$ (584,137,571)	**$ (452,540,786)**
	Best Case	$ (6,305,164)	$ 70,231,607	$ (76,536,771)	$ (1,091,595,118)	**$ (1,168,131,888)**
Baseline: Post-Disruption List	Worst Case	$ 139,733,106	$ 10,995,438	$ 128,737,669	$ (581,117,276)	**$ (452,379,607)**
	Best Case	$ (7,543,236)	$ 70,508,313	$ (78,051,549)	$ (1,091,884,630)	**$ (1,169,936,179)**
+ Customer Engagement (A-)	Worst Case	$ 170,641,037	$ 10,820,248	$ 159,820,789	$ (580,575,066)	**$ (420,754,276)**
	Best Case	$ 18,775,224	$ 69,556,039	$ (50,780,815)	$ (1,091,189,162)	**$ (1,141,969,977)**
+ Improved MRFs (A)	Worst Case	$ 171,657,060	$ 13,749,200	$ 157,907,860	$ (618,814,993)	**$ (460,907,133)**
	Best Case	$ 19,452,573	$ 64,881,595	$ (45,429,022)	$ (1,169,193,706)	**$ (1,214,622,728)**
+ Expanded Lists (A+)	Worst Case	$ 178,995,449	$ 15,329,249	$ 163,666,201	$ (675,221,030)	**$ (511,554,829)**
	Best Case	$ 22,225,907	$ 72,955,903	$ (50,729,997)	$ (1,227,903,770)	**$ (1,278,633,767)**
+ Statewide List (A++)	Worst Case	$ 178,087,403	$ 13,476,523	$ 164,610,880	$ (680,794,777)	**$ (516,183,898)**
	Best Case	$ 21,620,542	$ 67,957,394	$ (46,336,852)	$ (1,234,904,320)	**$ (1,281,241,172)**
CRF (B)	Worst Case	$ 223,092,435	$ 15,441,730	$ 207,650,705	$ (675,261,330)	**$ (467,610,625)**
	Best Case	$ 58,625,781	$ 72,272,262	$ (13,646,481)	$ (1,227,956,908)	**$ (1,241,603,389)**
Dual Stream (C)	Worst Case	$ 179,069,615	$ 16,746,740	$ 162,322,875	$ (681,428,586)	**$ (519,105,711)**
	Best Case	$ 22,266,160	$ 77,929,372	$ (55,663,212)	$ (1,238,396,431)	**$ (1,294,059,643)**
Expanded Collection (D low)	Worst Case	$ 229,019,683	$ 17,086,505	$ 211,933,178	$ (686,456,152)	**$ (474,522,975)**
	Best Case	$ 44,680,041	$ 79,500,114	$ (34,820,073)	$ (1,243,834,238)	**$ (1,278,654,312)**
Expanded Collection (D mid)	Worst Case	$ 256,266,107	$ 17,712,948	$ 238,553,159	$ (693,171,554)	**$ (454,618,395)**
	Best Case	$ 59,735,396	$ 82,149,872	$ (22,414,476)	$ (1,257,384,067)	**$ (1,279,798,543)**
Expanded Collection (D high)	Worst Case	$ 256,266,107	$ 18,289,071	$ 237,977,036	$ (699,346,860)	**$ (461,369,824)**
	Best Case	$ 71,261,485	$ 84,911,534	$ (13,650,049)	$ (1,266,789,582)	**$ (1,280,439,631)**
Zero Recycling	Worst Case	$ -	$ -	$ -	$ -	**$ -**
	Best Case	$ -	$ -	$ -	$ -	**$ -**

Recycling Steering Committee

Modernizing Oregon's recycling system with support from Oregon Consensus

Marginal costs relative to "Post-Disruption List" scenario (Cascadia baseline)

