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Final Study Design
Oregon Processor Commodity Risk Fee and Contamination Management Fee

May 25, 2023

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1. Introduction and Approach

This draft study design encompasses the Processor Commodity Risk Fee (PCRF) and the Contamination Management Fee (CMF), collectively the Commingled Recycling Processing Facility (CRPF) Fees, CRPF Fees, or Fees. The study design includes the following sections:

2. *Methodology Overview*
3. *Determining the Cost of Processing Recyclable Materials and Covered Products*
4. *Determining the Contamination Management Fee*
5. *Timing Implications and Future Fee Adjustments.*

A. Study Requirements and Components

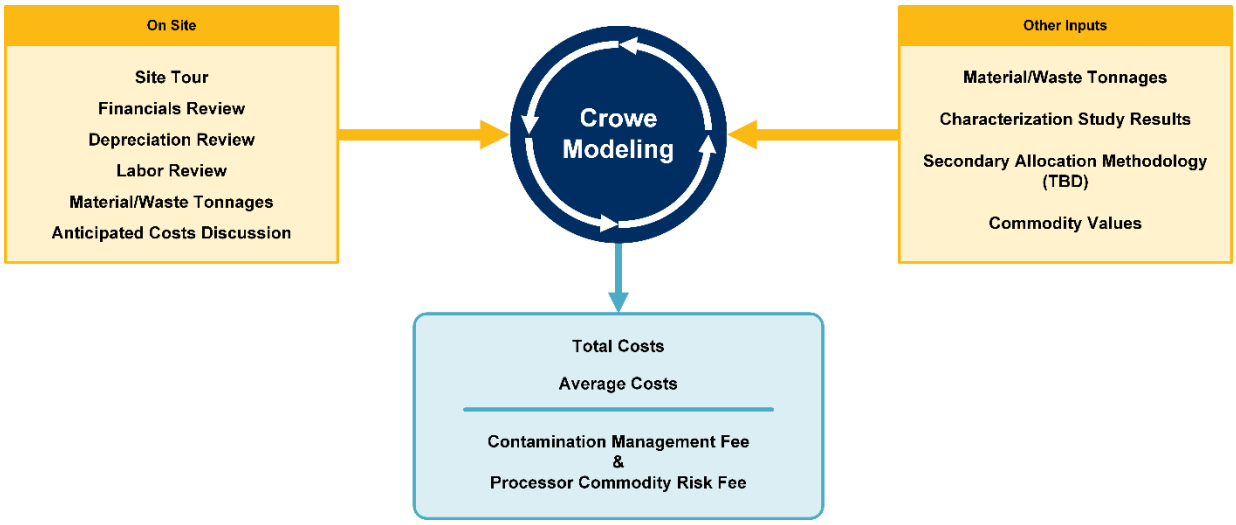
The State of Oregon enacted the Recycling Modernization Act (RMA), Senate Bill 582, in 2021. The RMA defines a set of covered products (packaging, printing and writing paper, and food serviceware) and establishes a shared producer responsibility system for responsible recycling of these and other materials. The RMA requires Oregon Department of Environmental Quality (DEQ), through the Environmental Quality Commission, to adopt two fees:

- Contamination Management Fee (ORS 459A.920) – to be paid by producer responsibility organizations (PROs) to compensate facilities for the costs of removing and disposing of covered products that are contaminants (e.g., that are not identified as accepted in commingled programs for recycling purposes).
- Processor Commodity Risk Fee (ORS 459A.923) – to be paid by PROs to commingled recycling processing facilities to ensure that producers share in the costs of fully processing commingled recyclables that are covered products (covered products) to allow local governments to reduce the financial impacts on rate payers.

Crowe is tasked with determining the CMF and PCRF and providing initial recommendations for fee levels to DEQ. These two fees are intended to shift the cost of processing recyclables, and disposing of covered products that are contamination, from rate payers to producer responsibility organizations (PROs). **Appendix A** provides text of Sections 24 (ORS 459A.920) and 25 (ORS 459A.923) of the RMA that define the CMF and PCRF.

Exhibit 1 provides a high-level overview of Crowe's approach to determining the two CRPF Fees. The study inputs are identified on the left and right sides of the graphic. The inputs on the left side of the graphic will be obtained from CRPFs prior to, and during, the on-site visits. The inputs on the right side of the graphic will be obtained from DEQ and secondary data sources. Crowe will calculate the secondary allocation methodologies, outlined in Section 2, from these sources. The blue "Crowe Modeling" circle illustrates Crowe's customized Excel model, also described in Section 2. The study outputs, illustrated in the light blue rectangle, will encompass total processing costs, average processing costs, costs per ton of contamination, costs per ton of covered product contamination, and average commodity values. From these data points, Crowe and DEQ will determine the preliminary contamination management fee and processor commodity risk fee. These fees will be updated as additional waste composition study data becomes available later in 2023.

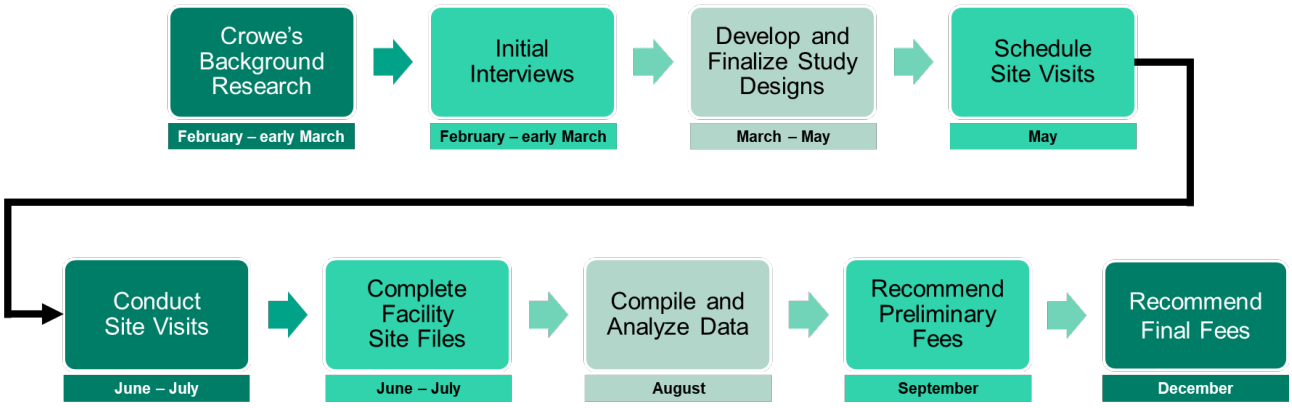
Exhibit 1
Schematic of Crowe's Study Methodology



B. Study Schedule

This study design will be finalized during April and early May 2023. Once the study design is finalized, Crowe will schedule one-day site visits at each of the facilities identified in Section 2. Visits will take place during June and July. Crowe will then compile data for each CRPF, compile data across the CRPFs, analyze results, calculate costs, and determine the preliminary recommendations for the two fees. Crowe will be providing DEQ with preliminary results in September 2023. These results may be adjusted further as the waste composition study data is finalized and as permit requirements are further defined. **Exhibit 2** illustrates the study timeline. DEQ will begin the rulemaking process in September. Crowe will finalize the recommended fee in December 2023 and study reports in early 2024.

Exhibit 2
Fee Study Timeline



2. Methodology Overview

This section provides an overview of Crowe's study design. Crowe's overall approach is based on a labor allocation methodology augmented by additional secondary allocation methods using weight, volume, contamination rates, or counts, as appropriate, to further assign costs to contamination management or commingled recycling processing. This overview includes the following nine subsections:

A. Survey Design
B. Site Visit Procedures and Documentation
C. Financial Review Process
D. Labor Allocation Methodology
E. Customized Excel Cost Model
F. Secondary Allocation Methodologies
G. Quality Control Review
H. Data Compilation and Calculations
I. Confidentiality and Data Security.

A. Survey Design

The survey design reflects a census of Commingled Recycling Processing Facilities handing commingled recycling generated in the State of Oregon. Facilities included in the study are identified in **Exhibit 3.** Commingled recycling is defined in the RMA as "the recycling or recovery of two or more materials that are mixed together and that generally would be separated into individual materials at a commingled recycling processing facility in order to be marketed". The RMA defines commingled recycling processing facilities as facilities that:

- Receive source separated commingled recyclable materials that are collected commingled from a collection program providing the opportunity to recycle; and
- Separate the recyclable materials into marketable commodities or streams of materials that are intended for use or further processing by others.
- Commingled recycling processing facilities do not include:
  - Scrap metal recycling facilities
  - Scrap automotive or appliance recycling facilities
  - Full-service redemption centers owned and operated by a distributor cooperative established under ORS 459A.718
  - Recycling facilities handling covered electronic devices, as defined in ORS 459A.305
  - Recycling processing facilities that process only non-commingled, source separated recyclable material from commercial entities
  - Recycling processing facilities that recover commingled recyclable material primarily from the construction and demolition debris waste stream
  - Recycling depots
  - Recycling reload facilities
  - Limited sort facilities, as defined by rule by the Environmental Quality Commission.[1]

[1] DEQ is still formulating a draft definition of limited sort facility; however, the intent is to define limited sort facilities as those conducting additional sorting/processing of materials purchased including from CRPFs.

Exhibit 3
Eligible Commingled Recycling Processing Facilities

Company Name	City	State
1. EFI Recycling	Portland (North)	Oregon
2. EcoSort (Waste Connections Inc.)	Eugene	Oregon
3. Far West Recycling	Portland (Northeast)	Oregon
4. Far West Recycling	Hillsboro	Oregon
5. Garten Services Recycling	Salem	Oregon
6. International Paper	Springfield	Oregon
7. Kahut Waste Services/K.B. Recycling (Waste Connections Inc.)	Clackamas	Oregon
8. Pioneer Recycling Services	Clackamas	Oregon
9. REACH	Klamath Falls	Oregon
10. Recology Eel River	Fortuna	California
11. West Vancouver Materials Recovery Center (Waste Connections Inc.)	Vancouver	Washington
12. WestRock Recycling Facility	Portland (Southeast)	Oregon

During the initial two months of the project, Crowe researched packaging EPR laws enacted in three other U.S. states: California (Senate Bill 54), Colorado (House Bill 22-1355), and Maine (Legislative Document 1541). As described in Appendix B the main take-away from this research is that the systematic, advanced research and stakeholder process currently underway by the DEQ is well ahead of the other three states, which have only recently begun stakeholder processes and have yet to launch any similar studies.

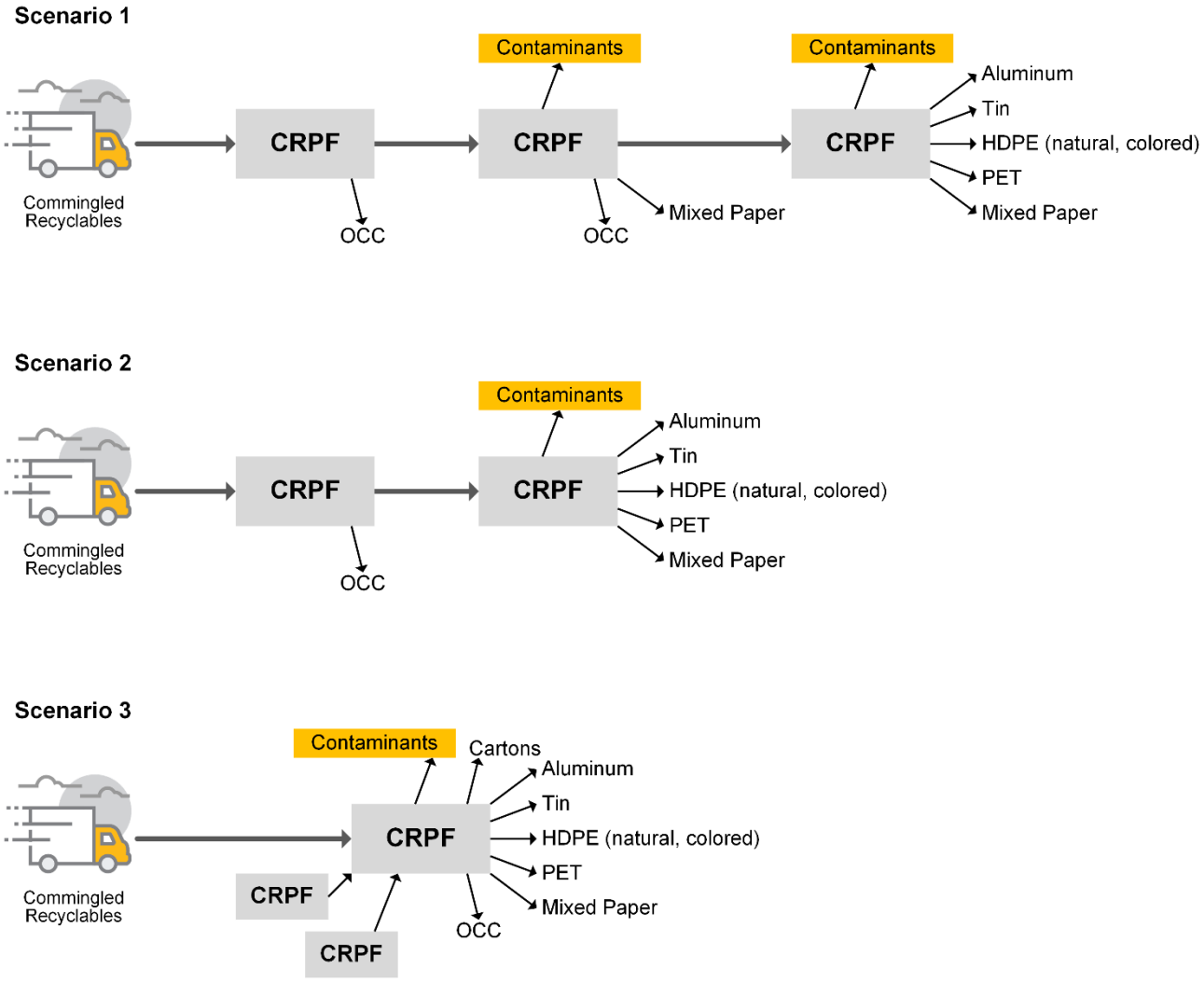
In February, Crowe prepared and presented an overview of the study design to DEQ's Commingled Recycling Processing Facilities Technical Work Group (TWG). The presentation introduced the goals of the study and Crowe's overall approach. We also outlined the first interaction with CRPFs, an initial one-on-one conversation with each facility.

The purpose of these interviews, conducted in late February and March, was to provide information to CRPFs and to inform our understanding of material flow and operations at each facility to support development of this study design. We covered the following topics during these one-hour Microsoft Teams calls:

- Facility size, materials accepted, and general operations
- Commingled recyclables material flow from door-to-door
- Sorting processes and materials accepted
- Contamination levels
- Equipment
- End-markets
- Confirmation of tonnage, financial, and labor data formats and time periods.

Through these interviews, Crowe gained an understanding of the range of operations and confirmed the general study approach as described in this document. The ecosystem of material recovery facilities (MRFs) currently serving Oregon, henceforth identified as Commingled Recycling Processing Facilities (CRPFs) reflects a range of business operation models and dynamic flow of material from local government haulers (sometimes a hauler associated with the CRPF), to CRPFs, to other CRPFs for further sorting, to limited sort facilities, and/or to end-markets. **Exhibit 4** provides a visual schematic of three material flows that occur from collection to processed recyclables ready for end-market. These three scenarios do not encompass all possible situations but rather are examples of the range of material-flow situations.

Exhibit 4
Examples of Recyclable Material Flows through CRPFs

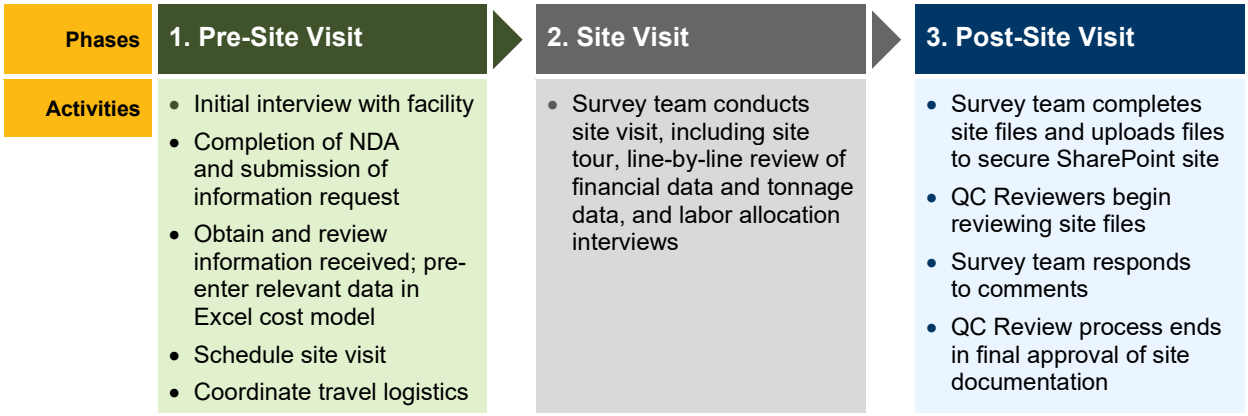


These scenarios illustrate the varied activities that occur across CRPFs. CRPFs are removing different recyclable materials/covered products, removing (or not removing) contaminants, and often shipping any remaining materials, with or without contaminants, to another CRPF for further processing. A CRPF may receive material directly from a collection program (single-family, multi-family, or commercial), and/or from another CRPF. End-markets could include other facilities (limited sort facilities) that further clean/upgrade materials. Oregon CRPFs operate under an open market model, with CRPFs bidding for material from haulers that collect commingled recyclables from communities in the state. In determining the total and average costs of removing contaminants and the total and average costs of processing, our study design will take into account costs at each location where materials are sorted, and contaminants are removed.

B. Site Visit Procedures and Documentation

The site visit survey and accompanying activities are fundamental to Crowe's study methodology. The site visit and tour are important to understanding each site's operations and providing a general understanding of the site. This understanding, in turn, helps the team when reviewing financial and labor documentation and assessing reasonableness of the results. Crowe will follow site visit procedures and document the information obtained during the site visit, as described in this section. **Exhibit 5** provides an overview of activities conducted prior to, during, and after the site visit.

Exhibit 5
Overview of Site Visit Activities



1. Pre- Site Visit Activities

During February and March, Crowe conducted initial interviews to understand each facility's operations and gain a general understanding of topics such as size of the facility, other non-recycling activities, material flows, financial and labor documentation, and equipment. We provided each facility with a non-disclosure agreement (NDA) to formalize confidentiality of facility information.

Following the initial interviews, Crowe prepared a data request for each facility. Receiving the information prior to the site visits will help to identify specific questions ahead of time and make the site visits more focused and efficient. The data request included the categories below, with the understanding that information could be in differing formats and that we may require additional information and clarification of data through an iterative process. The study period covers calendar year 2022, although Crowe will work with facilities that utilize different fiscal years.

- Financial statements
- Depreciation schedules
- Employee labor information
- Temporary/contract labor information
- Commingled and non-commingled tonnage data
- Reconciliation of tonnage data to annual tonnage report provided to DEQ
- Descriptions of other business activities.

Crowe created secure ShareFile accounts for each facility. This allows the facility team to create a ShareFile account with individual usernames and passwords that allows secure data upload to the site-specific ShareFile folder. Each ShareFile folder is only accessible to the specific facility team and Crowe staff assigned to the study. Crowe configured ShareFile to automatically delete uploaded files after 90 days.

Crowe will conduct a detailed review of the data submitted for the site prior to the site visit. The team may enter data into the Site Memorandum, Site Equipment List, and Excel Cost Model, as appropriate. The team will also develop a list of facility specific questions to be asked during the site visit to clarify data and facility operations.

During the month of May 2023, Crowe will contact each facility and schedule one-day site visits. These visits will take place in June and July 2023. We expect that each visit will be conducted by three to five Crowe team members. To the extent possible, we will coordinate schedules across facilities, for example visiting four to five Portland-area facilities in one week, in order to minimize travel costs. Crowe will manage travel accommodations and utilize the Oregon Travel Policy.

2. Site Visit Activities

Once at the site, our team will conduct numerous activities, as described below, and detailed further in the Financial Review Process and Labor Allocation Methodology subsections. In summary, our team will follow agreed-upon procedures, expanded as appropriate to obtain the information required for this study, ideally before we leave the site. We will follow-up with additional information requests if facilities do not have the requested information at the time of the site visit.

The survey team will first tour the site with site management to view and inquire about the site's operations, equipment, and general flow of materials. Our team will inquire about materials handled, equipment used, recycling procedures followed, and materials shipped. **Exhibit 6** provides an overview of site tour topics and questions.

