



Oregon Department of Environmental Quality

Topic paper: Clarifications to the Life Cycle Evaluation Rules

RMA Rulemaking 3: Prepared for Rulemaking Advisory Committee discussion - Jan. 27, 2026

Summary of proposed amendments

DEQ is proposing to make the following amendments to the life cycle evaluation rules at OAR 340-090-0900-0940, presented in this list in order of where they would appear within the existing rules:

1. An amendment to the definition of “refillable packaging product” at OAR 340-090-0900 (38), replacing the current definition with a definition drawn from the French government agency ADEME (the Agency for Ecological Transition) and its accounting approach for defining and measuring the share of reused packaging placed on the market.
2. Replacement of the European Union-derived methodology for measuring refill rate at OAR 340-090-0930(2)(g) with a methodology derived from French government agency ADEME and its accounting approach for defining and measuring the share of reused and refilled packaging placed on the market.
3. A clarification to be added as OAR 340-090-0920(4)(a)(A) in order to stipulate that a third-party verifier will not be considered independent if currently employed by the producer or any associated producers (e.g. subsidiaries), and to cross-reference a self-independence checklist from ISO 14071 that shall be filled out and submitted as part of the third-party review.
4. A clarification to OAR 340-090-0920(2)(a) to indicate that the plastic inventory analysis output (e.g. the estimated amount of plastic leaked during the life cycle of the covered product) must be disclosed in the producer’s public project report in order to receive a bonus.
5. An update to the citation at OAR 340-090-0930(2)(g) to specify that, when estimating plastic leakage using the Plastic Footprint Network methodology, producers must apply the microplastic-packaging and microplastic-tires modules. Other modules (e.g. leakage from waste export) may additionally be included in the analysis voluntarily.
6. A replacement of the Bouley et al 2023 reference at OAR 340-090-0930(3)(b)(T) with [Louvet et al 2026](#) so as to require that the most recent MariLCA characterization factors for plastic leakage impact assessment be used by producers.

Background

The Recycling Modernization Act, while focused on a primary goal of implementing systemic fixes to the state’s recycling system, has a secondary goal of reducing covered product impacts across their life cycles. Two important, relevant policies within the Act are ecomodulation of producer fees (ORS 459A.884) and large producer mandatory life cycle evaluation (ORS 459A.944). The two policies are tied together by a requirement that the PRO, in developing its ecomodulation approach, takes into account the life cycle impacts of covered products as measured by the methodology used by large producers for their mandatory evaluations (ORS 459A.884(4)(d)). DEQ built upon this requirement in rulemaking 2 (2023-2024) by mandating that PROs make two types of life cycle evaluation-based fee bonuses available to member producers, one for simple impact evaluation and disclosure and one for impact evaluation and disclosure that demonstrates substantial impact reduction (OAR 340-090-0910(3)).

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[Prior department research](#) demonstrates that when producers evaluate life cycle impacts, they often also take action to reduce life cycle impacts (Quantis 2014). In rulemaking 2, DEQ used existing normative standards for life cycle assessment, cross-referencing standards from the International Standards Organization (ISO) and from Product Environmental Footprint (PEF), the European Union's LCA method, as well as other standard-bearers in the rules.

Since the completion of rulemaking 2, during which the detailed rules for evaluation and disclosure of life cycle impacts were developed at OAR 340-090-0900-0940, the following developments have occurred:

- Circular Action Alliance included two ecomodulation bonuses (Bonus A for simple life cycle evaluation and disclosure and Bonus B for substantial impact reduction) based upon life cycle impact evaluation and disclosure in its program plan approved by DEQ on Feb. 21, 2025, and then subsequently amended the plan to include a third such bonus (Bonus C for switch from single-use to reuse). The amended version of the plan was approved by DEQ on Sept. 12, 2025.
- Circular Action Alliance launched Bonus A for simple life cycle evaluation and disclosure in early 2025, with a solicitation of producer evaluations for bonuses in the 2026 fee year. Producer participation in this first round of bonus offerings was limited by a number of factors, chief among them a fast-moving timeline toward program launch and limited window for preparation of evaluations. Two bonuses were ultimately awarded to Horizon Organic and their bonus assessments have been posted to CAA's [RecycleOn website](#).
- In fall 2025 DEQ announced the [preliminary list of large \(top 25\) producers](#) and began work on guidance toward and dialogue with these producers to prepare them to submit their mandatory evaluations for a deadline of December 31, 2026.