		Transactional Cost			Direct External Cost	**Full Social Cost**
		Gross	Revenue	Net		
Original Baseline: Pre-Disruption List	Worst Case	$ 73,062,742	$ (276,706)	$ 73,339,449	$ (351,856)	**$ 72,987,592**
	Best Case	$ (69,005,901)	$ (40,347)	$ (68,965,555)	$ (2,723,591)	**$ (71,689,146)**
Baseline: Post-Disruption List	Worst Case	$ -	$ -	$ -	$ -	**$ -**
	Best Case	$ -	$ -	$ -	$ -	**$ -**
+ Customer Engagement (A-)	Worst Case	$ 101,151,904	$ (952,274)	$ 102,104,178	$ 695,467	**$ 102,799,646**
	Best Case	$ (43,925,513)	$ (175,190)	$ (43,750,323)	$ 542,210	**$ (43,208,113)**
+ Improved MRFs (A)	Worst Case	$ 102,167,927	$ (5,626,718)	$ 107,794,645	$ (37,697,717)	**$ 70,096,927**
	Best Case	$ (43,248,164)	$ 2,753,762	$ (46,001,926)	$ (79,460,346)	**$ (125,462,272)**
+ Expanded Lists (A+)	Worst Case	$ 109,506,316	$ 2,447,591	$ 107,058,726	$ (83,304,123)	**$ 23,754,603**
	Best Case	$ (40,474,830)	$ 4,333,811	$ (44,808,642)	$ (153,770,167)	**$ (198,578,808)**
+ Statewide List (A++)	Worst Case	$ 108,598,270	$ (2,550,918)	$ 111,149,188	$ (87,840,850)	**$ 23,308,338**
	Best Case	$ (41,080,195)	$ 2,481,086	$ (43,561,280)	$ (161,469,142)	**$ (205,030,422)**
CRF (B)	Worst Case	$ 153,603,302	$ 1,763,949	$ 151,839,352	$ (83,340,520)	**$ 68,498,832**
	Best Case	$ (4,074,956)	$ 4,446,292	$ (8,521,248)	$ (153,815,857)	**$ (162,337,105)**
Dual Stream (C)	Worst Case	$ 109,580,482	$ 5,751,302	$ 103,829,180	$ (89,171,366)	**$ 14,657,813**
	Best Case	$ (40,434,577)	$ 7,421,059	$ (47,855,636)	$ (165,795,283)	**$ (213,650,920)**
Expanded Collection (D low)	Worst Case	$ 159,530,550	$ 6,091,068	$ 153,439,482	$ (92,993,664)	**$ 60,445,818**
	Best Case	$ (18,020,696)	$ 8,991,801	$ (27,012,497)	$ (172,320,699)	**$ (199,333,197)**
Expanded Collection (D mid)	Worst Case	$ 186,776,974	$ 6,717,510	$ 180,059,463	$ (99,985,342)	**$ 80,074,121**
	Best Case	$ (2,965,341)	$ 11,641,559	$ (14,606,900)	$ (189,065,054)	**$ (203,671,955)**
Expanded Collection (D high)	Worst Case	$ 206,210,230	$ 7,293,633	$ 198,916,597	$ (105,466,736)	**$ 93,449,861**
	Best Case	$ 8,560,748	$ 14,403,221	$ (5,842,473)	$ (200,614,938)	**$ (206,457,411)**

Recycling Steering Committee

Modernizing Oregon's recycling system with support from Oregon Consensus

Marginal costs relative to "Post-Disruption List + Customer Engagement (A-)" scenario

		Transactional Cost			Direct External Cost	**Full Social Cost**
		Gross	Revenue	Net		
Original Baseline: Pre-Disruption List	Worst Case	$ 46,744,282	$ 134,843	$ 46,609,439	$ (785,015)	**$ 45,824,424**
	Best Case	$ (99,913,832)	$ 675,568	$ (100,589,400)	$ (3,518,631)	**$ (104,108,031)**
Baseline: Post-Disruption List	Worst Case	$ 74,833,444	$ 175,190	$ 74,658,254	$ (427,674)	**$ 74,230,580**
	Best Case	$ (74,833,444)	$ (175,190)	$ (74,658,254)	$ (810,004)	**$ (75,468,258)**
+ Customer Engagement (A-)	Worst Case	$ -	$ -	$ -	$ -	**$ -**
	Best Case	$ -	$ -	$ -	$ -	**$ -**
+ Improved MRFs (A)	Worst Case	$ 75,849,467	$ (4,674,444)	$ 80,523,910	$ (38,239,928)	**$ 42,283,983**
	Best Case	$ (74,156,095)	$ 2,928,952	$ (77,085,047)	$ (80,255,386)	**$ (157,340,433)**
+ Expanded Lists (A+)	Worst Case	$ 83,187,856	$ 3,399,865	$ 79,787,991	$ (83,737,281)	**$ (3,949,290)**
	Best Case	$ (71,382,761)	$ 4,509,001	$ (75,891,762)	$ (154,565,207)	**$ (230,456,969)**
+ Statewide List (A++)	Worst Case	$ 82,279,810	$ (1,598,644)	$ 83,878,454	$ (88,274,009)	**$ (4,395,555)**
	Best Case	$ (71,988,125)	$ 2,656,275	$ (74,644,401)	$ (162,264,182)	**$ (236,908,583)**
CRF (B)	Worst Case	$ 127,284,841	$ 2,716,224	$ 124,568,618	$ (83,773,679)	**$ 40,794,939**
	Best Case	$ (34,982,887)	$ 4,621,482	$ (39,604,369)	$ (154,610,897)	**$ (194,215,265)**
Dual Stream (C)	Worst Case	$ 83,262,022	$ 5,926,492	$ 77,335,530	$ (89,604,525)	**$ (12,268,996)**
	Best Case	$ (71,342,508)	$ 8,373,333	$ (79,715,841)	$ (166,590,323)	**$ (246,306,165)**
Expanded Collection (D low)	Worst Case	$ 133,212,089	$ 6,266,257	$ 126,945,832	$ (93,426,823)	**$ 33,519,009**
	Best Case	$ (48,928,627)	$ 9,944,076	$ (58,872,702)	$ (173,115,739)	**$ (231,988,442)**
Expanded Collection (D mid)	Worst Case	$ 160,458,513	$ 6,892,700	$ 153,565,813	$ (100,418,501)	**$ 53,147,312**
	Best Case	$ (33,873,272)	$ 12,593,834	$ (46,467,105)	$ (189,860,094)	**$ (236,327,200)**
Expanded Collection (D high)	Worst Case	$ 179,891,770	$ 7,468,823	$ 172,422,947	$ (105,899,895)	**$ 66,523,052**
	Best Case	$ (22,347,183)	$ 15,355,495	$ (37,702,678)	$ (201,409,978)	**$ (239,112,656)**