After touring the facility and taking thorough notes for the *Site Memorandum* (see Appendix D for a template of this form), the site survey team will review financial documentation with site management or a financial officer and determine:

- Allowable and non-allowable costs
- Direct and indirect costs
- Anticipated costs.

Our on-site team will classify all costs into the following categories:

- Direct labor
- Other labor
- General business overhead
- Transportation
- Rent/lease/mortgage
- Depreciation
- Property taxes
- Utilities
- Disposal
- Supplies
- Fuel
- Insurance
- Interest
- Maintenance/repairs
- Not allowable

The survey team then will conduct structured labor allocation interviews to determine allocations of each employee's time first to processing of commingled recyclables or other business; then by specific activities conducted and materials handled by each employee. The cost model uses this labor allocation information to allocate indirect costs and wages to contaminant removal and specific material types or to all other materials/businesses.

The survey team will obtain and review labor records to confirm wages paid and hours worked for all company officers and employees. We will reconcile these labor costs with supporting financial documentation provided by the site operator. We will take into account wage paid to temporary workers and service fees paid to service agencies, as applicable.

Exhibit 6
Topics and Questions for Site Tour

Topic Area	Questions
General Background	How long have they been in business? What are the operating hours? What type of business (C-Corp, Sole Proprietor, Partnership, S-Corp, non-profit)? How many locations do they own?
Other Business	Does the site have another business other than processing commingled recyclables?
Buying and Selling	Who does the site purchase materials from and who does it sell to?
Employees	How many employees are there? What type of work do they do? Do any employees work on business other than recycling?
Equipment	What types of equipment are there? Is any of it depreciable? What is it used for? Is any of it used for business other than recycling? For specific material types?
General Recycling Operations	Who is sorting materials? How do they buy/weigh material? How/where do they pay for the material? How/where are materials stored?
Major Changes	Any major changes since last year (in terms of size, location, employees, equipment, etc.)?
Materials	What types of materials does the site accept? What is the general volume? Does the site accept more or less of a certain material? Does the site accept material from other states?
Transportation	Where does the material go? Who transports it? Who pays for transportation costs?

The information obtained during the site tour will augment the data we receive prior to the site visit. Key information the Crowe team will obtain from the walkthrough includes:

- A general site description (site size, location, demographics, operational hours, history, customer traffic flow, number and type of employees, changes since survey year)
- Major processes and operations, including how commingled recyclable materials and contaminants are handled
- Material types collected
- Tonnages of materials handled, including but not limited to:
  - Covered and non-covered recyclables
  - Source separated recyclables
  - Covered and non-covered contaminants
  - Out of state commingled recyclables
  - Out of state contamination rates
  - Oregon contamination rates

- Major equipment types and uses
- Other business activities not related to commingled recycling
- How specific materials flow through the site – where do they come from, how are they handled, where do they go?

It will be important to identify and write down the major equipment at a site, and the materials equipment is used for, to inform the associated equipment costs on the financial documentation. The extent and condition of equipment will contribute to a site's current and future costs, including anticipated costs. During the site tour we will closely review and evaluate equipment, considering the following:

- Equipment-related costs can appear under maintenance, rent, and depreciation categories.
- Equipment costs can represent a portion of expenses that may be allocated to one or more material types.
- One can get a sense of the site's operations by observing its equipment. The equipment can also provide a "reasonableness check" if costs are not in expected ranges.
- Equipment costs include not only the purchase or lease of new equipment, but also equipment rent, maintenance, repair, and depreciation, which can also be significant.

The survey team will scan relevant financial and wage information to include in the site file. This documentation will include: (1) reconciled labor costs with supporting financial documentation, (2) payroll records that support wages and salaries shown on financial statements, (3) confirmation that on-site survey procedures were followed, and (4) the site operator's signature on an affidavit attesting that the information provided was complete, accurate, and consistent with Crowe's instructions and requirements of the RMA.

While on site, the survey team will evaluate the financial information, considering areas such as: the size and scale of the operation, reasonableness of the expenditure line items, purpose of significant expenditures, and age and condition of equipment on the depreciation schedule. The team will request additional documentation, such as shipping reports and invoices, when it is necessary to validate expenditures.

3. Survey Documentation

It is important to accurately document operations, equipment, financial records, tonnage data, and labor records for each facility surveyed. Crowe utilizes electronic site files, securely stored on an internal SharePoint site (see below for confidentiality and data security considerations). Survey documents, provided in Appendix D, include the following:

- Methodology Checklist – provides an itemized list of activities to be undertaken prior to, during, and after the site visit
- Site Memorandum – provides narrative descriptions of the site location, facility operations, material flows, financial and labor data sources, and contact information
- Equipment List – provides an inventory of equipment at the facility including identification of material(s) for which the equipment is utilized
- Survey Affidavit – requires the facility manager and/or financial officer signature to verify the accuracy of the information provided for the study
- Customized Excel Cost Model (see Appendix C) – is utilized to capture financial, labor, and tonnage information for the facility and to calculate associated costs.

4. Post-Site Visit Activities

After the site visit, Crowe will compile financial and operational data, enter information into the cost model, complete the *Site Memorandum* and site file, and review the site file. In cases where recycling managers do not have all the necessary information available during the site visit, the survey team will leave the site operator with a written list of materials needed and telephone and/or email within one week to request additional information or ask specific questions about the data. We expect that by obtaining and reviewing facility data prior to the site visit, there will be limited need to follow up with information requests after the site visit.

The survey team will prepare the *Site Memorandum* using information gathered during the site tour. The *Site Memorandum* will summarize important information about the site including:

- A description of operations
- A description of commingled recyclable materials handled, including handling procedures and method(s) and destination(s) of transportation
- The source of financial information
- Specific sources of payroll information
- Problems encountered and how these problems were solved
- Final review and comments
- A contact person's name, title, email address, and telephone number.

The survey team will enter the labor hour and salary information for each employee, as well as the cost summary and direct cost information into the facility's cost model. The survey team will back up the preliminary site file to our secure Study SharePoint Site. We will use the Study SharePoint Site, in combination with the secure ShareFile that each facility will upload data to, to store and review cost survey files. Electronic file storage and review enhances security and review procedures. We will "assemble" site files within the system using a standardized file structure. Each component of the site file will be clearly labeled and identified and ordered. Any paper documents received at the site visits will be scanned and uploaded to the Study SharePoint Site. To the extent there are paper documents, the original paper documents will be stored securely until they are securely shredded upon completion of site files.

C. Financial Review Process

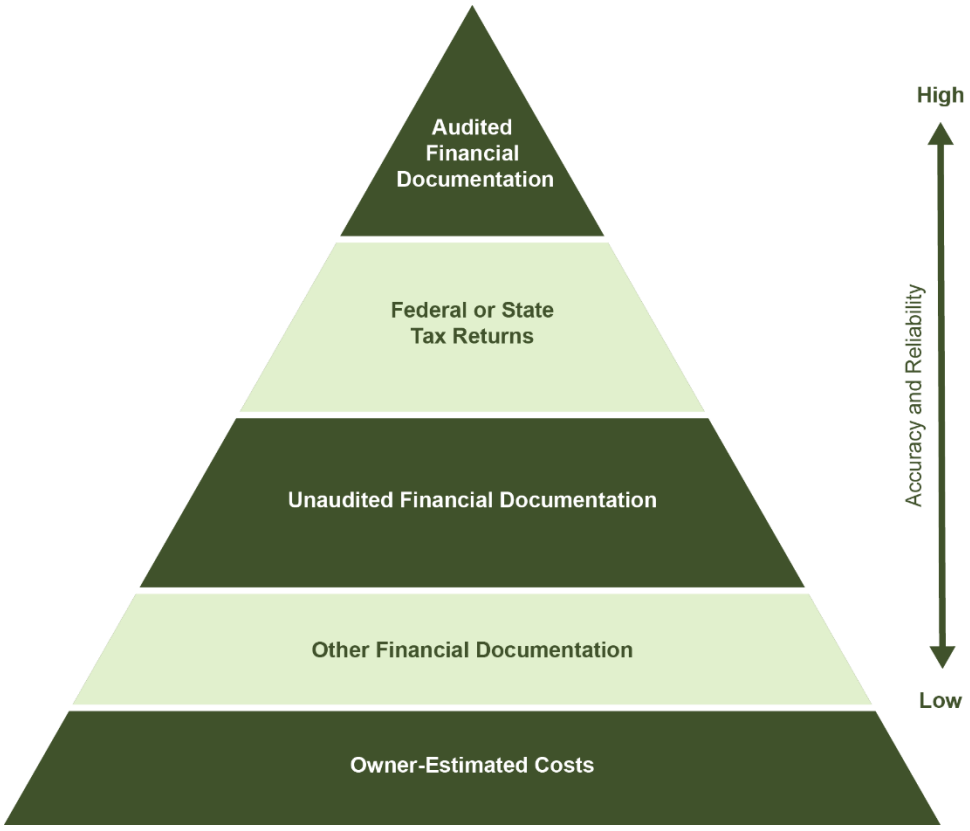
In this subsection we describe types of financial information the survey team will request from the facility and the financial interview process. Additionally, we detail the cost categorization process, allowable and non-allowable costs, and direct and indirect costs.

1. Financial Documentation

Crowe will request financial data for calendar year 2022 for each surveyed facility. We will request this information prior to the site visit. **Exhibit 7** provides a hierarchy of the types of financial information that we would expect to receive from a facility. Our goal is to obtain the most complete and accurate financial information for calendar year 2022. Examples of the types of financial information a facility may provide could include the following:

- Audited financial statements
- Tax returns
- Unaudited financial statements
- Other financial documents (income statements, profit/loss statements)
- Supporting documentation
    - Actual bills for such items as property taxes, utilities, supplies, fuel, insurance, and overhead
    - Invoices
    - Bank statements
    - Facility or equipment rental or lease agreements
    - Documents or invoices pertaining to various maintenance and transportation expenses.

Exhibit 7
Financial Information Hierarchy



We recognize that each facility may have different levels of accounting capabilities. Crowe will work with each facility to obtain the best available source data. In some cases, this may mean drawing on multiple sources. In other cases, we may develop the financial information from source documents such as invoices.

Crowe may perform testing of transactional support to validate the veracity of financial information presented by the facility. This could include sampling selected transactions and requesting source documentation to support the cost.

A facility may operate on a fiscal year that is different from a calendar year. In these cases, the survey team will ask for financial information from two fiscal years and will work with the facility to split and combine financial data to align with the calendar year 2022 basis.

The facility should provide financial data that is comprehensive of the entire facility's operations, including processing commingled recyclables and other non-related business activities. Crowe will use our labor-hour methodology to allocate the portion of the facility's total costs that are the costs of processing commingled recyclables (for purposes of determining the PCRF), and the costs of contamination removal (for purposes of determining the CMF).

2. Financial Interview

During Crowe's site visit financial interview, the survey team with ask questions about the costs on the financial documentation, in order to determine if they are related to processing commingled recyclables or not. For these interviews, the facility should make available site management and/or accounting personnel who are familiar with the costs presented and who have access to supporting records should the survey team have questions about specific costs.

Exhibit 8 shows an example of some of the questions we may ask and areas that frequently require further evaluation. This exhibit provides a list of common costs which are reported on financial documents, the questions the survey team may ask about them, and why. While the exhibit identifies some specific examples of cost categories which often need additional clarification, Crowe will ask similar questions about each line item as we walk through the financial documentation.

Exhibit 8
Example Questions and Issues on Financial Statements

2014	Federal Statements	Page 1

Statement 3
Form 1120S, Line 19
Other Deductions

Accounting		$ 7,550.
Auto and Truck Expense		28,828.
Bank Charges		6,252.
Cash <Over> Short		514.
Computer Charges		15,111.
Dues and Subscriptions		7,345.
Employee Meals		8,760.
Employee Welfare - Others		801.
Environmental		2,782.
Fuel		67,840.
Insurance	What type of insurance is this?	206,109.
Landfill / Dump Fees	Does is include workers comp?	6,825.
Legal and Professional	This is a large amount.	5,360.
Loan Fees		195.
Meals and Entertainment Expense		1,191.
Office Expense		9,030.
Office Supplies		14,648.
Outside Services	Please elaborate on this expense.	18,280.
Payroll Service Fees	What are outside services?	6,350.
Postage	Is this contract labor?	2,084.
Promotion		4,717.
Rent - Equipment		4,767.
Security		4,757.
Shop and Yard Expense	What costs are included in this line item?	55,918.
Telephone	This is a large amount (55,918).	11,430.
Travel		46,279.
Uniforms		20,038.
Utilities		36,544.
	Total	$ 600,305.

What are the autos/trucks used for? Are there personal vehicles in here?

What are the fuel costs for? Equipment on the site or autos/trucks?

What are these legal and professional fees for? Sometimes, these include accounting services, which is fine, but accounting is already listed above.

Please elaborate on this expense. Is it for advertising?

3. Allowable and Non-Allowable Costs

The cost model is designed to capture these eligible or "allowable" processing costs. In accordance with ORS 459A.923(1)(c)(A) of the RMA, "eligible processing cost" means all costs associated with owning and operating a commingled recycling processing facility as determined by this study, including but not limited to:

- Sorting
- Handling
- Storing
- Disposal
- Marketing and shipping
- Administration
- Rent
- Fees
- Depreciation
- Fixed costs
- Profit
- The target price paid for commingled recycling collected from Oregon, and
- Anticipated program costs.

During the financial interview process, the survey team will interview site management and/or accounting personnel to identify "non-allowable" costs included within the financial information. **Exhibit 9** identifies types of non-allowable costs that we will need to remove from the costs of processing commingled recyclables. Using the cost model, we will remove these non-allowable costs from the determination of the costs of processing commingled recyclables.

Exhibit 9
Non-Allowable Cost Categories

Categories	
1. **Charitable contributions/donations**	6. **Lobbying**
2. **Costs reimbursed by producer responsibility organizations or other parties (e.g., contamination management fee)**	7. **Promotional items increasing scrap value, and other incentives**
3. **Fines and penalties** (imposed by government/business)	8. **Revenue from the sale of recyclables to end markets**
4. **Inbound transportation**	9. **Royalty expense**
5. **Litigation**	10. **Settlements**
	11. **Taxes** (income, sales, franchise tax)
	12. **Grants / reimbursed costs**

4. Assigning Costs to Categories

During the financial interviews, the survey team will categorize costs into the fourteen (14) allowable cost categories identified in **Exhibit 10.** This exhibit further identifies items typically included within these cost categories. Categorizing costs in this way primarily assists the survey team to assess whether all costs are captured for the facility. Additionally, during subsequent QA/QC processes the team can determine how much each cost category represents of the total facility costs and compare these outcomes with averages for other facilities in the population to identify potential cost outliers which may require further analysis.

Exhibit 10
Allowable Cost Categories

Category	Detailed Items	
1. Direct Labor	• Contract (or outside) labor • Direct labor • Officer's salary • Overtime • Safety incentive program	• Temporary service (contract, office, site) • Vacation/holidays/sick leave (paid) • Wages (administration, field supervisors, site, truck drivers)
1b. Other Labor/ Overheard	• Accrued vacation and holidays • Employee benefits (pension, profit sharing plan, union) • Employee welfare • Group insurance • Health Insurance (dental, health, legal, vision, life)	• Payroll taxes • Retirement • Unemployment tax • Union benefits • Workers compensation insurance
2. General Business Overheard	• Accounting/administrative/ legal fees • Advertising/promotion • Automobile – general use • Bad debt accrual • Bank charges • Business meals • Cash short • City franchise tax • Computer expense • Consulting fees • Courier/postage • Credit card fees • Dues/subscriptions • Entertainment/meetings/meals • Laundry • Legal services • Miscellaneous • Office expense	• Payroll processing fees • Pension administrative fees • Physical exam • Postage • Printing • Reproduction (faxes, printing, Xerox) • Safety awards • Scale fees • Security (alarms, dogs) • Service (exterminator, janitorial, lab analysis, laundry) • Site mileage – auto • Taxes/licenses/permits (business) • Theft • Training/recruiting expenses • Travel/relocation expenses • Voucher redemption fees

Exhibit 10
Allowable Cost Categories *(continued)* *Page 2 of 3*

Category	Detailed Items	
3. Transportation	• Freight out (excluding scrap value deduction) • Fuel related to hauling materials • Fuel for general transportation • Hauling • Insurance (auto, truck) • Permits/license/taxes (auto, truck)	• Road expense (truck driver) • Tires • Tolls • Truck expense • Truck (maintenance/repair, outside service) • Weight fees
4. Rent/Lease/Mortgage	• Building • Equipment • Facilities	• Property/site • Vehicles (trucks, autos, forklifts)
5. Depreciation	• Amortization • Depreciation expense • Schedule 179 deduction	
6. Property Taxes	• Building property tax • Taxes – unsecured property	
7. Utilities	• Cell phone service • Electricity • Internet • Natural gas	• Sewer • Telephone • Water
8. Supplies	• Parts • Printing and stationary • Office • Safety equipment • Shop supplies	• Small equipment • Small tools • Uniforms • Yard supplies
9. Fuel	• Gas and oil • Gasses	• Propane • Yard fuel

Exhibit 10
Allowable Cost Categories *(continued)* *Page 3 of 3*

Category	Detailed Items	
10. Insurance	• Business • Fire	• Liability • Property
11. Interest	• Interest (loan, mortgage, notes payable)	
12. Maintenance	• Building, facility, property • Equipment • Painting • Radio maintenance	• Repairs • Repairs and Maintenance • Scale expense – repairs
13. Disposal	• Cost to dispose of contaminants/residual materials	• Tipping fees paid • Transportation of contaminants/residual materials to disposal facility
14. Cost of recyclables	• Payments to haulers for commingled materials	• Payments to other CRPFs for commingled materials (to receive or obtain recyclables)

5. Direct and Indirect Costs

The identification and assignment of direct costs—which we called "direct-costing"—is crucial to the cost survey. Direct-costing results in more accurate and precise survey results.

In general, direct-costing involves identifying direct costs during the financial interview process, populating the applicable workpaper in the cost model, entering the costs in a direct cost worksheet included in the model, and then filling in the supporting details for the direct cost in the site memorandum. The direct-costing process is depicted in the high-level graphic, **Exhibit 11.** Differences between direct and indirect costs are explained further below.

Exhibit 11
Direct Cost Process

Why is it Important to Identify Direct and Indirect Costs?

- Ultimately, the survey goal is to determine what it costs to process commingled recyclables. Some processor costs are associated with processing specific types of commingled recyclables such as OCC, thus those specific costs should be directly applied to those materials in the cost model.
- Identifying direct costs as opposed to indirect costs increases the accuracy of the survey results.

- It does not cost the exact same amount to recycle specific types of commingled recyclables. Accurate direct-costing reflects and accounts for this fact.

What is a Direct Cost?

- **Direct costs** – Direct costs can be associated with one or more specific materials in the commingled recycling stream or to another non-related business operation. Essentially, the cost of the item can be "directed" to a specific material(s) since the item is only used for that material(s).
- Costs can be directed to a material type or a combination of them.
- Costs can also be directed to non-covered product materials like beverage containers or rigid pallets. This is called direct-costing to "other business."
- The following are examples of direct costs (see also **Exhibit 12**):
    - A baler used only for corrugated cardboard. Since the baler is not used for printing and writing paper costs it should be direct-costed to cardboard.
    - A truck used only for other business activities not related to processing commingled recyclables. Since the truck is only used for other business, any truck costs should be direct-costed to other business activities.

Crowe utilizes a multi-step allocation approach when a direct cost is for more than one material type, for example a baler used for corrugated, PET, and HDPE. The first step is to apply the labor allocation percentages to split the direct cost, in this case between OCC and plastic. If we are not able to utilize labor allocation or an additional level of allocation is needed, we utilize weight. For example, we would likely utilize weight to allocate between PET and HDPE. We will document allocate methods for direct costs in the Site Memorandum.

Exhibit 12
Common Direct Cost Items and Materials

Cost Item	Material(s)
Baler-related costs (including baling wire, repair, maintenance, and depreciation) and conveyor system costs	• Usually directed to carboard, paper, plastics, aluminum cans, or some combination of those.
Consulting / professional services	• Sometimes directed to other business
Transportation costs	• Sometimes directed to one or more covered material types (for example, processor hauls baled paper to the end user), or directed to other business
Depreciation for scrap-metal processing equipment (excavators, shearers, shredders, cranes, etc.)	• Directed to other business
Glass crusher costs (depreciation, maintenance)	• Directed to glass
Scale costs	• Sometimes directed to all commingled recyclables if scale is used only for commingled recyclables, and there are other materials at the site. • Sometimes directed to other business if a scale is used only for scrap metal or non-commingled separated materials
Rent – when the financial information includes multiple processing facilities or businesses	• Rent for the site you are surveying is directed to all materials handled at the site (AMI) • Rent for the other site(s) included in the financial information is directed to other business

What is an Indirect Cost?