The rules proposed in this rulemaking are intended to address questions and concerns that have arisen in Circular Action Alliance's bonus rollout, during DEQ initial outreach to large producers regarding the mandatory evaluations, and in the program plan and plan amendment review process. The specific concern being addressed by each proposed amendment is cited below, along with a more detailed description of the amendment proposed to address it.

Proposed amendments

1. Refillable Packaging Product Definition

Concern: During the public process for CAA's plan amendment to add Bonus C to the program plan, reuse advocates expressed concern that, without a tighter definition of refillable packaging product and methodology for calculation of refill rate, a loophole may exist for producers to receive bonuses for at-home refill systems that do not actually generate impact reduction above the minimum threshold required. The advocates expressed particular concern that refill rate estimates could stretch or depart from the truth without methodological guardrails, and thereby exaggerate impact reduction, as refill rate depends upon at-home behavior that is not directly visible to or operated by the producer.

Additionally, producers and the Producer Responsibility Organization have expressed concerns that the existing rules leave vague the question of whether or not single-use refills used at home to fill refillable packaging should be included within a life cycle evaluation of a refillable packaging product, or not.

Proposed Amendments: The current definition found in OAR 340-090-0900(38) should be amended/replaced with the definition of a refillable product drawn from the French government agency ADEME (the Agency for Ecological Transition) (Jemet et al 2024). The ADEME definition requires the following two criteria to both be met for a package to be considered a refillable packaging product:

- First, a product pair must exist – a) refillable parent packaging and b) child (refill) packaging. The child packaging must be conceived and designed specifically by the producer to fill the parent package at home.

- Second, the child packaging (refill) must not perform the same function as the associated parent packaging and cannot be used without the parent. At least one of the following conditions must be met to be considered to meet this criterion:
 - The child packaging is not reclosable, which means that once opened, the product is no longer protected.
 - The child packaging is reclosable, but enables multiple filling of the parent packaging.
 - An additional component present on the parent package is necessary in order to be able to use the refill.

DEQ does not intend to include the third criterion from the ADEME definition that requires that the parent packaging be recyclable.

In refining the definition of “refillable packaging product” as such, DEQ would be focusing it particularly upon at-home refill models, and would be including both the refillable parent and the child (single-use refill) packaging within the definition. This would clarify that the full refill system (parent and child) should be included in the life cycle evaluation, which comports with the intent of the life cycle evaluation rules (to accurately and comprehensively account for all of the impacts of all of the packaging that delivers the functional unit under assessment, e.g., one liter of hand soap, one gallon of milk, etc.). This runs contrary to the recommendation of reuse advocates voiced during the plan amendment review process, who wished to see the single-use refills excluded from having bonuses applied to their fees as a guardrail against sizable bonuses being granted for practices that may not actually reduce impacts. DEQ prefers to address this concern rather by limiting the definition of “refillable packaging product” to dedicated parent-child pairs, thereby giving certainty that child refill sales are being used to refill parent packaging (see below). This will mean that some refillable offerings will be unable to qualify for Circular Action Alliance’s Bonus C¹, but DEQ considers that an acceptable consequence of ensuring that there is not a loophole for low-performing refill systems to be incented.

2. Refillable Packaging Product Calculation Methodology

Concern: See above concern from the reuse advocacy community regarding “Refillable Packaging Product Definition,” which is applicable here as well. Additionally, producers and the Producer Responsibility Organization have shared concerns regarding the current methodology required at OAR 340-090-0930(2)(g) for calculating the refill rate factor for a refillable packaging product – namely, that the European Union methodology cited in the current does not provide guidance specific to at-home refill.

Proposed Amendment: The current methodology for calculating the refill rate factor was adapted from the reuse rate factor calculation described in the European Commissions’ Product Environmental Footprint (PEF) method in section 4.4.9 of Annex I of EU 2021/2279. DEQ proposes to replace this with a methodology derived from French government agency ADEME (Jemet et al. 2024) and its accounting approach for defining and measuring the share of refilled parent packaging placed on the market. Formulae and examples for calculating the reuse of parent packaging through refill are found on pages 38-39 of Jemet et al. 2024.

Generally, the method is as follows:

refill rate = [total units of single use refill, i.e. child, packaging sold in a given year multiplied by (volumetric capacity of the single use child refill packaging / maximum volumetric capacity of the parent packaging)] / total units of packaging placed on the market in that same year, where the total units of packaging placed on the market is the sum of parent packaging, child packaging, and volumetrically adjusted refills.