- **Indirect costs** – Indirect costs cannot be attributed to a specific material type or to other business operations. Indirect costs are usually overhead costs, for instance, rent, advertising, utilities, and supplies. While these costs are all necessary to do business, there is no easy way to identify what amount of these costs is associated with specific material types. How would you tell how much of rent is associated with processing food serviceware? It's not possible.
- Indirect overhead costs usually touch all aspects of the business and cannot be separated out neatly.
- The cost model allocates indirect costs automatically based on the labor allocations that are developed through the labor interview process discussed below.

D. Labor Allocation Methodology

Labor costs commonly make up over half of a typical recycling center's total site costs, although this could be less at CRPFs with more sorting equipment. At approximately 50% of total site costs, labor is a substantially larger percentage of expenses than other costs like rent, transportation, equipment, and utilities. In addition to making up over half of all site costs, labor is a significant driver in how Crowe's methodology allocates other cost categories. All other cost categories, including transportation and rent, are distributed based on labor percentages (if the cost cannot be directly allocated to a specific material or other business). Since labor percentages influence the allocation of indirect costs, labor has both a direct and an indirect impact on site costs.

In short, labor costs are the main driver of site costs, and it is extremely important to obtain accurate and reliable labor information.

At a high level, there are three main steps to completing the labor costs portion of a facility, depicted graphically in **Exhibit 13:**

1) Obtain the labor information
2) Conduct the labor interview regarding the labor information
3) Analyze the results and enter data into the cost model.

Exhibit 13
Overview of Labor Cost Process

1. What Are Labor Interviews and Why Are They Important?

We conduct labor interviews with site management to determine the proportion of time each employee spends handling commingled recyclable materials, other recyclable materials, contaminants, and other business activities.

- Our goal is to determine the percentage of time each employee spends conducting specific activities and handling various types of materials
- Ultimately, for each employee, we will work with facility managers to approximate the percent of time spent on recyclable material categories including but not limited to: OCC, mixed paper, cartons, PET, HDPE Natural, HDPE colored, other rigid plastics, and contaminants
- These percentage breakdowns are called "activity splits"
- Obtaining accurate labor costs and activity splits is extremely important since they drive the allocation of all other costs.

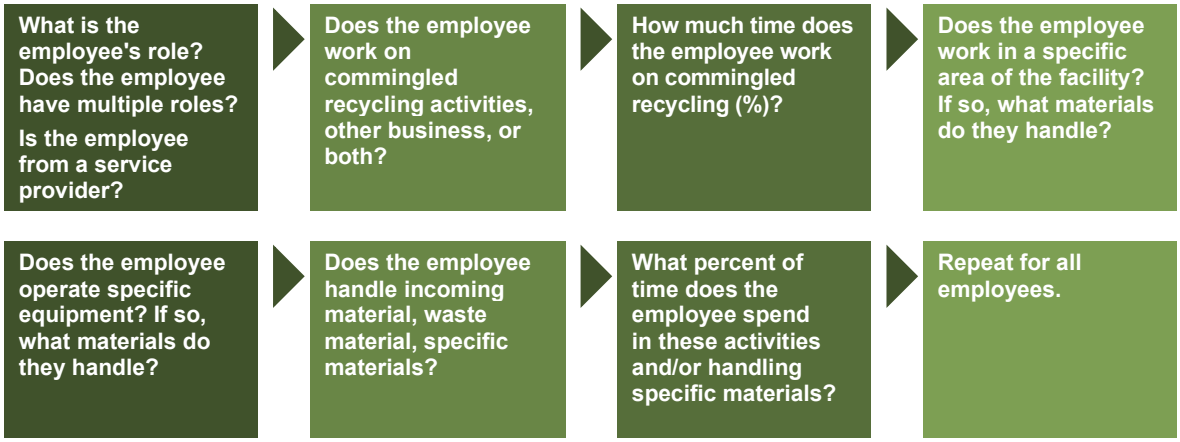
2. Conducting Labor Interviews

Crowe will interview facility management to determine the percentage of time each employee spends handling various materials at the site. We may need to talk to multiple managers and supervisors depending upon which employees we are discussing. As needed, we will "drill down" through more and more detailed lines of questioning that break bigger labor pieces into smaller pieces.

Exhibit 14 depicts the general line of questioning we will follow. It provides a high-level structure of the types of questions Crowe will ask to gather the information we need. We will review the site's tonnages and materials handled beforehand to understand the materials handled and likely labor activities. In our experience, facility managers are not used to thinking about their employees' activity in terms of how much time they spend handling various materials. Because we are asking them to think counterintuitively, we will slowly and iteratively walk through the labor interview process to parse out the information we will need to appropriately allocate costs.

At some sites there may be multiple employees who perform the same job function and have the same "activity splits." If there are multiple employees who do the same thing and spend the same amount of time on materials, we will combine their wages and hours and treat them all as one "super employee." This can simplify the interview process for the facility manager and for Crowe. A super employee is also commonly used for temporary employees and for employees working in other business areas.

Exhibit 14
General Line of Labor Questioning



3. Reconciling Labor Costs to Financial Statements

During the facility visit the Crowe team will reconcile labor costs to financial documents by doing a rough calculation to compare the total wages indicated on the labor documentation to the total wages on the financial documentation. This is an important quality control step for the following reasons:

- Reconciling labor costs means comparing total wages on the labor documentation to the total wages on the financials
- Essentially, labor expenses reported on the financials should equal, or be very close to, the total wages on the labor documentation
- Part of labor reconciliation is also making sure that the source of labor costs and the source of financial information are for the same time period.

If these two indicators are not reasonably close (within +/- 5 percent), the Crowe team will work on-site with facility management to determine and resolve the source of the difference. Often these differences are a result of missing data or inclusion of payroll taxes in labor-related financial data.

E. Customized Excel Cost Model Template

Crowe has developed a customized Excel Cost Model (Model) to capture financial and labor information for each participating CRPF in the survey. The model leverages Crowe's Labor Allocation Cost Model, first developed to determine costs of recycling for California beverage containers in 1995. Crowe has refined and updated that model over the last 27 years. The Model also builds on Crowe's Pilot Recycling Facility cost model, developed in 2022. This recent iteration of the cost model incorporates flexibility and functionality beyond that of the legacy model. In this section we provide an introduction and overview of the Model, which is further detailed in Appendix C. **Exhibit 15** provides an overview of the Model worksheets.

Exhibit 15
Overview of the Cost Model and its Worksheets

Worksheet	Action	Description
1. Review Sheet	 QC calculated results	This worksheet summarizes total costs, costs by category, total tons, cost per ton, labor hours per ton for the site. This worksheet is used for quality control purposes only.
2. Material/Waste Tonnage	 Input data  Review information	This sheet contains the site's material and waste tonnage, reported by the site to DEQ. Reviewing this information gives a sense of the site's size, tonnage, and operations.
3. Labor Input	 Input data	Labor information is entered into this worksheet. Specific inputs include labor hours, hourly rates, estimated percentage of time to the commingled processing recycling facilities, other business, estimated percentage of time to activities and materials, and estimated percentage of time between warehouse work versus administrative work. Individual employees (temporary/contracted and permanent) can be entered as well as groups of employees. It provides calculations, estimations, or explanations related to labor information. This worksheet is critical as it drives the allocation of all indirect costs.
4. MWI and AMI Percentages	 QC calculated results  Output data	This worksheet is used to perform QC checks on the outputted labor information. The percentages in this worksheet should be reasonable based on the labor interview during the on-site visit. This worksheet summarizes the site's labor allocation between material types including waste and other business activities. MWI (Material/Waste Indirect) applies to materials related to the PCRF and CMF. AMI (All Materials Indirect) applies to activities for the entire facility/operations.
6. Cost Input	 Input data	Financial information from the site is entered in this worksheet to include costs by line item. Each line item is categorized to a specific cost category. This sheet is a source for the model's calculations.

Worksheet	Action	Description
7. Cost Summary	QC calculated results	Financial information from the cost input worksheet is summarized by cost category. Quality control checks are performed in this worksheet to compare against provided financial information.
8. Direct Costs	Input data	Direct costs are entered in this worksheet by cost category to specific material types or activities such as other business.
9. MWI Costs	Review information Output data	Once labor, financial, and direct cost information are entered, this worksheet provides an outputted summary by major material types related to the PCRF and CMF.
10. Materials Submodel	Review information Output data	This worksheet calculates the secondary allocation using material tonnage or other secondary allocations. For example, the percentage of covered and non-covered products within the contaminated tonnage.
11. Facility Cost Summary	QC calculated results Output data	This worksheet provides a background calculation that sums total costs for each material type from Direct Costs, MWI Costs, and AMI Costs.

F. Secondary Allocation Methods

Crowe defines secondary allocation methods as methods used in addition to the labor allocation approach to assign processing facility costs to the appropriate activities and/or materials. Labor allocations alone cannot be sufficiently fine-tuned to address the complexity of the law, definitions of the PCRF and CMF, definitions and exclusions of covered products, and some aspects of operations at CRPFs. We describe additional allocation methodologies in Sections 3 and 4. At this point we have identified several areas in which secondary allocation approaches will be necessary to ensure that the PCRF and CMF appropriately reflect Oregon-specific facility costs; however, we will not be able to identify exact allocation ratios until we obtain and review additional data. Components of processing costs that will require secondary allocations include, but are not limited to:

- Non-Oregon versus Oregon commingled recyclables
- State-specific contamination rates by sector if available
- Source separated versus commingled recyclables
- Covered versus non-covered contaminants
- Material inflows with varying degrees of pre-sorting
- Non-Oregon versus Oregon recyclable commodities.

As we conduct additional research, receive facility data, and obtain preliminary waste composition study results, Crowe will work with DEQ to refine and apply secondary allocation methods.

G. Quality Control Review

Our experience conducting the recycling cost surveys at hundreds of facilities in California, as well as our experience helping the California recycling program defend costs, processing fees, and handling fees against industry challenges, has taught us that quality control of recycling cost surveys must be a primary theme for this project. We cannot overstate the need to implement defensible procedures and commit sufficient resources to determine that cost survey results are **fair, equitable, accurate, reasonable, justifiable, and defensible.** In addition, it is essential to implement procedures to assure potentially reluctant recyclers that participation in the survey is to their benefit. We have been assuring facilities that we understand their time commitment required to participate in the survey and will work with them to minimize the burden. We conduct several tasks, and commit ample time, to institutionalize quality control into our work efforts.

Our quality control/peer review process ensures quality control in the survey processes. We will implement this quality control on three fronts:

- Site survey quality control/peer review process
- Overall methodology control procedures and reasonable measures process (extensive cross-checking and quality review implemented within each task of our proposed work plan)
- Confidentiality process (discussed below).

Below, we provide details on our multiple layers of quality control and independent assurance.

- The on-site team will follow defined quality control (QC) procedures.
- An independent senior team member that did not visit the site will review each site's work papers and Excel cost model.
- The Project Advisor, with extensive site survey and review experience, will review each site file to evaluate financial and labor information and documentation of procedures.
- The Project Director, also with extensive site survey and review experience, will review the site file for accuracy and reasonableness and identify outliers.

After entering and validating the data, the on-site survey team will review the model's calculated total costs and costs per ton for commingled recyclables, non-covered contaminants, covered contaminants, and any relevant individual recyclable material categories. Finally, the survey team will compile and check all workpapers, and conduct a reasonableness check of survey results before passing the site file on to the Project Manager for the first of several office review steps.

In finalizing each site file, the on-site survey team will conduct the following QC activities prior to submitting the file for additional review steps:

- Determine that costs were: verified to a documented source; allowable and reasonable; and reconciled to appropriate documentation
- Determine that site procedures were followed and signed-off by the appropriate team member
- Verify data entry to the cost survey spreadsheet model
- Verify that the labor cost reconciliation was accurate
- Verify consistency of the labor allocations with site memorandum and site recycling volumes
- Verify that total costs and cost per ton for the relevant categories were reasonable, or that outliers could be explained by site data
- Prepare completed and cross-referenced work papers to document the final financial and labor data
- Create a separate electronic file for each site on the secure Study SharePoint Site with work papers, notes, and final determination of costs.

Following the team's completion of the site file and reviews, Crowe's Project Manager will conduct an independent quality control review process. Once she is satisfied that the file is complete and accurate, Crowe's Project Advisor and Project Director will each conduct an additional detailed review. When a site file does not meet the quality control criteria, the reviewer will document the problem(s) on a form developed by Crowe and return the file to the original survey team for corrections, if appropriate. Only after this extensive series of quality control reviews will we use the data for the final total cost and cost per ton calculations.

Activities Crowe will complete during the quality control review activity include:

- Review workpapers to confirm that they are all-inclusive
- Determine that costs were: verified to a documented source, allowable and reasonable, and reconciled to appropriate documentation
- Determine that survey procedures were followed, and the Site Memorandum and Site Equipment List are complete and signed-off by the appropriate team member
- Determine that problems encountered at the site (including post-visit information requests) were treated properly
- Confirm that all worksheets of the automated cost survey model are complete, accurately linked (when applicable), and included in the correct sequence in the workbook
- Determine that costs are verified to a documented source and consistent with financial information
- Verify that labor costs and financial data reconcile within a reasonable range (typically +/- 5%)
- Verify consistency of labor allocations with Site Memorandum and site recycling volumes. This task depends on an accurate description by the on-site survey team of a site's layout, operations, facilities, recycling tonnages, and problems encountered
- Verify that facility-provided tonnages and DEQ-provided tonnages are consistent
- Confirm that review notes are cleared
- Identify outliers and facilities with unusable data. This task may not be necessary, but should such facilities occur, this task is critical to determining whether we can use the facility in the calculation of total costs and costs per ton. We will meet with DEQ to discuss such facilities (while maintaining their anonymity) and together determine whether to include the facility in the calculations.

H. Data Compilation and Calculation of Results

Each site's financial, labor, and tonnage information is calculated by the *Labor Allocation Cost Model* Excel file for that facility. Data from each site's cost model must be extracted and consolidated in order to calculate the statewide weighted average actual cost per ton to process commingled recyclables at commingled recycling processing facilities (CRPFs). During 2023, there will be 12 CRPFs. This means there may be up to 12 individual Excel file cost models. For this survey, we will utilize multiple data visual analytics tools to support our analyses of survey results.

Members of our team have developed an Excel workbook, *Results.xlsx*, that significantly reduces the time needed to extract, transform, and load from each site's cost model into a single Excel workbook. In a few minutes, this updated workbook can do the following for all completed sites:

- Extract from each cost model site identifiers (e.g., company name, location), material and waste tonnage, and the total costs related to the PCRF and CMF.
- Populate a single, pre-defined table that contains all the required fields from each site.
- Calculate the statewide weighted average actual costs related to the PCRF.
- Calculate the statewide weighted average actual costs related to the CMF.

Exhibit 16 illustrates the calculation approach that will be utilized for determining weighted average cost per ton related to the PCRF. The costs are based on the cost to process commingled recyclables at CRPFs that are shipped to end markets and the cost to dispose non-covered products as part of disposing of contaminates. The tons are based on the tons of all recyclables on the USCL, sorted from the commingled stream, that are shipped to end markets. Crowe will present summary results for each of the PCRF components: facility costs, anticipated costs, and reasonable financial return.

Exhibit 17 illustrates the calculation approach that will be utilized for determining weighted average cost per ton related to the CMF. The costs are based on the cost to dispose commingled covered products at CRPFs that are shipped to landfill. The tons are based on the tons of covered products, sorted from the commingled stream, that are shipped to landfill.

In addition to the cost per ton calculations, we will conduct, and report on (in aggregate), several other relevant calculations, including:

- Costs per ton with reasonable financial return (RFR or profit) (discussed in Section 3 below)
- Cost per ton with anticipated program costs (discussed in Section 3 below)
- Cost categories as a percentage of total costs.

Other activities we will perform include:

- Perform outlier analyses, and follow-up as necessary, to correct problems causing the site to be an outlier.
- Calculate metrics such as labor hours per ton and tons per site to help evaluate survey results.

Presentation of Results

In calculating the PCRF and CMF, Crowe will be analyzing and determining data points in several sub-categories. Where we can do so without exposing confidential information, we will do so. For example, we expect to calculate average and percent of total costs by cost category (direct labor, transportation, rent, etc.) for current and anticipated costs. We also will be determining material specific costs where the data allows. Other relevant study information we will gather and provide, if feasible, includes details around calculation of profit and overall planned capital investment.

Exhibit 16
Processor Commodity Risk Fee (PCRF) Cost per Ton Calculation

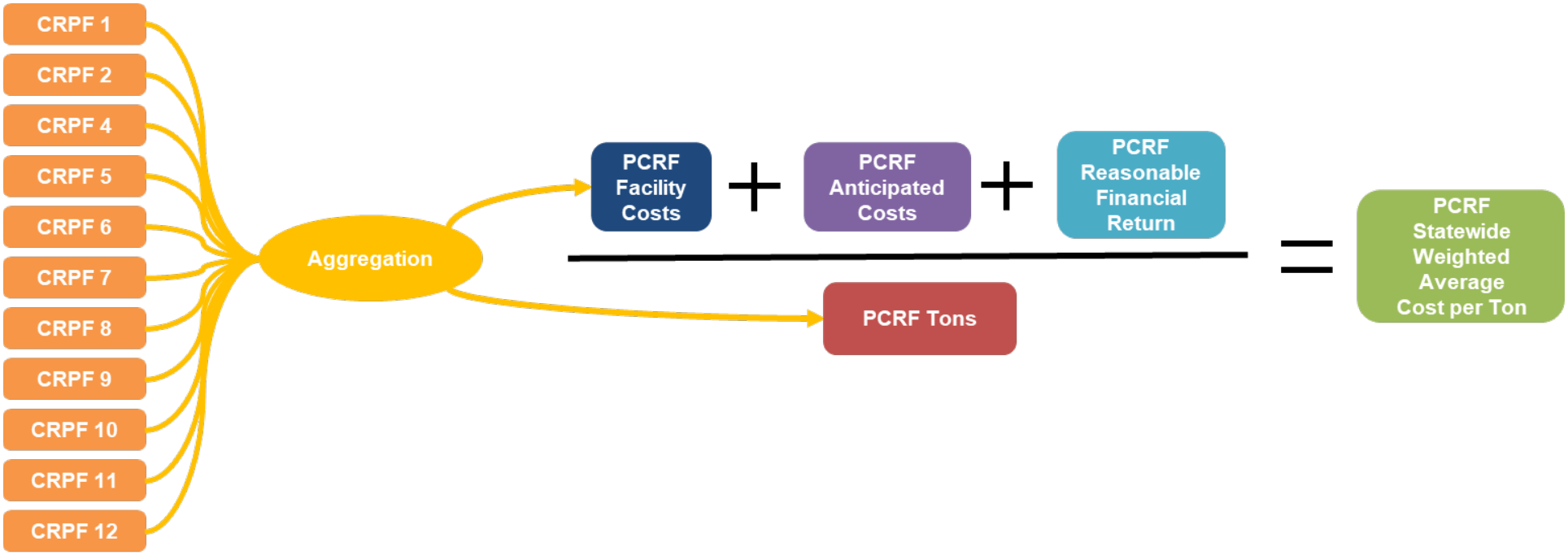
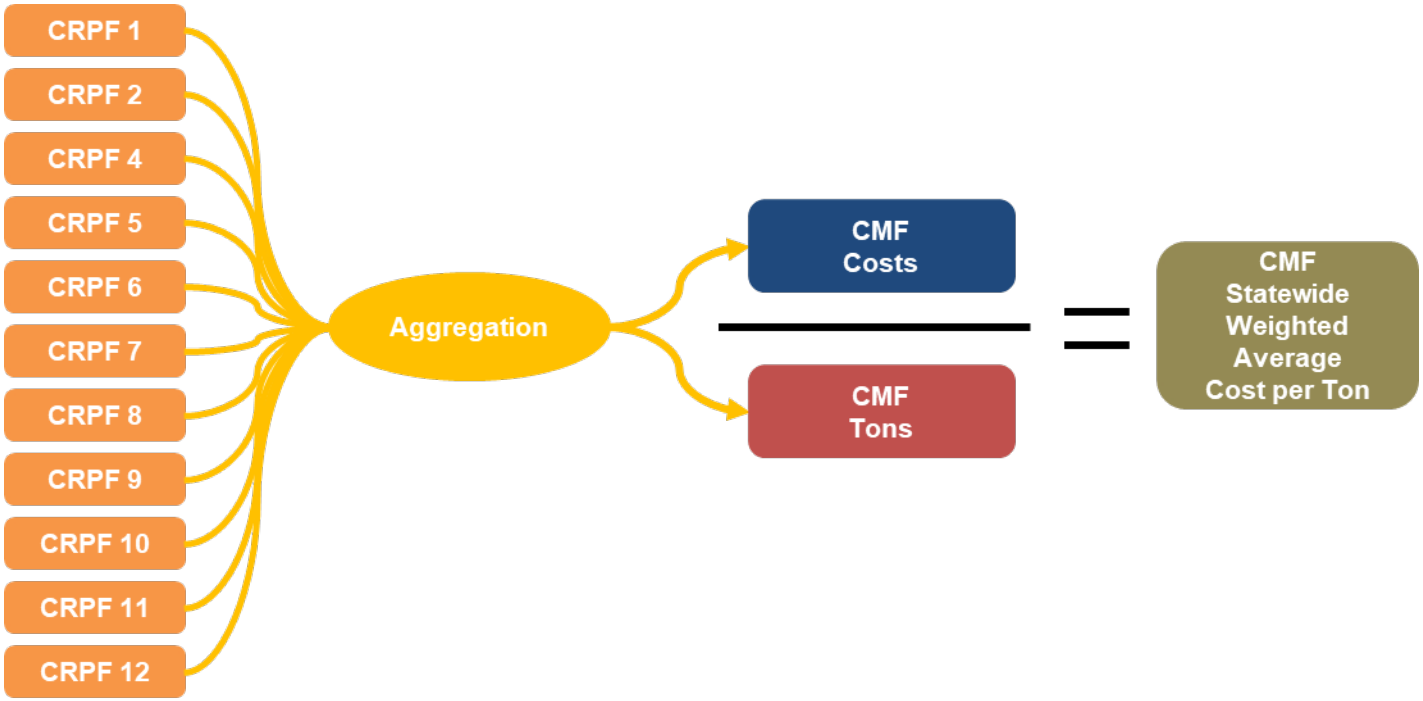


Exhibit 17
Contamination Management Fee (CMF) Cost per Ton Calculation



I. Confidentiality and Data Security

Confidentiality is important for the cost survey. The recycling volume data and financial data from each facility are highly confidential. Release of these data could be compromising to a facility. Proprietary data received from CRPFs as part of determining the CMF and PCRF are protected, as defined in ORS 459A.920 and ORS 459A.923:

> *Any proprietary information provided to the department …or to a person conducting a study under this section may be designated confidential by a commingled recycling processing facility. Information designated confidential is not subject to public disclosure under ORS 192.311 to 192.478, except that information may be disclosed as summarized or aggregated data if doing so does not directly or indirectly disclose the proprietary information of any specific facility.*

Crowe created a project-specific Non-Disclosure Agreement, reviewed by our internal Legal team, to formalize and document confidentiality of facility data. The NDA is signed by Lisa Voeller, the Executive Partner for this study. The NDA incorporates the relevant RMA language from ORS 459A.920(4) and ORS 459A.923(5). Crowe provided a facility-specific NDA to each contact person and is working to obtain executed copies for each facility.