¹ If parent and child packaging do not meet the criteria above and thus do not qualify as a “refillable packaging product,” bonus life cycle evaluations could still be submitted for them, but individually (for the parent or child), and they would need to be assessed as if they are single-use products rather than refillables.

This method amounts to a calculative means enabling estimation of the number of times the parent packaging is refilled, with the ratio between the capacity of the refill package and the capacity of the parent packaging taken into account in the case of “refill” and “parent” packaging of different capacities.

3. Independence of Third-Party Verifier(s)

Concern: producers have communicated uncertainty as to the degree of independence required of a third-party verifier (all assessments must undergo third-party review and validation), with questions raised as to whether or not an employee of the producer housed within a different division from that which prepared or commissioned the evaluation, or an employee of a subsidiary company, could serve as the third-party verifier.

Proposed Amendment: The rules regarding third-party review at OAR 340-090-0920(4) set a distinct bar for the qualifications of a third-party reviewer, but do not lay out what is meant by “independent.” To fill this gap in the rules, DEQ proposes to add a new Paragraph OAR 340-090-0920(4)(a)(A) to stipulate that a third-party verifier will not be considered independent if currently employed by the producer that commissioned the study, the practitioner that accomplished the study, or by any producer associated with the commissioning producer (i.e., using the definition of “associated producer” at OAR 340-090-0860(6)). DEQ considers that such arrangements pose a conflict of interest that does not comport with the intent of third-party review. DEQ proposes to additionally require that third-party verifiers fill out and submit Annex B of ISO 14071 (a standard for life cycle assessment critical review processes and guidelines) as part of the third-party verification document – this is a simple checklist where the third-party verifier would attest to not being employed by the commissioner or practitioner of the LCA study, not having been involved in defining the scope or carrying out any of the work to conduct the LCA, and not having any vested financial, political or other interest in the study outcome.

4. Requirement to Disclose Life Cycle Inventory Analysis Results

Concern: OAR 340-090-0920(2) indicates that five types of data, including (a) life cycle inventory analysis result, need to be disclosed to the public in the public-facing version of the project report for a life cycle evaluation to qualify for an ecomodulation bonus. Producers have raised questions as to what constitutes the “result” for each type of inventory data, prompting the question of whether or not the specific data that is considered the result need to be defined in rule.

Proposed Amendment: While DEQ is comfortable with leaving the language as is for most types of inventory data and seeing if problems with the degree of disclosure of specific types of inventory data arise in implementation, DEQ does want to make sure that the output of plastic leakage inventory analysis that results from application of the Plastic Footprint Network methodology is publicly disclosed, i.e., that the specific volume of plastic in kilograms leaked across the life cycle of a covered product is disclosed. DEQ proposes to add OAR 340-090-0920(2)(a)(A) to specify that disclosure of this particular inventory value is required.

For the mandatory evaluations and for the simple evaluation and disclosure bonuses (Bonus A in CAA’s Program Plan), producers are required to include plastic leakage in their inventory analysis, but do not need to proceed to impact assessment. Therefore, if inventory analysis results are not disclosed, there would be practically no LCA disclosure for plastic impacts in these evaluations. This does not align with the statutory requirement to evaluate and disclose.

5. Plastic Leakage Inventory Analysis Methodology

Concern: It is unclear which modules (i.e., methodological components) of the Plastic Footprint Network V1 2023 are required for use in order to generate the plastic leakage inventory data. The modules that are part of the method that is presently publicly-available are Packaging, Textiles, Fishing Gears, Leakage from Export, Micro tire dust, and Micro textile fibers. Additional modules, including modules for release rates and micro pellets, are foreseen for the near future. Some of these modules are clearly irrelevant for the products covered under this law but the rule does not provide specificity.

Proposed amendment: DEQ proposes to add a paragraph to the rules at OAR 340-090-0930(2)(g)(A) where it would be stipulated that producers must apply the Macroplastic: Packaging and Microplastic: Tire particles modules of Plastic Footprint Network V1 2023 when conducting plastic leakage inventory analysis, and that they may apply other modules by choice. This would mean that leakage during recycling and disposal would receive more general treatment through the Packaging module (which applies the US average mismanaged waste/release rates to all plastics regardless of whether they actually stay in the country or are exported) rather than the more country-specific treatment/data that would be applied were the Leakage From Export module to be applied (country-specific mismanaged waste/release rates are applied to the fractions of plastic exported to each country). However, until Oregon-specific data are compiled detailing export destinations and export rates of different materials, it would be difficult for a producer to accurately apply the Leakage From Export module for products that go into Oregon – they could only do so with their own dataset indicating the location of final disposition (by country) of their plastic packaging at end of life. As a result, DEQ considers appropriate to represent this module as optional for now, and revisit this question during the next rulemaking, at which point aggregate disposition reporting generated through the Recycling Modernization Act will likely have been compiled adequately so as to enable producers to apply the module.

6. Update to MariLCA Version for Plastic Impact Assessment

Concern: Characterization factors for the MariLCA impact assessment methodology for plastic have been updated subsequent to DEQ's approval of the rules ([Louvet et al 2026](#)). A further update is currently underway in order to integrate the MariLCA methodology into the European Union's Product Environmental Footprint forthcoming fourth version (Saadi et al, 2026 or 2027, TBD).

Proposed amendment: DEQ proposes to replace the Bouley et al 2023 reference at OAR 340-090-0930(3)(b)(T) with Louvet et al 2026 so as to require that the most recent MariLCA characterization factors for plastic leakage impact assessment be used by producers. Should the expected additional update (Saadi et al 2026 or 2027) occur before finalization of these rules, DEQ proposes to replace Louvet et al 2026 with Saadi et al 2026/2027 before finalization of the rules by the Environmental Quality Commission.

Outcomes of proposed amendments

- Operations: Greater methodological and procedural clarity for producers accomplishing life cycle evaluations, and for the PRO managing its ecomodulation program.
- Fiscal or economic impacts: Some producers of refillable products may be unable to apply for Circular Action Alliance's Bonus C for transition from single-use to refillable packaging because their products will not meet the new definition of "refillable packaging product," i.e., they do not sell dedicated parent-child pairs.
- Equity impacts: The amendments proposed for refillables should improve equitable distribution of fee burden among producers in that producers will have less flexibility in reporting of refill rate, meaning

their life cycle evaluations are more likely to reflect actual impact reduction and only those producers achieving substantial impact reduction will receive bonuses.

Committee discussion questions

1. Does the proposed approach to refillables adequately balance the concerns of reuse advocates and producers, with reuse advocates wanting to ensure that bonuses go only to producers who truly achieve substantial impact reduction, and producers wanting maximum access to bonuses?
2. If the change to the definition of “refillable packaging product” is made, at-home refillables will fall into this category, whereas “refill on the go,” if it involves private- or publicly-owned washing and distribution infrastructure to wash and redistribute the packaging, would fall under the definition of “reusable packaging product.” Is there a gap here for refill on the go that does not involve private- or publicly-owned washing and distribution, and if there is, is it okay that producers that use such models would not be able to qualify for Circular Action Alliance’s Bonus C because their products would neither be defined as reusable nor as refillable packaging products?
3. Does the Committee have any concerns about requiring producers to disclose their plastic leakage estimates?
4. Does the Committee have any concerns about disallowing third-party verifiers who are employees of the producer that has submitted the evaluation, the practitioner who conducted the evaluation, or of a subsidiary of the producer that has submitted the evaluation?
5. Does the Committee have any concerns about not updating impact weightings nor the approach to toxics impacts (including the list of chemicals that need to be disclosed) in this rulemaking? The Department considers that these aspects of the rules should be updated periodically, but wants more information from implementation before undertaking a first update.

References

European Commission. 2021. [Commission Recommendation \(EU\) 2021/2279 of 15 December 2021 on the use of the Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organisations](#). Document 02021H2279-20211230.

Jemet, E., Guiot, M., Pasquier, S., Bocquet, M., Marcoux, M.A., and Rondel, M. 2024. Counting the Reuse of Packaging in France, Counting Methodologies - Summaries of operations. ADEME. 51 pages.

Louvet, J., Quik, J.T.K. and Boulay, A.M. 2026. [Regionalized characterization factors for microplastic emissions in life cycle assessment considering multimedia fate modelling](#). Journal of Cleaner Production. 538:147217.

ISO 14071:2014. Environmental management — Life cycle assessment — Critical review processes and reviewer competencies: Additional requirements and guidelines to ISO 14044:2006. Geneva: International Organization for Standardization.

Plastic Footprint Network. 2023. [Plastic Footprint Guidelines and Strategic Modules](#). V1.

Quantis. 2014. [Evaluation of actions to support product environmental footprinting in the Pacific Northwest: Findings and recommendations from research, surveys and interviews of business leaders](#).

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