As an accounting and consulting firm, Crowe has expertise in security, privacy, records management, and confidentiality. We will follow Crowe's published policies on records management, privacy, encryption, out-of-office security, password management, external connectivity, and use of sensitive data. We have not experienced issues related to security and/or breaches of confidentiality in prior cost surveys. Implementing Crowe's formal policies provide additional layers of protection for sensitive participant data. Crowe's confidentiality and security approach includes three measures, described below.

Establish and implement specific confidentiality procedures

To protect confidentiality of each participant's business data, we will do the following:

- Limit access to all confidential and proprietary documents, information, and data to those individuals whose work requires such access
- Formally adopt a policy, codified in the NDA, that specifically recognizes participants' business records and other records identifying the name of facilities are strictly confidential in nature
- Advise all project personnel that such records shall not be made available to any agency of state, federal, or local government except in an aggregated format, except as may be authorized under the authority of, and pursuant to, federal, state, or local law relating to civil, criminal, or administrative discovery procedures or legislative investigative power
- Keep all participant electronic or paper site files, both in progress and after completion, in a secure, accessible only by the approved Crowe project team members
- Protect against unauthorized access to our computer laptops through use of project passwords. Require all project staff to adopt appropriate security measures for their computer laptops including use of appropriate security software and use of locked password access. Require all project staff to utilize approved security software to encrypt project-related files and folders with an additional layer of password protection
- Securely store electronic files related to site file visits in our secure, password-protected Study SharePoint Site. All survey team members will receive a unique login to access the files
- Limit access to participant data, once site file reviews are complete, to only those Crowe team members involved in the final analyses

- Maintain all data in aggregate form, removing participant names to the maximum extent possible, once site files are complete
- Provide facility data to DEQ in aggregate form
- Maintain strict confidentiality of participant information and discuss a participant's information only with that entity.

Utilize Crowe's ShareFile system to allow CRPFs to securely transfer data to Crowe

- **Crowe ShareFile access**
  - Crowe created secure ShareFile accounts for each facility. This allows the facility team to create a ShareFile account with individual usernames and passwords that allows secure data upload to the site-specific ShareFile folder. Each ShareFile folder is only accessible to the specific facility team and Crowe staff assigned to the study. Crowe configured ShareFile to automatically delete uploaded files after 90 days.

- **Data protection during file transfer**
  - File transfer – ShareFile employs Transport Layer Security (TLS) protocols to protect client authentication, authorization and file transfers
  - High-grade encryption – ShareFile secures files in transit with up to 256-bit encryption using industry-standard encryption protocols
  - File integrity – ShareFile employs a keyed hashed message authentication code (HMAC) to authenticate and ensure the integrity of intra-system communications. ShareFile verifies file size and file hash to ensure integrity
  - Link generation – ShareFile download links are uniquely and randomly generated using strong hash-based message authentication codes. Technical countermeasures provided to protect links from guessing attacks.

- **Data protection during storage**
  - Datacenters generation – ShareFile uses 3rd party cloud service providers like Amazon Web Services (AWS) and Microsoft Azure that are certified with SOC1/SOC 2/ ISO 27001 certified datacenters to host the SaaS application and metadata. All files are stored in SOC1, SOC2 datacenters that also enable users to use the secure environment to process, maintain, and store PHI. Citrix cloud storage is also stored with the same level of compliance as our 3rd-party data centers
  - Encryption – ShareFile stores client files at rest using Advanced Encryption Standard (AES) 256-bit encryption
  - Firewalls – Files are processed using systems protected by securely configured firewalls that effectively limit and control access to network segments.

- **Additional ShareFile security information**
  - The ShareFile platform is owned by Citrix Systems
  - ShareFile introduction – https://www.sharefile.com/company
  - ShareFile security and compliance website – https://www.sharefile.com/resources/citrix-sharefile-security-and-compliance
  - ShareFile security white paper – https://www.sharefile.com/content/dam/sf/pdf/en/sharefile-enterprise-security-whitepaper.pdf

Maintain a secure server for storing and reviewing project electronic documents

For secure and streamlined exchange of information among on-site survey teams and our quality control and review personnel, Crowe has created and is maintaining a secure, password-protected Study SharePoint Site.

This secure database will allow only authorized personnel to access project information from secure Internet-connected computers. For security purposes, authorized team members will be required to navigate to the exact database and enter the correct username and password before being allowed to access files.

We will create a project database for forms and populated cost models, and company-specific databases for site visit files. Only the site team and quality control reviewers will have access to the company-specific databases. Survey teams will make changes to and store the cost models and site files within the database, and reviewers will access and review the files and provide review comments through the same application. We will utilize electronic file review. We will scan signed affidavits and hard copy documents received from participants and incorporate these documents into the electronic file record. With this architecture, we will maintain cost models and forms on the server as masters and provide and safely disseminate review comments and updated files to team members in real time, regardless of a team member's physical location.

In addition to providing an extremely efficient means to exchange large volumes of cost survey data, this solution provides the following security advantages:

- Each user gets his/her own user identification name and password
- Users log on directly to the Study SharePoint Site database and access their files
- Computers are encrypted to protect files from unauthorized access
- Servers are located in a restricted access and locked location.

Crowe Information Services staff will back up data multiple times per day during the study. In the event of network problems or catastrophic failure, this backup source then will be used.

3. Determining the Cost of Processing Recyclable Materials and Covered Products

ORS 459A.923(1) defines the Processor Commodity Risk Fee (PCRF) to include:

- Anticipated program costs (all additional costs related to any new requirements of sections 1 to 43 of the RMA that are anticipated prior to the next review of the PCRF)
- Eligible processing costs (all costs associated with owning and operating a commingled recycling processing facility as determined by the study, including but not limited to sorting, handling, storing, disposal, marketing and shipping, administration, rent, fees, depreciation, fixed costs, and profit)

ORS 459A.923 also specifies that eligible processing cost excludes:

- Revenue from the sale of recyclables and any costs that are reimbursed by producer responsibility organizations or other parties, including the contamination management fee established under ORS 459A.920.

This section provides an overview of methodological considerations related to eligible processing costs, anticipated program costs, financial return/profit, and average commodity value.

A. Eligible Processing Costs

Crowe's financial review and labor allocation methodology will identify and separate commingled recycling processing costs from other business activities. We will utilize additional allocation measures to separate out other costs not associated with processing Oregon commingled recyclables, for example:

- Tonnage, time, count of loads, and/or labor data related to source separated loads run through the commingled sort line
- Tonnage data related to non-Oregon commingled recyclables (from Washington, California, Idaho, Montana, or others)
- Contamination rates for recyclables from other states based on recent reports, CRPF data, the waste composition study, and/or other available sources.

During each site visit, Crowe will capture the financial and labor activities associated with processing commingled recyclables. These activities include, but are not limited to the following:

- Coordinating with haulers and other CRPFs to obtain commingled recyclables
- Weighing and staging incoming recyclable material
- Breaking apart and "fluffing up" incoming material if it is baled
- Pre-sorting contaminants and larger items (OCC, bulky rigid plastics, film, etc.)
- Running material through a metering bin and onto the sort line
- Running material through screens
- Scanning for contaminants and non-contaminants that drop through the screens or run through the sort line
- Sorting recyclable materials through manual, optical, and/or robotic processes
- Re-running material through the sort line to further remove contamination
- Sorting recyclable materials into bins or bunkers
- Moving materials along conveyors or with loaders/forklifts to balers
- Baling materials

- Moving bales via forklift or other methods to storage locations
- Coordinating with brokers and end-users to transport and market materials
- Conducting administrative functions including reporting, accounting, hiring, managing, and supervising operations and employees.

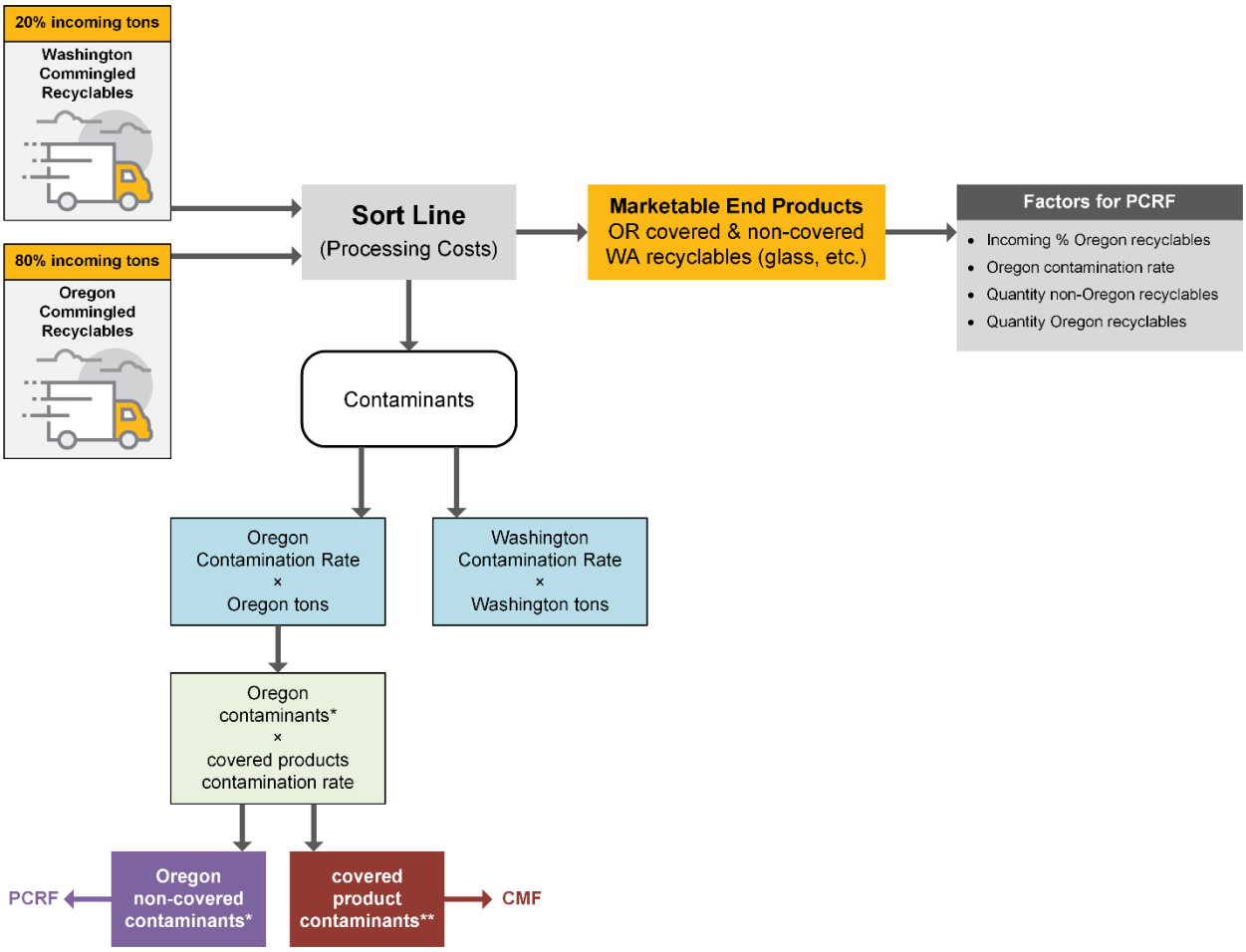
Crowe will document costs for these activities through the methodologies described in this study design report. We will utilize secondary allocation methods to remove costs that are not eligible processing costs, such as costs of processing non-Oregon materials and costs of removing and disposing of covered contaminants.

The RMA specifies that the PCRF excludes costs of commingled materials originating outside Oregon. Oregon CRPFs may receive commingled materials from Washington, California, Idaho, and Montana. In addition, two CRPFs, located in Vancouver, Washington and Fortuna, California, accept and process Oregon commingled recyclables and contaminants, along with materials from other states. Crowe's proposed methodology will account for non-Oregon materials at CRPFs as follows:

- Obtain the tonnage of Oregon versus non-Oregon materials at each CRPF in 2022
- Determine state-specific contamination percentages based on research conducted by states on their commingled recyclables contamination percentages, including the California commingled rate for the Recology CRPF in Fortuna, California
- Conduct interviews with CRPFs regarding contamination levels across states, if available
- Review material-specific data from CRPFs of glass and other materials not on the Oregon uniform statewide collection list.

Exhibit 18 provides a schematic illustrating some of the considerations and allocations that Crowe will undertake to isolate eligible processing costs for the PCRF and costs of covered product contaminants for the CMF. In this hypothetical example, incoming material is represented as a split between commingled recyclables from Washington and Oregon, with the majority from Oregon. This example includes only two incoming material sources; however, there could be additional material coming into a CRPF from non-RMA collection programs that Crowe will need to account for. Crowe will determine and allocate sort line processing costs to capture Oregon-specific costs. Materials coming off the sort line are either contaminants (described below) or marketable end products (Oregon covered, Oregon non-covered, and/or Washington-specific (for example glass)). These costs will be allocated based on factors identified at the right of the exhibit. Costs of non-recyclable contaminants as well as the cost of handling recyclables that are not on the USCL such as PET thermoforms, will also be allocated and captured.

Exhibit 18
Schematic of Material Flows and Allocations

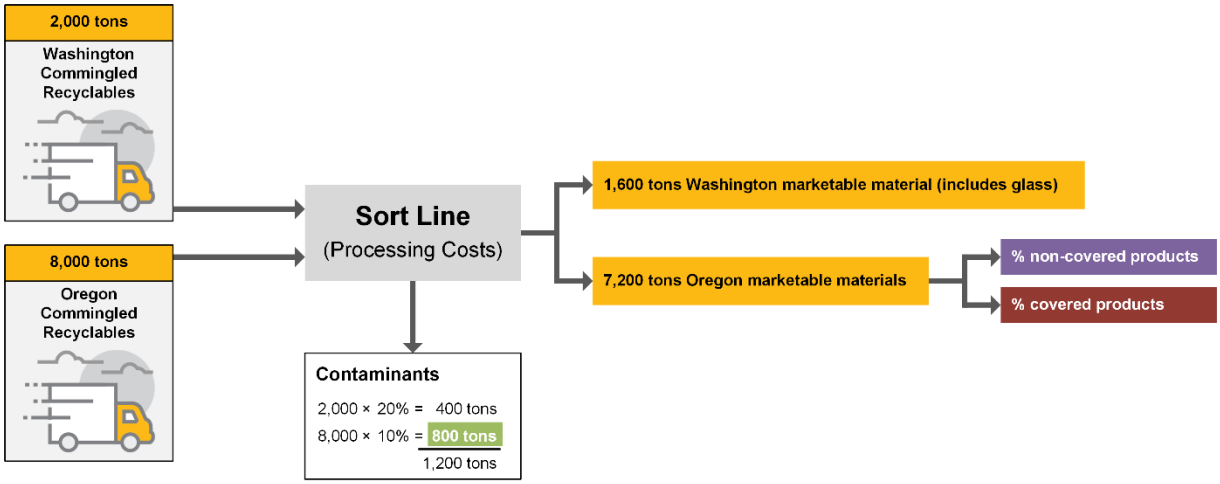


* Boxes marked with a single asterisk will be included in the cost of processing for the PCRF.

** Boxes marked with two asterisks will be included in the cost of removing and disposing of covered product contaminants for the CMF.

Exhibit 19 provides a hypothetical example of how Crowe will utilize secondary allocation methods (tonnages by state and contamination by state) to inform the cost of processing commingled recyclables. In this example, we leverage the different contamination rates to determine tons of material for Oregon. In addition, Crowe will consider materials unique to a state, such as glass, which is not collected in Oregon commingled recyclables (except to the extent it is a contaminant).

Exhibit 19
Example of Allocating Material Between States



Washington: 20% contamination rate
Oregon: 10% contamination rate

B. Anticipated Program Costs

ORS 459A.923(1)(a) defines anticipated program costs as "all additional costs related to any new requirements of sections 1 to 43 of this 2021 Act that are anticipated prior to the next review of the processor commodity risk fee". There are significant unknowns related to anticipated program costs. First, many of the requirements are not yet formally defined. Second, there is no set date for the next review of the processor commodity risk fee, other than within the next five years (although likely this review would be sooner). Crowe will prepare and ask a series of questions related to categories of anticipated program costs during the facility visits. In addition, we will conduct follow-up telephone interviews with commingled recycling processing facilities (CRPFs) in late 2023 to identify anticipated program costs that may be identified as the rulemaking requirements are further defined (e.g., defining living wage and supportive benefits for CRPF workers and permit standards). Anticipated costs could include, but are not limited to, the following:

- Administrative and reporting requirements necessary to comply with permits, including disposition reporting and responsible end market standards
- Operational changes necessary to add sorting capability for materials listed on the Uniform Statewide Collection List
- Quality enhancements necessary to comply with permit requirements including costs associated with:
  - Re-running material through the sort line
  - Adding employees (or reducing employees)
  - Equipment

  - Capacity expansions
- Cost estimations to satisfy contamination standards ultimately established during the rulemaking process (which may vary by bale type, e.g., 1%, 2%, 3%, etc.)
- Cost estimates to satisfy the capture rates standards ultimately established during the rulemaking process.
- Living wage and supportive benefits requirement, though requirement does not take effect until January 1, 2027.

An additional challenge related to anticipated program costs will be to separate already planned facility upgrades and expansions from those necessary to meet the requirements of the RMA. For example, a facility with 30-year-old equipment would most likely be planning upgrades regardless of the requirements of the law. Should some portion of the costs be allocated to "anticipated program costs" or should those costs be excluded? For a facility that is upgrading between now and the next Fee Study, the costs of those upgrades will be included as processing costs in the future study. Crowe will evaluate this question further as we work through the methodology with DEQ. Furthermore, the USCL may change over time, impacting anticipated costs in yet-to-be-determined ways.

To support anticipated costs, Crowe will request supporting documentation to substantiate anticipated costs. Examples of supporting documentation could include the following:

- Salary levels and duty descriptions of additional personnel
- Equipment proposals/quotes
- Standard operating procedures
- Documentation of current capacity and quality levels
- Generally accepted calculations.

Crowe will compile and analyze anticipated program costs obtained during each on-site visit. We will add anticipated program costs to total eligible processing costs (along with profit) to determine the total cost of processing commingled recyclables for the purposes of calculating the PCRF. As part of this analysis, we will consult with the TWG and review DEQ's recently published RMA Modeling Study (Overview of Scenario Modeling). **Appendix D** provides a description of Crowe's Anticipated Cost methodology.

C. Financial Return

ORS459A.923(1)(c)(A) of the RMA indicates that profit is an eligible processing cost. Crowe plans to work closely with the DEQ on the determination of what constitutes a reasonable profit level for a commingled processing facility sorting materials from Oregon. As part of this analysis, we intend to obtain and analyze the following sources of comparable profitability data, at a minimum:

- Other states that provide a financial return for similar recycling subsidy programs (e.g., California's beverage container processing fee)
- Recent profit levels of publicly-traded companies providing service in the waste management/ recycling industry
- Recent profit levels of small, medium, and large privately-held companies providing service in the waste management/recycling industry (e.g., Risk Management Association annual statement studies, Dunn & Bradstreet industry norms and key business ratios)
- Regulated profit levels provided by State/local governments to waste management/recycling companies providing services under a contractual or franchise arrangement.

We also will collect actual profitability data from each of the commingled recycling processing facilities we survey. This profitability data will come from the actual financial documentation provided by the facility. In an effort to normalize what could be a wide range of profitability data for these facilities we will

take into account such factors as:

- Extent of other businesses or activities (which could be either more or less profitable than commingled recyclable processing)
- Owner draws
- Owner salaries
- Pre-tax vs post-tax profit levels
- Size of business
- Status of current prices paid by end-markets
- Type of business structure (corporation, partnership, sole proprietor).

From these sources and analyses, we plan to provide DEQ with recommendations for an industry standard profit level to include in the PCRF.

D. Average Commodity Value

As part of this study, Crowe will recommend a method to determine and periodically update, no more frequently than once per month, the average commodity value per ton of commingled recyclables. As defined in ORS 459A.923(1)(b) of the RMA, the methods must include:

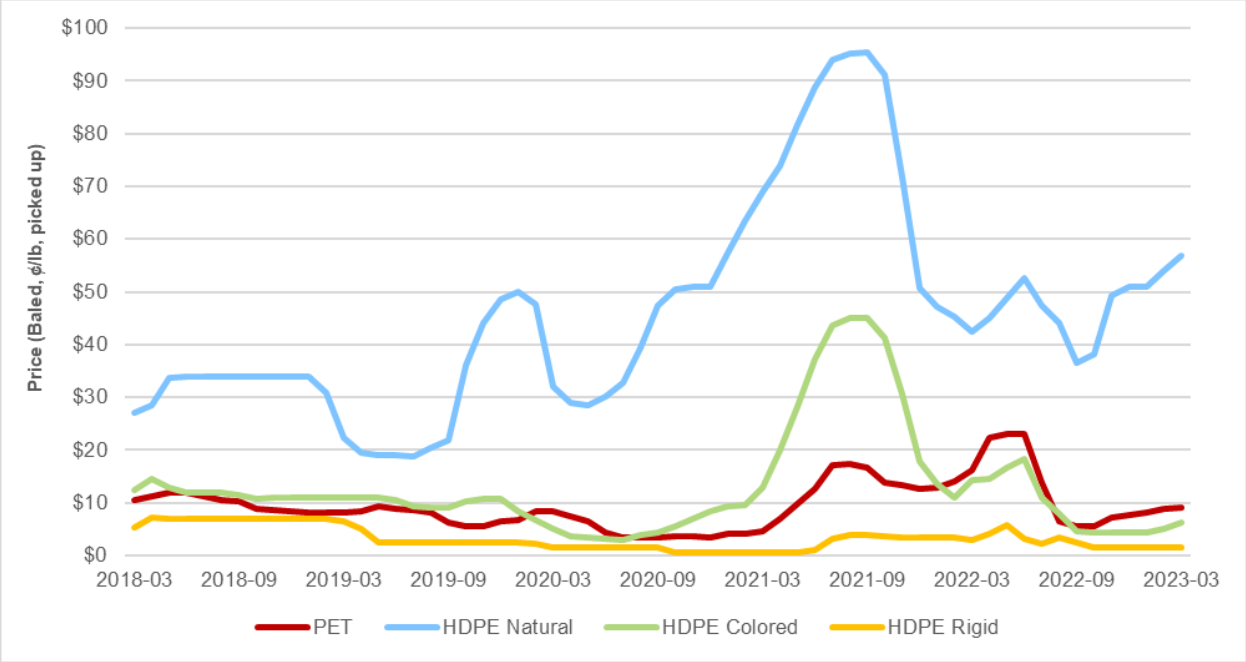
- The average composition of materials by percentage in each mix, multiplied by published market values
- The sources of the published market values used,
- Any adjustments to published market values for each commodity to reflect conditions in Oregon.

The overall composition of materials by percentage in each mix will be determined by DEQ's 2023 waste composition study. Crowe will apply these percentages to relevant market data. We will research market data sources. Currently, our preferred market data source is Secondary Materials Markets data for the Pacific Northwest. Should our research determine that there are other similarly valid sources, we may utilize a hybrid approach to determining commodity values.

As the historical market data in **Exhibits 20 and 21** illustrate, commodity prices for recyclable materials fluctuate over time. These exhibits provide average Pacific Northwest pricing of various baled plastics and paper materials over the last five years. Although some material types such as HDPE rigid do not fluctuate as much as other materials, the overall trend show that there is significant pricing volatility over time. Although pricing can fluctuate similarly for similar materials, there will be times that commodity prices of the various materials may offset each other where some materials may increase while other materials may stay flat or decline.

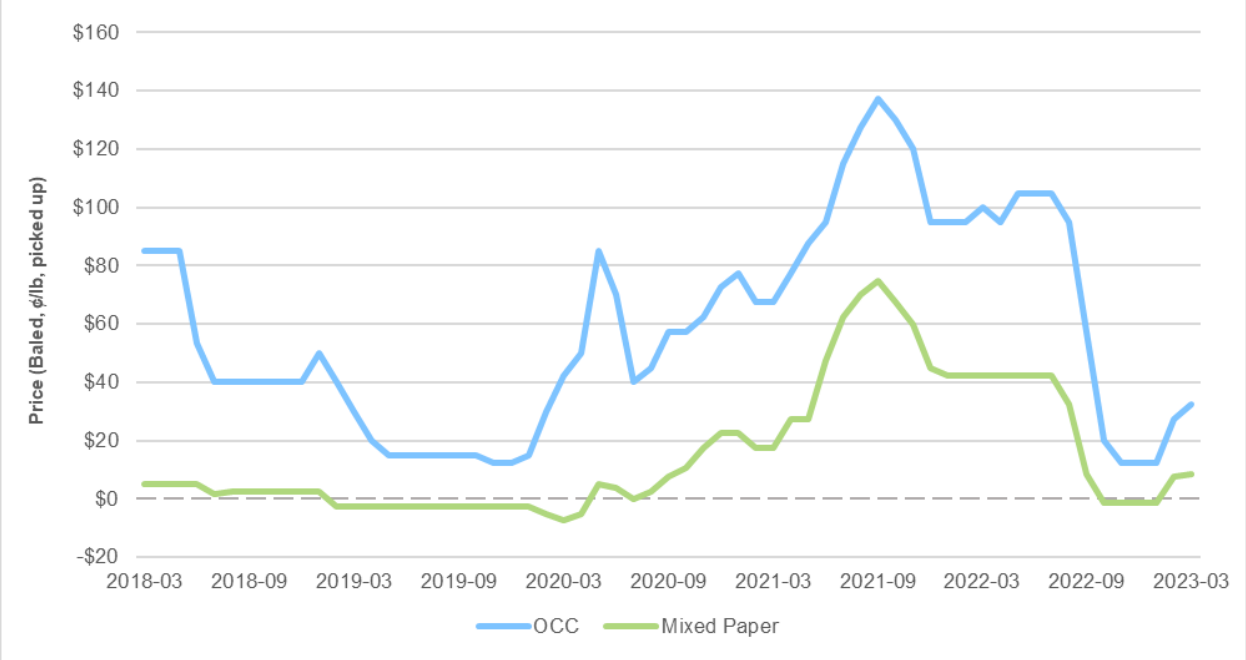
We will develop and document an algorithm for DEQ to calculate average commodity values. We will provide a methodology to update commodity prices, determine the change in average commodity values, and calibrate differences between published sources and Oregon market prices as reported by CRPFs. This will include identifying multiple potential sources for market pricing for the Pacific Northwest. Additionally, during our on-site survey, we plan to confirm pricing to compare to broad market pricing.

Exhibit 20
Plastics Pricing
PET, HDPE (Nat/Color), HDPE Rigid



Source: https://recyclingmarkets.net/secondarymaterials/ (Pacific Northwest)

Exhibit 21
Paper Pricing
OCC, Mixed Paper



Source: https://recyclingmarkets.net/secondarymaterials/ (Pacific Northwest)

E. Understanding and Addressing Project Challenges

This study is the first time that costs of processing Oregon's commingled recyclables will be determined. The study is taking place within the context of a new and complex producer responsibility law. Crowe understands and will proactively address this project's many challenges. We expect to continue to work collaboratively with DEQ as we implement the study and facilitate its overall success. **Exhibit 22** provides a summary of several key challenges and implications for our study design and implementation.

Exhibit 22
Selected Fee Study Challenges and Implications

Page 1 of 2

	Key Challenge	Implications for Study
1	**The RMA was signed into law in 2021. DEQ and the Environmental Quality Commission (EQC) are in the midst of rulemaking for may aspects of the law that are relevant to this study. Examples include permit requirements, finalization of materials included on the Uniform Statewide Collection List (USCL), specifically identified materials, and the PRO Recycling Acceptance List. The uncertainty around future rules creates a moving target as it relates to determing costs to comply with the Act.**	• Crowe is currently and will continue to work closely with DEQ as we develop the study design and implement the study. Crowe and DEQ are collaboratively discussing aspects of the law and the implications for permit and CRPF operations to inform both the study and the rulemaking process. As it relates to the study design, we are incorporating flexibility and the ability to update and evolve data gathering and analysis as more information is known. For example, ORS 459A.914(4)(b) allows DEQ to add to the USCL. While this is beyond the scope of this study, updates to the USCL over time could impact future processing costs. While we will be preparing preliminary results in September 2023, there will be opportunities to revisit and revise the data, if necessary, to reflect the latest rules and permit requirements.
2	**The waste composition study, which will inform the percentages of covered products in the commingled recycling stream and the share of covered product contaminants, is currently in process.**	• Crowe is working closely with DEQ to understand the study methodology. We are utilizing this information to inform the first draft of our Excel Cost Model for the project. We have created a structure that allows us to update the study data which will in turn link to the relevant labor allocation percentages. This will allow us to incorporate the first round of preliminary data in May, before Crowe's field work begins, and allow for future adjustments as data is updated and eventually finalized.
3	**There are significant unknowns related to anticipated program costs, defined as "all additional costs related to any new requirements of sections 1 to 43 of this 2021 Act that are anticipated prior to the next review of the processor commodity risk fee". First, many of the requirements are not yet defined. Second, there is no set date for the next review of the processor commodity risk fee, except it must occur no sooner than one year and within the next five years.**	• We provide an overview of our approach to determining anticipated program costs in Section 3.B of this document. Crowe will conduct thorough interviews with facility operators, in addition to researching known industry expenditures in areas such as equipment, to determine a best estimate for anticipated program costs. Where appropriate we will conduct sensitivity analyses to determine costs for potential permit requirements. For example, we could evaluate processing line costs to meet varying levels of bale quality (contamination levels of 1%, 2%, 3%, etc.). Throughout the project we will work closely with DEQ and DEQ's TWG to incorporate the most up-to-date information related to rulemaking and permits.

Exhibit 22
Selected Fee Study Challenges and Implications *(continued)* *Page 2 of 3*

Key Challenge		Implications for the Cost Survey
Oregon's CRPFs reflect a wide array of size, business operational models, and level of processing technology utilized. This data must be aggregated without double-counting costs across facilities.	4	• Crowe will aggregate costs of processing (and contamination removal) across all facilities to determine a total cost of processing. We will divide total costs by total tonnage recycled to determine a weighted average cost per ton of material received and a weighted average cost per ton sold. This aggregation is illustrated in Exhibit 16. Each facility's unique costs for the portion of statewide total quantity they process will be included in the total processing cost. A facility that handles only a small component of the whole will contribute a smaller portion of total costs while a facility that handles a large component of the whole will contribute a larger portion of total costs. This approach will eliminate double-counting costs.
There is significant time lag between this first study to determine the PCRF and CMF and the implementation of the fees in July 2025.	5	• The RMA allows for a process to update the fees that is defined in rulemaking. Crowe will work with DEQ to evaluate the two alternatives identified in Section 5.
Oregon CRPFs have never participated in a cost of recycling study and may be reluctant to provide the required information.	6	• Crowe is executing NDAs with participating CRPFs and has proven policies for safeguarding confidential information. Each facility's data will be treated as confidential, and not shared outside of essential team members. No company specific information will be shared with DEQ, and only aggregated, statewide statistics will be publicly released. CRPF operators have a strong incentive to participate since this is required to receive the two fee payments, but Crowe will make every effort to address facility concerns.

Exhibit 22
Selected Fee Study Challenges and Implications *(continued)* *Page 3 of 3*

Key Challenge		Implications for the Cost Survey
Because this is the first time this study has been undertaken, there may be concerns regarding the veracity of study results.	7	• Crowe's methodology includes several checkpoints to validate data. We will confirm and tie data to validated sources such as tax returns, company-wide financial statements, and/or audited financial statements. Crowe may perform testing of transactional support to validate the veracity of financial information presented by the facility. This could include sampling selected transactions and requesting source documentation to support the cost. • We reconcile labor and financial date to ensure data is consistent. We will evaluate category-specific costs against our own data from previous engagements to identify potential outliers. We will leverage our combined 100-plus years of experience evaluating recyclers' financials and operations. And finally, our methodology includes a comprehensive quality control process to identify and address potential errors and outliers before aggregating data across facilities.
Several Oregon CRPFs accept commingled recyclables from neighboring states and two CRPFs that process Oregon commingled recyclables are located out of state and regulalry process non-Oregon commingled recyclables.	8	• Crowe will utilize tonnage data from each facility and as reported to DEQ to determine the origin of incoming material. We will leverage percentages of in-state and out-of-state commingled recyclables in allocating costs. In addition, we will research data and studies to determine state-specific contamination rates.
Source separated inbound recyclables from commerical collection (OCC) or boutique programs such as RecyclePlus (clamshells) may be run through commingled recycling sort lines.	9	• Similar to accounting for out-of-state materials, we will utilize information on incoming tonnage and loads to determine the origin of incoming material. The cost of removing and disposing of covered product contaminants in commercial loads is an allowable component of the CMF. One proposed approach is that CRPFs and PROs could negotiate costs of covered product contaminants that are recyclable and may be in outgoing bales (such as PET thermoforms).

4. Determining the Contamination Management Fee

ORS 459A.920 requires the Environmental Quality Commission to promulgate a rule to adopt and periodically revise a Contamination Management Fee to be paid by PROs to CRPFs. The fee is intended to compensate CRPFs for the cost of removing and disposing of covered products that are contaminants in the recycling stream. As an example, the CMF is intended to cover the removal from the recycling stream of covered products such as toothpaste tubes and plastic food serviceware that are not included in DEQ's proposed Uniform Statewide Collection List (which represents the mix of materials CRPFs are expected to process beginning in July 2025). The CRPF incurs costs to remove these materials from the recycling stream, transport them to a landfill, and for disposal. ORS 459A.920(2) requires the DEQ to contract with an independent organization (Crowe) to:

- Estimate the cost to commingled recycling processing facilities of removing and disposing of covered products that are contaminants, reported as the cost per ton of covered products; and
- Estimate the costs to commingled recycling processing facilities of removing and disposing of all contaminants, reported as the cost per ton of all contaminants.

In addition, the law requires that the fee may not be based on commingled recycling originating outside of Oregon and that there is a review process to ensure that the fee is appropriately charged.

The cost of removing contaminants from the recycling stream is a necessary component of eligible processing costs within "sorting, handling, storing, disposal, marketing, and shipping". As described above, Crowe will determine the costs of contaminant removal as part of the total processing costs at each facility. We will further allocate contamination costs to remove costs associated with non-Oregon contamination and Oregon covered product contamination. In the example below, the $76,000 in contamination costs from our hypothetical facility will be incorporated into the total cost of processing at that facility. This, in turn, will be incorporated into the total cost of processing recyclables across all CRPFs.

A. Components of the Costs of Handling Contamination

Removal and disposal of contamination includes multiple steps. In addition, contaminants may be transferred from one CRPF to another for further processing. Depending on the facility, activities related to recycled product contamination removal and disposal may include some or all of the following activities that encompass covered and non-covered materials:

- Weight incoming recyclable material and dump on tip floor
- If material is in bales, it is broken apart and "fluffed up"
- Pre-sort for contaminants (larger items, rigid plastics, film, etc.)
- Run through metering bin onto sort line
- Run through screens or manual sorts, contaminants drop down (unders) or run through line
- Potentially re-run through line again to further remove contamination
- Contaminants pulled off at pre-sort, unders, run off the end of the line
- Potentially bale contaminants or load straight to trucks
- Haul to another CRPF (and repeat sorting processes) or haul to landfill
- Pay disposal tip fees.

B. Determining Overall and Covered Product Costs of Contamination

A question that Crowe will evaluate early in the study is whether there is a difference between cost per ton of removing and disposing of covered products and cost per ton of removing and disposing of all products. Factors that could influence this determination include:

- At what points in the processing line are covered product contaminants removed?
  - Can we assume that covered product contaminants are not removed during pre-sort?
- Are covered product contaminants causing slow-downs or maintenance issues on the sort line? (for example, plastic bag packaging)
  - Are covered product contaminants resulting in higher maintenance costs or causing down-time on the sort line?
- Conversely, are non-covered product contaminants resulting in higher costs for either of these reasons?
- To the extent that these conditions occur, Crowe will utilize the labor allocation approach and applicable direct costing, potentially supplemented by secondary allocation based on tonnages or other factors, to account for the different costs of covered and non-covered contamination removal and disposal.
- To the extent that there are no significant differences between the costs of removing and disposing of covered and non-covered products, Crowe will determine an overall cost of contamination that applies to both, then utilize tonnage data, percentages of Oregon and non-Oregon recyclables, contamination rates for Oregon and non-Oregon recyclables, and the waste composition study results to determine the appropriate payments to CRPFs for covered contaminants.

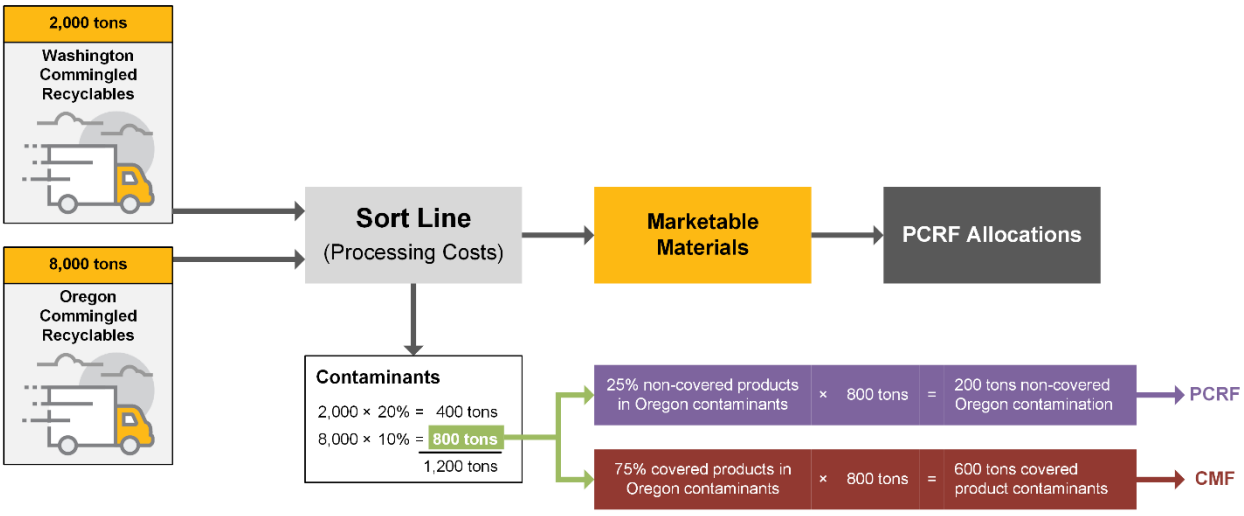
In either case, it will be necessary to establish an allocation methodology to ensure that the fee is appropriately charged. This allocation methodology should account for and remove costs of contamination from recyclables and covered product contaminants originating outside of Oregon. This cost will depend on the percentage of total incoming tons from outside of Oregon and the (likely) differing contamination levels between Oregon and non-Oregon recyclables. For example, while glass contamination occurs in Oregon commingled recyclables, the costs of removing and disposing of glass contaminants would generally not be attributed to Oregon recyclables to the same extent that they would be for recyclables originating from other states where glass is often co-collected with other materials. Crowe's proposed process to determine the appropriate cost of removing and disposing of covered product contaminants for facilities receiving material from outside Oregon is as follows:

1. Determine average percent of non-Oregon material, by state, as a percent of total incoming commingled recyclables
2. Obtain average contamination rates for Oregon and each applicable state (Washington, California, Idaho, Montana)
3. Obtain percent of covered product contaminants in the inbound stream
4. Calculate tons of Oregon contamination
5. Calculate tons of Oregon covered product contaminants
6. Determine the cost of removing and disposing of contaminants at the facility (calculated within the Excel Cost Model)
7. Calculate tons of Oregon covered product contaminants; multiply by cost per ton of contamination at that site – this cost is included in the total cost of removing and disposing of covered product contamination
8. Calculate tons of Oregon non-covered product contaminants; multiply by cost per ton of contamination at that site – this cost is included in the total cost of processing recyclables.

Exhibit 18 in the previous section provides an illustration of Crowe's proposed process to determine costs of covered and non-covered Oregon contamination. **Exhibit 23** provides a of how the costs of removing and disposing of contaminants would be split first between states and next between covered and non-covered products. The cost of removing and disposing of non-covered products will be incorporated into the total cost of processing recyclables as part of the PCRF and the cost of removing and disposing of covered product contaminants will be used to determine the CMF. In the example shown, if the cost of removing and disposing of Oregon contaminants (covered or non-covered) is $100 per ton, then $20,000 (200 tons x $100/ton) will be included in the cost of processing recyclables and $60,000 (600 tons x $100/ton) will be included in determining the CMF.

Another consideration is that the cost of covered product contamination from source separated materials will be incorporated into the CMF. It is not uncommon for CRPFs to run source separated recyclables through the processing sort line to further clean the material before sending to end markets. For example, commercial loads of OCC may be contaminated with containers or non-recyclable covered products. Based on statute language and intent, DEQ and Crowe determined covered product contaminants from source separated materials may be included in the cost of managing covered product contaminants. CRPFs (and ultimately PROs) will be responsible for paying for costs of managing/disposing of all covered product contaminants removed from recyclables and sent to landfill.

Exhibit 23
Hypothetical Example of Splitting Costs of Contamination



5. Timing Implications and Future Fee Adjustments

Crowe will provide preliminary results for this study in September 2023. The Environmental Quality Commission will conduct rulemaking to establish the PCRF and CMF over the following months. The fees will not go into effect until July 2025. There are many unknowns and aspects of the law that are yet to be determined. In addition, economic and market conditions, both volatile at the moment, will most likely be entirely different in July 2025 as compared to September 2023 (as well as calendar year 2022, the source of most primary data for this study). This section discusses and proposes methods to address some of these areas of uncertainty.

A. Incorporating and Updating Waste Composition Study Results

The results of DEQ's Waste Composition study will be an important input to the Customized Excel Cost Model. The applicable percentages of covered products link to equations to allocate processing costs across covered and non-covered products and to determine costs of contamination removal and disposal for covered and non-covered products. As new data is available, Crowe will update the model so that the most recent composition results are utilized in our calculations. We expect to utilize initial study results for the models we create by late Spring or early Summer 2023, incorporate updated numbers prior to determining preliminary results, and incorporate final composition results when they are available in late 2023 or early 2024.

B. Proposed Annual Adjustment Process

There will be a three-year gap between the cost data Crowe utilizes to determine the PCRF and CMF and when the fees are first paid (2022 to 2025). The RMA provides for the fees to be determined by similar study at least once every five years and no more than once every year. There is also a provision that if a study demonstrates that the average per-ton eligible processing cost has changed by more than 10 percent since the commission last established the PCRF, the commission shall by rule review the PCRF. Any process to update the fee between studies must be clearly defined and documented in the rulemaking process. As part of this study, Crowe will examine two potential approaches to updating processing costs and costs of removing and disposing of contaminants. The first is to simply apply a cost-of-living adjustment, the second is a more comprehensive adjustment methodology utilizing data from the study and published economic indicators. These adjustments could occur annually or at another predetermined interval, for example every two years.

1. Application of a Cost-of-Living Adjustment (COLA)

Utilizing a COLA to yearly adjust fees and payments is standard across many programs. California applies a COLA to the cost of recycling to determine processing payments and applies a COLA to handling fees paid to recyclers. This provides a mechanism to adjust the cost of recycling that is measured two years before the payment is applied (costs of recycling in 2022 will inform recycler payments in 2024). **Exhibit 24** provides the CPI (CPI-U, Western Region) for the last 10 years, between 2013 and 2022. Below provides a hypothetical example over four years, with adjustments starting at Year 2. This example shows how COLA adjustment using CPI could be implemented.

Exhibit 24
Consumer Price Index (CPI-U) Western Region
2013 to 2022

Year	Annual Index	YoY %Δ	Cumulative %Δ
2013	235.824		
2014	240.215	1.9%	1.9%
2015	243.015	1.2%	3.0%
2016	247.705	1.9%	5.0%
2017	254.738	2.8%	8.0%
2018	263.263	3.3%	11.6%
2019	270.350	2.7%	14.6%
2020	275.057	1.7%	16.6%
2021	287.494	4.5%	21.9%
2022	310.509	8.0%	31.7%

Source: U.S. Bureau of Labor Statistics, Series ID – CUUR0400SA0

Hypothetical COLA Adjustment:

- **Year 1 (2022, Survey Year) Cost per Ton Results**
  = $100 per ton
- **Year 2 (2023) Adjustment**
  Year 1 Cost per Ton * (1 + % Δ CPI between 2022 and 2023) = $100 per ton * (1 + 5%)
  = $105 per ton
- **Year 3 (2024) Adjustment**
  Year 2 Cost per Ton * (1 + % Δ CPI between 2023 and 2024) = $105 per ton * (1 + 3%)
  = $108.15 per ton
- **Year 4 (2025) Adjustment**
  Year 3 Cost per Ton * (1 + % Δ CPI between 2023 and 2024) = $108.15 per ton * (1 + 2%)
  = $110.31 per ton

2. Category-Specific Adjustment Methodology

A second approach to adjusting the fees to account for the lag between study periods and fee implementation is to leverage study data on costs of processing (or contamination). As described in the Financial Review Process subsection, we will classify facility costs into one of 13 categories. Crowe's work on prior recycling cost surveys in California, Hawaii and for carpet recycling has demonstrated that the split of costs across categories is generally consistent. For example, labor (employee wages and temporary labor) typically accounts for approximately 50% of total costs.

The proposed adjustment methodology would leverage category costs, standard metrics in a few key categories, and a COLA to more precisely adjust costs to reflect current time periods. Crowe developed a model utilizing this methodology for the State of Hawaii's beverage recycling program handling fee payment. **Exhibit 25** provides an example of how this approach would work. We multiply each average percent of category costs by the relevant published indicator to determine an adjusted percentage. In this example, the adjustments result in an increase. If the calculated processing cost was $120 per ton, the updated cost would be $120 x 105.3% = $126.38.

Exhibit 25
Illustration of Category-Specific Adjustment Methodology

Category	Average Percent of Costs	Example Adjustment Indicator (Annual Percentage Change)	Hypothetical Indicator	Adjusted Percentage
Direct labor	50%	Quarterly census of employment and wages (or livable wage requirements)	3%	50% x (1+ 3%) = 51.5%
Indirect labor	12%	Average cost of health insurance data	10%	12% x (1+10%) = 13.2%
Transportation	10%	Weekly West Coast No. 2 Diesel Retail Prices	15%	10% x (1+15%) = 11.5%
All other costs	28%	COLA	4%	28% x (1 + 4%) = 29.1%
Total	100%			**105.3%**

C. Addressing Changes to Recyclable Products Lists

The addition of recyclable products to the Uniform Statewide Collection List (USCL), PRO Recycling Acceptance List, and/or specifically identified materials could result in changes to how a commingled recycling processing facility handles these materials. For example, the addition of PET thermoformed material to the USCL could, in turn, necessitate that the commingled recycling processing facility sort and market this material to responsible end markets rather than disposing of the material as a contaminant. If the product is now on the USCL, the PRO will want to ensure the facility is processing and selling the product to a responsible end market.

In order to fully reflect such a change to the costs captured for the PCRF and CMF, we envision DEQ would need to work with facilities to estimate what additional costs the facility would incur to process each new recyclable product. Additionally, DEQ would need to understand the volumes of these new products already in or entering the system. Finally, while the PCRF may increase with the incremental new processing costs required for these new products, this could be offset by a proportionate reduction in the CMF if these materials shift from formerly contaminants to products sold to end markets.

Appendix A:
Recycling Modernization Act – ORS 459A.920 and 459A.923

Exhibit 26
Text from ORS 459A.920 and .923 of the Recycling Modernization Act

ORS 459A.920. Contamination management fee. (1) The Environmental Quality Commission shall by rule adopt and periodically revise a contamination management fee to be paid by producer responsibility organizations to commingled recycling processing facilities to compensate the facilities for the costs of removing and disposing covered products that are contaminants. The amount of the fee shall be based on the result of the study conducted under subsection (2) of this section. Rules adopted under this section must:

(a) Provide that payment of the fee may not be required more frequently than once per month and must be paid within 45 days of a request for payment;

(b) Provide that the fee may not be based on commingled recycling originating outside of Oregon; and

(c) Establish a review process to ensure that the fee is appropriately charged.

(2) The Department of Environmental Quality shall contract with an independent organization to conduct the study under this subsection. The study must:

(a) Estimate the cost to commingled recycling processing facilities of removing and disposing of covered products that are contaminants, reported as the cost per ton of covered products; and

(b) Estimate the costs to commingled recycling processing facilities of removing and disposing of all contaminants, reported as the cost per ton of all contaminants.

(3) A commingled recycling processing facility that does not participate in the review process described in subsection (1) of this section or the study described in subsection (2) of this section is not eligible to receive a contamination management fee.

(4) Any proprietary information provided to the department under subsection (1) of this section or to a person conducting a study under subsection (2) of this section may be designated confidential by a commingled recycling processing facility. Information designated confidential is not subject to public disclosure under ORS 192.311 to 192.478, except that information may be disclosed as summarized or aggregated data if doing so does not directly or indirectly disclose the proprietary information of any specific facility.

(5) The department shall review the contamination management fee at least once every five years. The department may not review the contamination management fee more frequently than once per year.

ORS 459A.923. Processor commodity risk fee. (1) As used in this section:

(a) “Anticipated program cost” means all additional costs related to any new requirements of sections 1 to 43 of this 2021 Act that are anticipated prior to the next review of the processor commodity risk fee under subsection (6) of this section.

(b) “Average commodity value” means the average revenue paid by brokers or end markets, after processing by a commingled recycling processing facility, for a composite ton of commingled material collected for recycling in Oregon.

(c)(A) “Eligible processing cost” means all costs associated with owning and operating a commingled recycling processing facility as determined by the study conducted under subsection

(3) of this section, including but not limited to sorting, handling, storing, disposal, marketing and shipping, administration, rent, fees, depreciation, fixed costs, profit, the target price paid for commingled recycling collected from Oregon as described in subsection

(2)(d) of this section and anticipated program costs.

(B) “Eligible processing cost” does not include revenue from the sale of recyclables and any costs that are reimbursed by producer responsibility organizations or other parties, including the contamination management fee established under section 24 of this 2021 Act.

(2) The Environmental Quality Commission shall by rule adopt and periodically revise a processor commodity risk fee to be paid by producer responsibility organizations to commingled recycling processing facilities to ensure that producers share in the costs of fully processing commingled recyclables that are covered products and to allow local governments to reduce the financial impacts on ratepayers. The processor commodity risk fee shall be based on the eligible processing costs of facilities less the average commodity value of recyclable materials processed by facilities. Rules adopted under this section must:

(a) Provide that payment of the fee may not be required more frequently than once per month and must be paid within 45 days of a request for payment.

(b) Provide that the fee may not be based on commingled recycling originating outside of Oregon.

(c) Establish a review process to ensure that the fee is appropriately charged.

(d) For purposes of calculating the processor commodity risk fee, allow the average fee charged by commingled recycling processing facilities for acceptance of commingled recyclables collected from Oregon to target a price of $0 per ton, expressed on the basis of compensation per ton of delivered material.

(e) Provide that the fee is to be paid on the basis of recyclable material received by or sold from a commingled recycling processing facility.

(f) Ensure that materials handled by more than one commingled recycling processing facility are not double counted for purposes of calculating the fee.

(g) Allow local governments to protect ratepayers from cost increases associated with the volatility of commodity markets.

(h) Establish methods to determine and periodically update, but no more frequently than once per month, the average commodity value per ton of commingled materials collected from single-family residences in Oregon and from all other sources in Oregon. The methods developed under this paragraph must include:

(A) The average composition of materials by percentage in each mix, multiplied by published market values;

(B) The sources of the published market values used; and

(C) Any adjustments to published market values for each commodity to reflect conditions in Oregon.

(3) Subject to subsection (6) of this section, the Department of Environmental Quality shall contract with an independent organization to conduct the study under this subsection. The study must:

(a) Estimate the average eligible processing cost at commingled recycling facilities that process commingled recycling generated in Oregon; and

(b) Report the costs on the basis of tons of commingled recycling received and materials shipped to end markets.

(4) A commingled recycling facility that does not participate in the review process described in subsection (2) of this section or the study described in subsection (3) of this section is not eligible to receive a processor commodity risk fee.

(5) Any proprietary information provided to the department under subsection (2) of this section or to a person conducting a study under subsection (3) of this section may be designated confidential by a commingled recycling processing facility. Information designated confidential is not subject to public disclosure under ORS 192.311 to 192.478, except that information may be disclosed as summarized or aggregated data if doing so does not directly or indirectly disclose the proprietary information of any specific facility.

(6) The department shall contract for the study under subsection (3) of this section to be performed at least once every five years. The department may contract for the study under subsection (3) of this section to be performed no more than once per year. If a study under subsection (3) of this section demonstrates that the average per-ton eligible processing cost has changed by more than 10 percent since the commission last established the processor commodity risk fee, the commission shall by rule revise the processor commodity risk fee.

Appendix B: Summary of Research on State Producer Responsibility Programs

In addition to Oregon's Recycling Modernization Act, to date in the U.S. three states have enacted extended producer responsibility legislation targeting packaging: California, Colorado, and Maine. To help inform this study design, Crowe researched these laws to identify similar provisions and any ongoing or planned similar studies. This appendix summarizes this research.

Exhibit 27 summarizes some key elements of these state EPR laws. All four laws call for producers to join and pay fees to a PRO (called a producer stewardship organization in Maine, or PSO), and for the PRO to reimburse MRFs for certain costs or to otherwise contract with them, and to make investments as needed to achieve access, recycling rates and/or other applicable performance targets. All four laws also call for the PRO to undertake consumer education and outreach to increase participation in recycling programs and to reduce inbound contamination. The laws also call for a needs assessment to analyze existing systems and identify specific needs, although the lead responsibility and required elements of these needs assessment studies vary by state. In each state the PRO must prepare a plan for approval that integrates the needs assessment findings.

The four laws also differ in key respects, including the definition of covered materials, the extent to which specific operational and cost coverage responsibilities and payment mechanisms are assigned to the PRO, and the roles and decision-making authority in completing a needs assessment study to define all needed actions, investments, and cost coverages (among other things) that the PRO must undertake.

The main take-away from this research is that the systematic, advanced research and stakeholder process currently underway by the Oregon Department of Environmental Quality (DEQ) is well ahead of the other three states, which have only recently begun stakeholder processes and have yet to launch any similar studies.

Following below are some key points on each state related to MRF obligations, required PRO funding, investment and other support for PROs, and related studies.

Exhibit 27
Synopsis of State Packaging Extended Producer Responsibility Laws

State	Packaging EPR Law	Covered Materials	Performance Targets	Key Producer / PRO Roles	Status
OR	Recycling Modernization Act (RMA), SB 582 OR DEQ RMA Web Site	Packaging, food service ware, and printing and writing paper.	Plastics recycling rates and dates: 25 percent by 2028; 50% by 2040; 70% by 2050; other collection targets set in administrative rule.	Ensure materials flow to responsible end markets; make contamination management fee and processor commodity risk fee payments to CRPFs; achieve plastics recycling rate targets; operate depots for certain materials; invest in and conduct education and outreach; fund other impact reduction programming	Rulemakings, needs assessment and extensive other studies (in addition to this cost study) and stakeholder processes underway; PRO program plans first due 3/31/2024; program launch by 7/1/2025
CA	SB 54, the Plastics Pollution Prevention and Packaging Producer Responsibility Act CalRecycle SB 54 Web Site	All single use packaging and plastics food service ware, broadly defined, regardless of generator	By 2032: all covered materials recyclable or compostable; plastics 65% recycling rate and 25% source reduction rate with minimum refill, reuse, and elimination; interim targets starting in 2027	Make investments and reimburse costs related to SB 54 compliance and as needed to improve system and achieve targets; possible ongoing operational cost coverages TBD; invest in and conduct statewide education and outreach, and market development; may operate alternative collection programs TBD	First CalRecycle public information sessions January 2024; PRO applications due by 1/1/2024; early stage, informal rulemaking; rulemaking to be completed by January 2025, Needs Assessment expected late 2025, PRO Plan approval and program launch by January 2027
CO	Producer Responsibility Program for Statewide Recycling Act, HOUSE BILL 22-1355 CO DPHE EPR Web Site	Single or short-term use packaging and paper products,	2030 and 2035 targets for recycling rate, collection rate, and minimum PCR content rates to be determined in PRO Plan; needs assessment to identify 3 scenarios for consideration	Contract with service providers and waste/recycling facilities; cover 100% of capital and operating costs; invest in and conduct education and outreach and market development; possibly establish alternative collection programs and/or regional collaboration outside of Colorado to grow collection and expand markets	Stakeholder process begun March 2023; rulemaking begins May 2023; two PROs submitted letters of intent and PRO approval expected in Spring 2023; needs assessment to start by Fall 2023 and be completed by end of 2024; PRO Plan approval and implementation in 2025
ME	§2146. Stewardship program for packaging, LD 1541 ME DEP EPR Web Site	Packaging	Recycling rate and PCR content targets to be set by state	Cover all ongoing recycling operational costs and new capital investment to improve packaging recycling system TBD, undertake education and outreach; operate alternative collection programs TBD	Stakeholder process underway; rulemaking expected in 2024; RFP to possible Packaging Stewardship Organizations (PSOs) in 2025; 2026 PSO selection and implementation begins

Oregon

Under Oregon's Recycling Modernization Act (RMA), the PRO is responsible for paying the processor commodity risk fee (PCRF) to CRPFs so that producers share in the cost of processing by covering the average net CRPF operating costs. The PRO is also responsible for paying the contamination management fee (CMF) to cover the average per-ton cost of managing covered products received from on-route, source separated collection programs that are not identified as accepted materials on the Uniform Statewide Collection list (USCL). To be eligible for these payments, CRPFs must be permitted, certified or meet comparable standards in compliance with new yet to be adopted regulations and participate in related cost studies being undertaken by Crowe per this study design. However, new permitted or certified CRPFs (or those meeting certification standards) that coming online after completion of these initial studies would still be eligible for funding from the CMF and PCRF. In addition to the Crowe cost studies, DEQ is leading an expansive stakeholder engagement and research effort to support rulemaking.

California

Under California's SB 54, local programs and the MRFs servicing them must include covered materials determined by the state to be recyclable or compostable, although there are several opt-out options available. Generally, the law requires the PRO to reimburse local governments and existing recycling service providers and facilities for any additional, new costs related to complying with the EPR law, and to make investments and provide other support as required to reduce contamination, ensure that recycled materials meet market specifications, and to achieve the performance targets.

The law states that if a MRF chooses to send materials to a secondary MRF, then the PRO must pay a rebate to cover the additional costs. Beyond this no specific fees or payments are defined, but statute language clearly anticipates payments similar to the Oregon CMF and likely reimbursement of some MRF net operating costs in certain circumstances, to be determined. The needs assessment studies to be led by the California Department of Resources Recycling and Recovery (CalRecycle) may also identify a wide range of specific MRF technologies or improvements needed to manage certain materials. The PRO may choose to negotiate directly with specific MRFs for improvements and adjustments to boost access, reduce contamination or otherwise improve the system performance to achieve the statutory targets. California's law also has broad language calling for the PRO to invest in advanced sorting and material identification technologies and to generally fund innovative approaches as needed to satisfy the statutory requirements.

There are no specific cost studies detailed in statute or currently underway; however, such studies will likely be included as part of the needs assessment and/or undertaken by the PRO to develop and implement its plan, once approved. Under a related law, SB 343, the "Truth in Labeling Law" requires CalRecycle to conduct a materials characterization study to document how materials are handled at MRFs, including identifying which may be considered contamination. This first study is due by January 2024. CalRecycle published a request for proposals calling for a statistically representative sampling study; however, no bidders responded and CalRecycle now anticipates conducting the study in-house with limited contractor support. CalRecycle is also required by SB 54 to conduct periodic disposal characterization studies for use in calculating recycling rates.

Colorado

Under Colorado's packaging EPR law the PRO must cover 100 percent of the costs of managing covered materials. The PRO has somewhat more authority than in other states, for example, it is responsible for leading the needs assessment. The PRO will contract with recycling service providers and MRFs as needed to satisfy the access, recovery rate and recycling rate targets. The Needs Assessment must identify the levels of contamination at MRFs and compost facilities throughout the state and the impacts of contamination on those facilities. And the PRO is required to take steps to reduce and manage contamination. But there are no specific fees or payments defined in the law, nor are there any specific contamination or cost related studies defined. However, such analyses are likely to be included in the needs assessment which is expected to begin in late 2023 and be complete by late 2024. The Colorado Department of Health and Environment has conducted a variety of characterization and recycling infrastructure studies in recent years.

Maine

Under Maine's law, local recycling programs and MRFs will continue to operate, and will receive new financial or other support from the producer stewardship organization (PSO) to cover all net costs and to improve operations in a manner to be determined in a PSO-led needs assessment. There are no specific contamination or MRF processing cost studies identified in statute or currently underway that we are aware of. However, the needs assessment must evaluate the capacity, costs and needs associated with the collection and transportation of recyclable material in the state. Also, the PSO must propose a method to estimate operational costs during the startup period based on material-specific per ton costs, and this may well further necessitate cost studies. The Maine Department of Environmental Protection is expected to complete rulemaking in 2025 and then select a PSO that would undertake the needs assessment.

Appendix C:
Oregon-Specific Cost Model

This appendix provides examples of Crowe's Oregon-specific cost model with mock data as examples. These examples provide a subset of the displays in the model, which are intended to provide a sense of how a facility's labor and financial information would be inputted to generate a cost per ton. This model provides the calculation for facility costs and does not incorporate a financial return. Note: Within the model, black text represents automated data while the bright blue text represents direct input data.

Exhibit 28 provides an example using mock data of the facility's PCRF cost summary, broken down by cost category by covered product and non-covered product disposal, as well as the total costs and cost per ton. This display is for outputting results.

Exhibit 29 provides an example using mock data of the facility's CMF cost summary, broken down by cost category for covered product disposal, as well as the total costs and cost per ton. This display is for outputting results.

Exhibit 30 provides an example using mock data of the facility's labor allocation input sheet that allows direct input of employees, and multiple levels of allocations including percentage of time working with commingled recyclables, other business, as well as by specific material types. The material types in these examples are hypothetical; we will update the model based on waste composition results. This display is for inputting data.

Exhibit 31 provides an example using mock data of the facility's hourly rate input sheet, which allows direct input of hourly rates by employee. This summary includes both monthly and annual hours and wages. This display is for inputting data.

Exhibit 32 provides an example using mock data of the facility's annual hours and wages summary, which includes a summation of hours and wages by type. This display is for outputting results.

Exhibit 28
Facility Cost Summary
PCRF Costs (Mock Data)

PCRF Cost Summary

Cate	Category Name	Covered Product 1	Covered Product 2	Covered Product 3	Covered Product 4	Covered Product 5	Non-Covered Product Disposal	CPRF Total Costs
1	Labor	$ 293,213.86	$ 181,130.41	$ 54,626.29	$ 51,781.82	$ 293,213.86	$ 51,781.82	**$ 925,748.06**
1b	Indirect Labor	146,606.93	90,565.20	27,313.14	25,890.91	146,606.93	25,890.91	**462,874.03**
2	GBO	87,964.16	54,339.12	16,387.89	15,534.55	87,964.16	15,534.55	**277,724.42**
3	Transportation	131,946.24	81,508.68	24,581.83	23,301.82	131,946.24	23,301.82	**416,586.63**
4	Rent/Lease/Mortgage	43,982.08	27,169.56	8,193.94	7,767.27	43,982.08	7,767.27	**138,862.21**
5	Depreciation	65,973.12	40,754.34	12,290.91	11,650.91	65,973.12	11,650.91	**208,293.31**
6	Property Tax	79,167.74	48,905.21	14,749.10	13,981.09	79,167.74	13,981.09	**249,951.98**
7	Utilities	63,334.19	39,124.17	11,799.28	11,184.87	63,334.19	11,184.87	**199,961.58**
8	Disposal	-	-	-	-	-	335,546.22	**335,546.22**
9	Supplies	35,185.66	21,735.65	6,555.15	6,213.82	35,185.66	6,213.82	**111,089.77**
10	Fuel	38,704.23	23,909.21	7,210.67	6,835.20	38,704.23	6,835.20	**122,198.74**
11	Insurance	47,500.64	29,343.13	8,849.46	8,388.66	47,500.64	8,388.66	**149,971.19**
12	Interest	15,833.55	9,781.04	2,949.82	2,796.22	15,833.55	2,796.22	**49,990.40**
13	Maintenance	50,139.57	30,973.30	9,341.10	8,854.69	50,139.57	8,854.69	**158,302.92**
Total Costs		**$ 1,099,551.96**	**$ 679,239.04**	**$ 204,848.58**	**$ 194,181.84**	**$ 1,099,551.96**	**$ 529,728.06**	**$ 3,807,101.44**
	Tons	20,004.00	20,004.00	20,004.00	20,004.00	20,004.00	10,000.00	100,020.00
	Cost per Ton	**$ 54.97**	**$ 33.96**	**$ 10.24**	**$ 9.71**	**$ 54.97**	**$ 52.97**	**$ 38.06**

Exhibit 29
Facility Cost Summary
CMF Costs (Mock Data)

CMF Cost Summary			
Cate	Category Name	Covered Product Disposal	CMF Total Costs
1	Labor	$ 293,213.86	**$ 293,213.86**
1b	Indirect Labor	146,606.93	**146,606.93**
2	GBO	23,857.79	**23,857.79**
3	Transportation	21,088.92	**21,088.92**
4	Rent	17,283.35	**17,283.35**
5	Depreciation	12,131.00	**12,131.00**
6	Marketing	26,065.44	**26,065.44**
7	Utilities	3,689.31	**3,689.31**
8	Disposal	123,568.00	**123,568.00**
9	Supplies	7,434.24	**7,434.24**
10	Fuel	52,555.00	**52,555.00**
11	Insurance	24,701.91	**24,701.91**
12	Interest	7,577.00	**7,577.00**
13	Maintenance	125,454.00	**125,454.00**
Total Costs		**$ 885,226.74**	**$ 885,226.74**
	Tons	15,000.00	15,000.00
	Cost per Ton	**$ 59.02**	**$ 59.02**

Exhibit 30
Labor Input
Labor Allocation Input (Mock Data)

Labor Allocation Input										Material Types							
#	Name	Position	% CRPF	% SS	% Other	Total %	% DYL	% AOL	Total %	OCC	Mixed Paper	PET	HDPE	Al/Tin	Other Materials	Total %	Notes
1	Employee 1	Owner/President	34%	33%	33%	100%	0%	100%	100%	17%	17%	17%	17%	16%	16%	100%	
2	Employee 2	Office Manager	34%	33%	33%	100%	0%	100%	100%	17%	17%	17%	17%	16%	16%	100%	
3	Employee 3	Accountant	34%	33%	33%	100%	0%	100%	100%	35%	20%	10%	10%	10%	15%	100%	
4	Employee 4	Facility Manager	34%	33%	33%	100%	90%	10%	100%	35%	20%	10%	10%	10%	15%	100%	
5	Employee 5	Scale Operator	34%	33%	33%	100%	100%	0%	100%	35%	20%	10%	10%	10%	15%	100%	
6	Employee 6	Driver	34%	33%	33%	100%	0%	100%	100%	35%	20%	10%	10%	10%	15%	100%	
7	Employee 7	Driver	34%	33%	33%	100%	0%	100%	100%	35%	20%	10%	10%	10%	15%	100%	
8	Employee 8	Sort Line	60%	30%	10%	100%	100%	0%	100%	35%	20%	10%	10%	10%	15%	100%	
9	Employee 9	Sort Line	50%	50%	0%	100%	100%	0%	100%	35%	20%	10%	10%	10%	15%	100%	
10	Employee 10	Sort Line	50%	50%	0%	100%	100%	0%	100%	35%	20%	10%	10%	10%	15%	100%	
11	Employee 11	Sort Line	50%	50%	0%	100%	100%	0%	100%	35%	20%	10%	10%	10%	15%	100%	
12	Employee 12	Sort Line	50%	50%	0%	100%	100%	0%	100%	35%	20%	10%	10%	10%	15%	100%	
13	Employee 13	Baler Operator	50%	50%	0%	100%	100%	0%	100%	35%	20%	10%	10%	10%	15%	100%	
14	Employee 14	Baler Operator	50%	50%	0%	100%	100%	0%	100%	35%	20%	10%	10%	10%	15%	100%	
15	Employee 15	QC Inspector	60%	30%	10%	100%	90%	10%	100%	35%	20%	10%	10%	10%	15%	100%	
16	Employee 16	QC Inspector	60%	30%	10%	100%	90%	10%	100%	35%	20%	10%	10%	10%	15%	100%	
17	Employee 17	Forklift Operator	60%	30%	10%	100%	100%	0%	100%	35%	20%	10%	10%	10%	15%	100%	
18	Employee 18	Forklift Operator	60%	30%	10%	100%	100%	0%	100%	35%	20%	10%	10%	10%	15%	100%	
19	Employee 19	Maintenance Technician	34%	33%	33%	100%	100%	0%	100%	17%	17%	17%	17%	16%	16%	100%	
20	Employee 20	Health and Safety Officer	34%	33%	33%	100%	50%	50%	100%	17%	17%	17%	17%	16%	16%	100%	

Note: Bright blue text represents direct inputs, black text represents automated data/calculations.

Exhibit 31
Labor Input
Hourly Rate Input (Mock Data)

Hourly Rate Input				Monthly Hours and Wages					Annual Hours and Wages								
#	Name	Position	Hourly Rate	Monthly Regular Hours	Monthly OT Hours	Monthly Reg Wages	Monthly OT Wages	Total Monthly Hrs	Total Reg Hours	Total OT Hours	Total Hours	Total Reg Wages	Total OT Wages	Total Wages	Total Benefits	Total Wage per Hour	Notes
1	Employee 1	Owner/President	$ 100.00	160.00	-	16,000.00	$ -	160.00	1,920.00	-	1,920.00	$ 192,000.00	$ -	$ 192,000.00	$ 96,000.00	$ 100.00	
2	Employee 2	Office Manager	$ 50.00	168.67	-	8,433.33	$ -	168.67	2,024.00	-	2,024.00	$ 101,200.00	$ -	$ 101,200.00	$ 50,600.00	$ 50.00	
3	Employee 3	Accountant	$ 45.00	147.23	-	6,625.13	$ -	147.23	1,766.70	-	1,766.70	$ 79,501.50	$ -	$ 79,501.50	$ 39,750.75	$ 45.00	
4	Employee 4	Facility Manager	$ 75.00	143.19	-	10,739.25	$ -	143.19	1,718.28	-	1,718.28	$ 128,871.00	$ -	$ 128,871.00	$ 64,435.50	$ 75.00	
5	Employee 5	Scale Operator	$ 28.00	85.46	-	2,392.83	$ -	85.46	1,025.50	-	1,025.50	$ 28,714.00	$ -	$ 28,714.00	$ 14,357.00	$ 28.00	
6	Employee 6	Driver	$ 30.00	160.00	-	4,800.00	$ -	160.00	1,920.00	-	1,920.00	$ 57,600.00	$ -	$ 57,600.00	$ 28,800.00	$ 30.00	
7	Employee 7	Driver	$ 30.00	160.00	-	4,800.00	$ -	160.00	1,920.00	-	1,920.00	$ 57,600.00	$ -	$ 57,600.00	$ 28,800.00	$ 30.00	
8	Employee 8	Sort Line	$ 25.00	160.00	11.08	4,000.00	$ 277.08	171.08	1,920.00	133.00	2,053.00	$ 48,000.00	$ 4,987.50	$ 52,987.50	$ 26,493.75	$ 25.81	
9	Employee 9	Sort Line	$ 25.00	32.00	9.80	800.00	$ 245.00	41.80	384.00	117.60	501.60	$ 9,600.00	$ 4,410.00	$ 14,010.00	$ 7,005.00	$ 27.93	
10	Employee 10	Sort Line	$ 25.00	48.00	9.80	1,200.00	$ 245.00	57.80	576.00	117.60	693.60	$ 14,400.00	$ 4,410.00	$ 18,810.00	$ 9,405.00	$ 27.12	
11	Employee 11	Sort Line	$ 25.00	48.00	-	1,200.00	$ -	48.00	576.00	-	576.00	$ 14,400.00	$ -	$ 14,400.00	$ 7,200.00	$ 25.00	
12	Employee 12	Sort Line	$ 25.00	160.00	9.80	4,000.00	$ 245.00	169.80	1,280.00	78.40	1,358.40	$ 32,000.00	$ 2,940.00	$ 34,940.00	$ 17,470.00	$ 25.72	
13	Employee 13	Baler Operator	$ 30.00	160.00	9.80	4,800.00	$ 294.00	169.80	1,600.00	98.00	1,698.00	$ 48,000.00	$ 4,410.00	$ 52,410.00	$ 26,205.00	$ 30.87	
14	Employee 14	Baler Operator	$ 30.00	160.00	9.80	4,800.00	$ 294.00	169.80	1,920.00	117.60	2,037.60	$ 57,600.00	$ 5,292.00	$ 62,892.00	$ 31,446.00	$ 30.87	
15	Employee 15	QC Inspector	$ 40.00	160.00	-	6,400.00	$ -	160.00	1,600.00	-	1,600.00	$ 64,000.00	$ -	$ 64,000.00	$ 32,000.00	$ 40.00	
16	Employee 16	QC Inspector	$ 40.00	160.00	-	6,400.00	$ -	160.00	1,920.00	-	1,920.00	$ 76,800.00	$ -	$ 76,800.00	$ 38,400.00	$ 40.00	
17	Employee 17	Forklift Operator	$ 30.00	160.00	-	4,800.00	$ -	160.00	800.00	-	800.00	$ 24,000.00	$ -	$ 24,000.00	$ 12,000.00	$ 30.00	
18	Employee 18	Forklift Operator	$ 30.00	160.00	-	4,800.00	$ -	160.00	1,920.00	-	1,920.00	$ 57,600.00	$ -	$ 57,600.00	$ 28,800.00	$ 30.00	
19	Employee 19	Maintenance Technician	$ 40.00	80.00	-	3,200.00	$ -	80.00	960.00	-	960.00	$ 38,400.00	$ -	$ 38,400.00	$ 19,200.00	$ 40.00	
20	Employee 20	Health and Safety Officer	$ 50.00	80.00	-	4,000.00	$ -	80.00	960.00	-	960.00	$ 48,000.00	$ -	$ 48,000.00	$ 24,000.00	$ 50.00	
Total											**29,372.68**			**$ 1,204,736.00**	**$ 602,368.00**		

Note: Bright blue text represents direct inputs, black text represents automated data/calculations.

Exhibit 32
Labor Input
Annual Hours and Wages Summary (Mock Data)

Annual Hours and Wages Summary

#	Name	Position	DYL Hours	AOL Hours	Total Hours	DYL Wages	AOL Wages	Total Wages
1	Employee 1	Owner/President	-	1,920.00	1,920.00	$ -	$ 192,000.00	$ 192,000.00
2	Employee 2	Office Manager	-	2,024.00	2,024.00	$ -	$ 101,200.00	$ 101,200.00
3	Employee 3	Accountant	-	1,766.70	1,766.70	$ -	$ 79,501.50	$ 79,501.50
4	Employee 4	Facility Manager	1,546.45	171.83	1,718.28	$ 115,983.90	$ 12,887.10	$ 128,871.00
5	Employee 5	Scale Operator	1,025.50	-	1,025.50	$ 28,714.00	$ -	$ 28,714.00
6	Employee 6	Driver	-	1,920.00	1,920.00	$ -	$ 57,600.00	$ 57,600.00
7	Employee 7	Driver	-	1,920.00	1,920.00	$ -	$ 57,600.00	$ 57,600.00
8	Employee 8	Sort Line	2,053.00	-	2,053.00	$ 52,987.50	$ -	$ 52,987.50
9	Employee 9	Sort Line	501.60	-	501.60	$ 14,010.00	$ -	$ 14,010.00
10	Employee 10	Sort Line	693.60	-	693.60	$ 18,810.00	$ -	$ 18,810.00
11	Employee 11	Sort Line	576.00	-	576.00	$ 14,400.00	$ -	$ 14,400.00
12	Employee 12	Sort Line	1,358.40	-	1,358.40	$ 34,940.00	$ -	$ 34,940.00
13	Employee 13	Baler Operator	1,698.00	-	1,698.00	$ 52,410.00	$ -	$ 52,410.00
14	Employee 14	Baler Operator	2,037.60	-	2,037.60	$ 62,892.00	$ -	$ 62,892.00
15	Employee 15	QC Inspector	1,440.00	160.00	1,600.00	$ 57,600.00	$ 6,400.00	$ 64,000.00
16	Employee 16	QC Inspector	1,728.00	192.00	1,920.00	$ 69,120.00	$ 7,680.00	$ 76,800.00
17	Employee 17	Forklift Operator	800.00	-	800.00	$ 24,000.00	$ -	$ 24,000.00
18	Employee 18	Forklift Operator	1,920.00	-	1,920.00	$ 57,600.00	$ -	$ 57,600.00
19	Employee 19	Maintenance Technician	960.00	-	960.00	$ 38,400.00	$ -	$ 38,400.00
20	Employee 20	Health and Safety Officer	480.00	480.00	960.00	$ 24,000.00	$ 24,000.00	$ 48,000.00
Total			**18,818.15**	**10,554.53**	**29,372.68**	**$ 665,867.40**	**$ 538,868.60**	**$ 1,204,736.00**

Appendix C:
Survey Documentation Templates

This appendix provides examples of Crowe's Oregon-specific cost model with mock data as examples. These examples provide a subset of the displays in the model, which are intended to provide a sense of how facility's labor and financial information would be inputted to generate a cost per ton. This model provides the calculation for facility costs and does not incorporate a financial return. Note: Within the model, black text represents automated data while the bright blue text represents direct input data.

Exhibit 33 provides a blank affidavit, which requires the site operator's signature attesting that the cost information provided was complete, accurate, and consistent with Crowe's instructions and requirements of the RMA.

Exhibit 34 provides a blank site procedures checklist, which is an itemized list of activities to be undertaken prior to, during, and after the site visit.

Exhibit 35 provides a blank site memorandum, which includes narrative descriptions of the site location, facility operations, material flows, financial and labor data sources, and contact information.

Exhibit 36 provides a blank equipment list, which includes an inventory of equipment at the facility including identification of material(s) for which the equipment is utilized.

Exhibit 33
02 Affidavit

02 Affidavit

Site Information

Facility Name: _____

Survey Team Members: _____ Site Visit Date: ____ / ____ / ____
MM DD YYYY

_____

_____

To the best of my knowledge, the information provided for this fee study is complete, accurate, and consistent with the guidance provided by Crowe LLP and Oregon Department of Environmental Quality (DEQ).

Name: _____

Signature: _____

Title: _____

Date: _____

City, County: _____

State: _____

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Exhibit 34
03 Site Procedures Checklist

03 Site Procedures Checklist

Site Information

Facility Name: _____

Site Visit Date: _____ / _____ / _____
MM DD YYYY

Pre-Site	
1.	☐ Provide a project introduction to the facility management
2.	☐ Request labor, financial, and material/waste tonnage information
3.	☐ Obtain and review labor, financial, and material/waste tonnage information from facility
4.	☐ Schedule facility visit time, date, location with facility management
5.	☐ As needed, conduct follow up call with facility regarding information provided
6.	☐ Prepare and print facility survey forms
7.	☐ Make travel arrangements
On-Site	
8.	☐ Conduct introductions, provide a study overview and on-site objectives, and exchange business cards
9.	☐ Conduct facility tour and take notes on general business operations
10.	☐ Obtain activity splits for commingled processing operations and other operations
11.	☐ Identify equipment and record on equipment list
12.	☐ Review labor information and conduct labor interview with facility management
13.	☐ Review financial documentation and conduct financial interview with facility management
14.	☐ Reconcile labor costs on labor documentation with labor costs on financial documentation
15.	☐ Identify direct costs and any special cost considerations
16.	☐ Have facility management sign the affidavit
17.	☐ Confirm that all documentation has been received
18.	☐ If any information is outstanding, confirm a date and method to obtain it
Off-Site	
19.	☐ Input costs from financial documentation and labor documentation into cost model
20.	☐ Complete all necessary work papers within the cost model
21.	☐ Determine direct costs and direct cost accordingly
22.	☐ Review cost model results, perform reasonability checks
23.	☐ Complete facility equipment list
24.	☐ Complete facility memo
25.	☐ Scan necessary documentation provided by facility
26.	☐ Complete workpapers – tick and tie the facility documentation to the cost model
27.	☐ Perform final review of site files as a whole to ensure they are consistent and accurate
28.	☐ All survey members sign off on procedures checklist
29.	☐ Upload facility files to SharePoint
30.	☐ Change facility file status on SharePoint site tracker to indicate they are ready for review

I confirm that I have performed the pre-site, onsite, and off-site procedures above and have reviewed this facility's file to my satisfaction.

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

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Exhibit 35
04 Site Memorandum

Page 1 of 7

04 Site Memorandum

Site Information

Facility Name: _____

Survey Team Members: _____ Site Visit Date: ____ / ____ / ____
MM DD YYYY

_____

_____

A. General Information of Site's Location and Operations

1. Facility Information

Facility Stats	
Square Feet:	
Capacity:	
Throughput:	

Lot Size / Description
Acreage: _____

2. Business Activity

a. Other business on site: ☐ Source Separated ☐ Other ☐ None

b. Business ownership: ☐ Sole Proprietorship ☐ C-Corp ☐ Partnership ☐ S-Corp
☐ Non-Profit ☐ Other: _____

c. Are other facilities owned by this company in the survey this year?:
☐ Yes ☐ No If Yes, enter Facility Names/Locations: _____

Exhibit 35
04 Site Memorandum *(continued)* *Page 2 of 7*

04 Site Memorandum

3. **Narrative Description of Facility's Location and Operations**

Provide an overview of facility operations, materials/contamination flow, and end markets. Check off the items on the list to make sure that you have included them in the description.

☐ Overview of Facility Operations ☐ Hours of Operations ☐ Other Business Activities

☐ Materials/Contamination Flow ☐ End Market(s) ☐ Disposal Activities

[start narrative here]

Exhibit 35
04 Site Memorandum *(continued)* *Page 3 of 7*

04 Site Memorandum

4. Changes From Previous Calendar Year

Identify if there were any changes from the previous calendar year. If "yes," provide a brief description.

a. Materials Types: ☐ No ☐ Yes: _____
b. Employees: ☐ No ☐ Yes: _____
c. Equipment: ☐ No ☐ Yes: _____
d. Facility Size: ☐ No ☐ Yes: _____
e. Location: ☐ No ☐ Yes: _____
f. Tonnage: ☐ No ☐ Yes: _____
g. Other: ☐ No ☐ Yes: _____

5. ESTIMATED Number of Full-Time Employees

☐ Facility Employees ☐ Contracted Employees ☐ Vocational/Day Activity Employees

Commingled Recyclables	*Source Separated Recyclables*	*Other*	*Total*

6. Material Streams

☐ Commingled recyclables: _____
☐ Source separated recycables: _____
☐ Other: _____

7. Source of Materials

☐ Curbside Program (single/multi-family, commercial/industrial) ☐ Purchased from other commingled recyclable processors ☐ Depot Collection ☐ C&D ☐ Drop-off Collection
☐ Mobile Collection ☐ Recycling Events ☐ Container rentals ☐ Out-of-State
☐ Other: _____

8. Overall Activity Split (%)

Commingled recycables: _____ Other: _____

9. Commingled Recyclables Activity Split (%)

Paper: _____ Plastics: _____ Metals: _____

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Exhibit 35
04 Site Memorandum *(continued)* *Page 4 of 7*

04 Site Memorandum

B. Material Flow and Handling

Provide a brief description of how materials are handled by the site. Check off the items on the list to make sure that you have included them in the description.

- ☐ Material flow (collection to end market)
- ☐ Material handling (baling, etc.)
- ☐ Transportation of materials (who/where/how often/distance)
- ☐ Material sorting
- ☐ Material storage
- ☐ Disposal (handling, location, tip fees, disposal rate)

[start description here]

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Exhibit 35
04 Site Memorandum *(continued)* *Page 5 of 7*

04 Site Memorandum

C. Payroll Information

Payroll Information Provided:

☐ W-2 ☐ Payroll registers ☐ W-2s ☐ K-1 partnership forms

☐ State Tax Form ☐ Timesheets/ Labor Reports ☐ Other: _____

Labor (ULD%) Reconciliation:

☐ The labor total documented on the payroll information reconciles with the labor total documented on the financial information (if there is any difference, it is less than 5%; i.e, no more than 5% and no less than -5%).

Describe any additional information related to the payroll information provided:

[insert additional info here]

D. Financial Information

Financial Information Provided:

☐ Audited financial information ☐ Tax return ☐ Unaudited financial documentation

☐ Depreciation schedule ☐ Other: _____

Financial Representation:

☐ Commingled recycling operations specific financials ☐ Facility-specific financials ☐ Multi-facility/operation financials

Describe any additional information related to the financial information provided:

[insert additional info here]

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Exhibit 35
04 Site Memorandum *(continued)* *Page 6 of 7*

04 Site Memorandum

E. Direct Costs and/or Special Cost Considerations

1. Did you direct-cost any costs? ☐ Yes ☐ No

   If yes, please briefly describe why and how items were direct-costed below and check the box(es) if you used: ☐ MWI ☐ AMI ☐ Material specific

2. Were there any special cost considerations? ☐ Yes ☐ No

   If yes, please briefly describe special cost considerations below:

F. Problems and Solutions

Any problem must have a corresponding solution.

Problem 1	Solution 1

Problem 2	Solution 2

Problem 3	Solution 3

Exhibit 35
04 Site Memorandum *(continued)* *Page 7 of 7*

04 Site Memorandum

G. Facility Contact Information

Name	
Title	
Phone	
Email	

Name	
Title	
Phone	
Email	

Name	
Title	
Phone	
Email	

Name	
Title	
Phone	
Email	

Exhibit 36
05 Site Equipment List

05 Site Equipment List

Facility Information

Facility Name: _____

Facility Equipment list

Equipment	#	Material Type	Notes (age, owned/leased, etc.)
Sorting and Handling Equipment			
Truck Scale		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Hopper and Bins		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Conveyor System		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Magnetic Separator		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Trommel Screen		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Vibrating Screen		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Air Classifier		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Optical Sorter		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Eddy Current		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Glass Breaker Screen		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Dust Collector/Air Filter		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Fines Screen		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Bag Opener/Breaker		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Robotic Arm		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Other Robotic Sorter		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Baler		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Compactor		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Storage Equipment			
Bunker		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Bins		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Transportation Equipment			
Front-end Loader Truck		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Rear Loader Truck		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Side Loader Truck		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Roll-off Truck		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Transfer Trailer Truck		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Walking Floor Trailer		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Grapple Truck		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Forklifts		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Skid-steer Loader		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Other Equipment			
Fire Supression/Safety		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Control Room/Monitoring		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
Maintenance Tools		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	
PPE		☐1 ☐2 ☐3 ☐4 ☐5 ☐Other ☐All	

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Appendix D:
Anticipated Program Costs

This Appendix describes Crowe's Anticipated Program Cost methodology. ORS 459A.923(1)(a) defines anticipated program costs as "all additional costs related to any new requirements of sections 1 to 43 of this 2021 Act that are anticipated prior to the next review of the processor commodity risk fee". There are significant unknowns related to anticipated program costs. First, many of the requirements are not yet formally defined. Many of the requirements are currently under active discussion as part of proposing performance standards and other permit conditions as part of rule concept development. As a result, there will some give-and-take between development of permit rules and estimation of anticipated program costs. This will be an iterative process and will include scenarios or options reflecting potential performance standards, permit conditions, and differing levels of capital investment. Another uncertainty is that there is no set date for the next review of the processor commodity risk fee, other than within the next five years (although likely this review would be sooner).

Crowe will prepare and ask a series of questions related to categories of anticipated program costs during the facility visits. In addition, we will conduct follow-up telephone interviews with commingled recycling processing facilities (CRPFs) in late 2023 to identify anticipated program costs that may be identified as the rulemaking requirements are further defined (e.g., defining living wage and supportive benefits for CRPF workers and permit standards). Anticipated costs could include, but are not limited to, the following:

- Administrative and reporting requirements necessary to comply with permits, including disposition reporting and responsible end market standards
- Operational changes necessary to add sorting capability for materials listed on the Uniform Statewide Collection List
- Quality enhancements necessary to comply with permit requirements including costs associated with:
  - Re-running material through the sort line
  - Adding employees (or reducing employees)
  - Equipment
  - Capacity expansions
- Cost estimations to satisfy contamination standards ultimately established during the rulemaking process (which may vary by bale type, e.g., 1%, 2%, 3%, etc.)
- Cost estimates to satisfy the capture rates standards ultimately established during the rulemaking process.
- Living wage and supportive benefits requirement, though requirement does not take effect until January 1, 2027.
- Potential changes to material disposition, such as eschewing existing end markets that may not meet future standards for "responsible end markets" and/or sending partially-processed materials on to another commingled recycling processing facility (or other entity) for secondary processing.

A. Approach

Crowe's approach to identifying anticipated program costs for CRPFs will include the following activities:

- Development of a questionnaire to be completed during the CRPF facility visits. The questionnaire, provided below, will include the following categories:
  - Administration and reporting
  - Living wage and supportive benefits
  - Employment changes
  - Equipment updates

  - Operational/quality changes
  - Capacity and material acceptances changes
- Validation of survey data
- Research on facility upgrades and equipment prices through:
  - Existing studies and reports
  - Trade literature
  - Equipment vendors
  - Interviews with out-of-state processors (beyond the Oregon CRPFs)
- Follow-up meetings with CRPFs in Fall 2023
- Compilation and categorization of survey data
- Development of models and scenarios that depict high-tech and low-tech approaches to upgrading facilities
- Presentation of aggregated results across RMA cost categories, Crowe's methodology categories, and separately for high-tech and low-tech scenarios.

Exhibit 37 provides an overview of Crowe's approach to conducting the anticipated program costs activities. In conducting this work, our overall goal is to be:

- Comprehensive in capturing and evaluating a wide range of costs and cost trade-offs
- Transparent in describing our methodology, data inputs, categories, scenarios, and assumptions
- Consistent in following our general methodological approach and categorization of costs
- Conservative in determining the minimum costs required to meet proposed RMA requirements and/or scenarios
- Focused on capturing costs supported by documentation where possible (e.g., equipment price quotes)
- Distinguishing anticipated costs required to comply with the RMA from costs that a CRPF would otherwise have to incur to run its business absent the RMA.

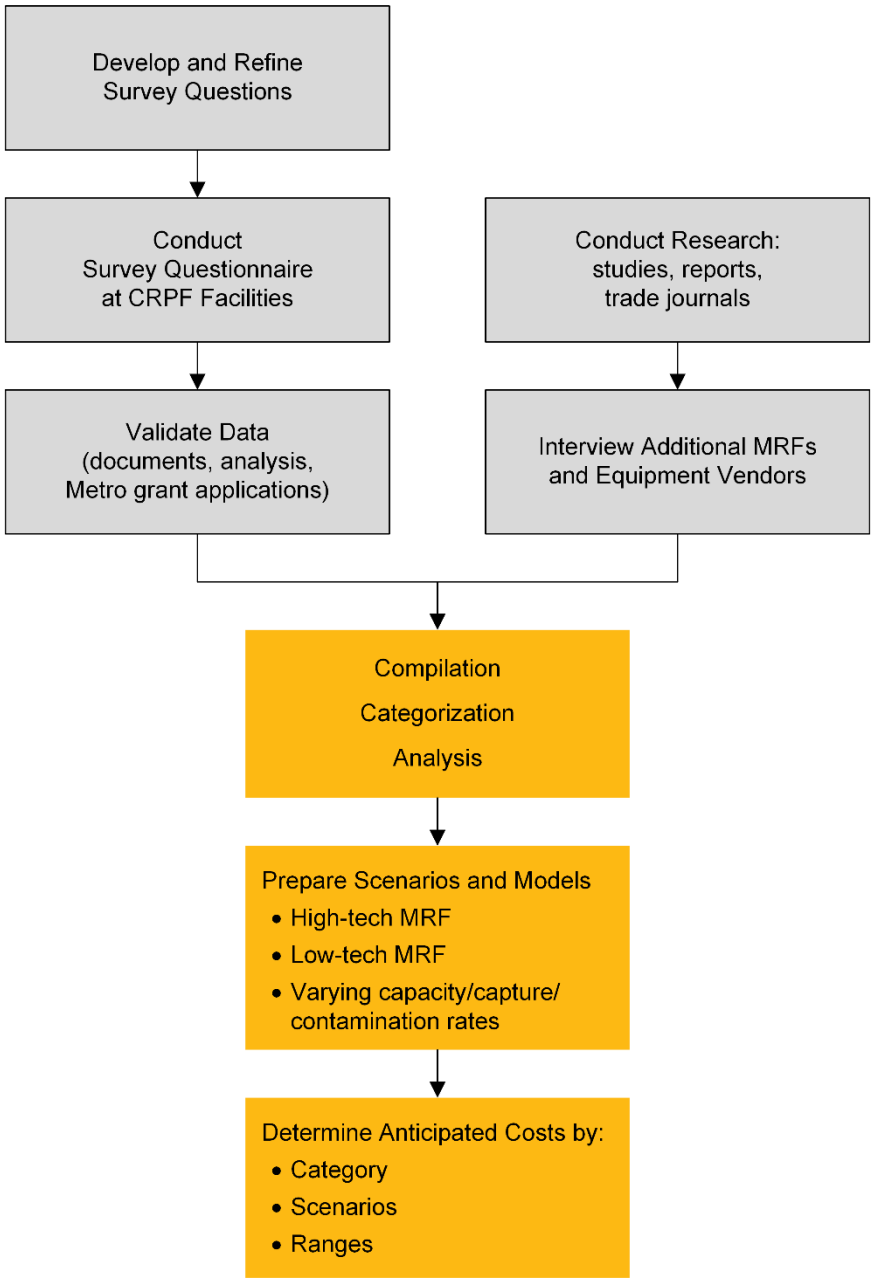
Crowe will present anticipated program costs in several categories. First, we will determine total anticipated program costs across each of the broad RMA areas outlined above (administration/reporting, living wage and supportive benefits, capacity/material acceptance, and capture rates/contamination rates). Utilizing this approach will more easily allow for updates to any of these categories as rulemaking proceeds. The second set of categories will align with the 15 cost categories described in our methodology. The cost categories most likely to apply for the anticipated cost analysis are:

- Direct labor
- All other labor/overhead
- General business overhead[2]
- Depreciation
- Disposal
- Supplies; and
- Maintenance.

Where it is possible without revealing proprietary information, Crowe will summarize the current and planned capabilities of Oregon's CRPFs related to sorting capabilities, degree of automation, and capacity.

[2] We will compute an overhead rate based on current costs and apply an overhead percentage as other costs change.

Exhibit 37
Overview of Anticipated Program Costs Methodology



B. Anticipated Program Costs Survey

As a component of each CRPF facility site visit, Crowe will conduct a survey to identify potential anticipated program costs. Crowe will follow the same confidentiality procedures with anticipated program costs as with facility cost and associated data provided during this study. The remainder of this section provides the draft anticipated program costs survey. We will complete the anticipated program cost survey with the CRPF after we have conducted the site tour and reviewed financial and labor information. At this point we will have a good understanding of the facility's operations and ability to meet future performance standards. The first two questions will frame the conversation and allow our team to focus questions on the types of anticipated costs most applicable to each CRPF. For example, if a facility has stated that they will not be upgrading equipment in response to question #2, we will not ask the questions related to new equipment.

In order to target the quality levels that will be required for permit compliance, we are starting with two assumptions: a 5% or a 2% outbound contamination rate on average (for all materials combined), with corresponding capture rates that support the facility meeting the 5% or 2% targets[3]. Should a different contamination rate be determined during the rulemaking process, Crowe will reach out to reevaluate the estimates CRPFs provide. We expect that we will be following up with each CRFP to further discuss anticipated costs in the Fall of 2023.

Exhibit 38 provides the initial draft of the anticipated program costs survey. It is important to emphasize that Crowe understands and expects that the initial responses to these questions will be just that, initial responses, and estimates. Responses to this survey will provide a starting point for the iterative process that will unfold over the remainder of 2023.

[3] There is ongoing discussion around outbound contamination rate targets to be incorporated into performance standards. Proposals under discussion include, but are not limited to 5%, APR or ISRI Grade A, a 20% improvement over ISRI or APR standards, and commodity specific versus average rates.

Exhibit 38
Anticipated Program Costs Survey

Section	Question No.	Question
1. Primary Concerns	1a	What are your primary concerns in meeting new requirements for Materials accepted?
	1b	Capture rates?
	1c	Contamination rates?
	1d	Living wage and supportive benefits?
	1e	Other requirements of the RMA?
2. Considerations Meeting RMA Requirements	2a	What are your facility's considerations related to meeting the RMA requirements through: Moving materials to another CRPF?
	2b	Adding employees?
	2c	Adding equipment/technology? What documentation do you have related to future equipment purchases (quotes, plans, proposals, etc.)?
	2d	Other?
3. Administration and Reporting	3a	How much time does your facility currently spend on reporting to Oregon DEQ? To Metro (if applicable)?
	3b	Of that time, how much time is spent on tonnage reporting?
	4	Are there any other reporting categories you currently report on? If yes, please specify and provide the amount of time spent on each.
	5a	How much additional labor cost or other expenses do you anticipate incurring for administration and reporting for permit /certification compliance?
	5b	Reporting related to the living wage and supportive benefits wage compliance?
	5c	Responsible end-market compliance?
	5d	Tonnage and contamination reporting?
	5e	Participation in audits and inspections?
	5f	Fee invoicing?
	5g	Other (please specify)?
4. Living Wage and Supportive Benefits	6	PTO - How many days of paid time off (including holidays, sick days, and vacation) are provided to workers in a year?
	7a	Does your facility provide health benefits? (If yes, provide specifics on premium levels, co-pays, deductibles)
	7b	Dental benefits? (Yes/No)
	7c	Vision benefits? (Yes/No)
	7d	Retirement benefits? (Yes/No)
	7e	Training and education benefits? (Yes/No)
	7f	Other benefits? (Yes/No, please specify)
	8	Estimate the total annual cost per employee for all benefits provided by your facility. Provide by employee category or job classification if there are differences.
	9	Estimate the current average percentage that benefits represent of salaries and wages by worker category.
	10	Do you expect an increase in temporary agency staffing use and related administration fees? If yes, how are benefits calculated for these temporary laborers? Will their benefits increase? How will temporary agency fees be increased?
	11	Have you considered wage compression implications? If yes, describe how they will impact your labor costs across all employees, on average, using a hypothetical 25% increase from current entry-level rates (e.g., $20/hour to $25/hour).

Section	Question No.	Question
5. Capacity and Material Acceptance	12	What changes will be required to accept additional materials as part of the Uniform Statewide Collection List (USCL), as currently proposed?
	13	What is your current daily capacity in tons per day (all materials combined)? Please provide documentation.
	14	Can you provide documentation of any planned capacity increases?
	15	What are the reasons for any planned capacity increases?
6. Current Quality Levels	16	What is your current average bale contamination rate (all materials combined)? Please provide documentation. Please provide average contamination rates for each commodity (OCC, mixed paper, HDPE (natural/color), PET, tin, aluminum, etc.)
7. Operational Changes	17	Are you planning additional sorting procedures? If yes, will they be primarily manual or automated?
	18	What other procedural changes do you anticipate?
	19	What changes do you expect in the number of employees due to reductions from automation?
	20	What changes do you expect in the number of employees due to increases in manual labor needs?
	21	How do you expect your residual/ disposal costs to change due to higher quality outputs?
8. Equipment Changes	22	Are you planning to invest in new equipment to meet the materials on the USCL and/or performance standards starting July 1, 2025 (assume 5% and 2% contamination rates)? If yes, please identify the types and quoted prices for each equipment.
	23	Are you planning to apply for grants (matching or otherwise) from Metro, Carton Council, or other organizations for new equipment?
	24	If new equipment is being or will be purchased, do you plan to perform facility upgrades to incorporate the new equipment? If yes, describe the upgrades needed and estimated costs. Provide quotes if possible.
	25	Are there any staffing changes which would result from adding new/upgraded equipment?
	26	If certain processes will be automated, how do you anticipate reallocation of resources with automation?
	27	Will equipment maintenance costs be impacted? If yes, provide an estimate of the additional costs or cost savings.
	28	If new equipment is being purchased, does it require ongoing subscription costs (for example, monthly software/support for advanced equipment)? If yes, provide an estimate of how much monthly costs would be.