

Plastic Packaging Stakeholder Advisory Committee Report

DECEMBER 2021

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Executive Summary

I. BACKGROUND

Washington State's 2021 [Senate Bill E2SSB 5022](#) (E2SSB 5022) directed the Departments of Ecology and Commerce to select a neutral third-party facilitator to convene a Stakeholder Advisory Committee (Advisory Committee) to develop recommendations on mandatory post-consumer recycled (PCR) content requirements for types of plastic packaging that are present in the municipal solid waste material stream and are not covered by the law.

Ross Strategic, as the facilitator, convened the Advisory Committee that included participation from 32 distinct organizations across the packaging value chain. The complete list of the 32 members (plus alternates) that participated on the Advisory Committee is provided in [Appendix A](#) of this report.

This report describes the convening of the Plastic Packaging Stakeholder Advisory Committee and its recommendations on the development of mandatory postconsumer recycled content requirements for the following packaging types:

- [Polypropylene \(PP\) Tubs Marked with Resin ID Code Number 5 \(#5 PP Tubs\)](#)
- [Polyethylene Terephthalate Thermoform Containers \(PET Thermoform Containers\)](#)
- [PP, PET, and Polystyrene \(PS\) Single-use Plastic Cups \(Single-Use Plastic Cups\)](#)

II. ADVISORY COMMITTEE RECOMMENDATIONS

The Advisory Committee did not reach consensus agreement on its recommendations. Most Advisory Committee members that responded to online polling and assessments supported these PCR content percentages and target dates either fully or partially (see [Appendix H](#) for assessment results). Details around the Advisory Committee's rationale for full or partial support are noted in the "key considerations" sections for each packaging type. All recommendations follow a 10-year time horizon and did not recommend minimum PCR content for dates beyond 2031.

The Advisory Committee chose to develop recommendations around three types of resin-specific packaging (see table below). This approach varied from the resin-neutral approach taken in E2SSB 5022. Members advocating for a resin-neutral approach felt such recommendations would have better aligned with E2SSB 5022 and would be less likely to create unfair market advantages among resin types. Members recommending rates and dates by resin type for certain types of packaging felt that some resins are ahead of others in sorting and recycling technologies, and that there was a need to create a manageable next step for PCR content in Washington, rather than capturing an unmanageably wide array of products.

Minimum % PCR Content by Effective Dates Across Packaging Types

	2023	2024	2025	2026	2027	2028	2029	2030	2031
#5 Polypropylene (PP) Tubs				10%					30%
Polyethylene Terephthalate (PET) Thermoform Containers: Packaging for Consumable Goods				10%					30%
PET Thermoform Containers: Packaging for Durable Goods									30%
PP Single-Use Cups							15%		25%
PET and Polystyrene (PS) Single-Use Cups							20%		30%

III. KEY CONSIDERATIONS

Advisory Committee members identified several key considerations associated with the recommendations for each packaging type described above. For example, food grade PP recycling is still maturing compared to PET and High-Density Polyethylene (HDPE) and the PP recycling material is commonly used in non-food and durable goods. Upcoming developments in PP recycling technologies have the potential to open more opportunities for food-grade use, but investments in separate PP sorting capabilities will be needed. The proposed effective dates for the different PP PCR content requirements consider anticipated developments in infrastructure, including developments in recycling technologies.

PET thermoform containers represent the largest and most diverse set of packaging within the Advisory Committee recommendations, and the Advisory Committee was deliberate in defining this packaging. The Advisory Committee generally agreed to recommend an exemption for PET thermoform containers designed to accompany a durable good where that durable good model (and thus the associated packaging) was designed prior to the effective date of the PCR content requirement. Members of the Advisory Committee believe PCR material for PET thermoform containers is limited by supply rather than by technological capability, and additional sorting capabilities at material recovery facilities will eventually be required to increase PET thermoform container recovery.

Single-use plastic cups are made primarily from three resin types: PP, PET, and PS. Of these resins, PP is most common for single-use plastic cups. Lower minimum PCR content recommendations were developed for PP single-use cups for several reasons, including current and projected chemical recycling capability, availability of rPP supply, and current collection and sorting practices. There was also a preference for

aligning the PP recommendations for single-use plastic cups with the recommendations for #5 plastic tubs given the common resin type.

IV. CROSS-CUTTING CONSIDERATIONS

During its discussions, the Advisory Committee identified several considerations that were common across the packaging types. For example, the Advisory Committee suggests applying provisions from E2SSB 5022 to all the packaging described in the report. This includes the Ecology market study described in the statute to determine if market conditions are appropriate for meeting PCR content requirements and allowing producers to be excluded from the requirements if they demonstrate lack of technical feasibility. Other cross-cutting considerations discussed by the Advisory Committee included:

- Other off-ramps, alternative compliance measures, or incentives
- Availability of recycled material for food contact packaging
- Supply-building initiatives
- Markets, technology, and sorting for recycled polypropylene

V. FUTURE CONSIDERATIONS

Several considerations arose that the Advisory Committee felt were out of scope for its task, but important for the legislature to consider for future opportunities for plastic recycling. This included issues such as advancing the circular economy, evaluating the carbon impacts of the plastic packaging life cycle, and reducing the overall amount of plastic used in packaging. Other future considerations discussed by the Advisory Committee included:

- Advancing the circular economy to stimulate recycled plastic content markets
- Aligning Washington State's minimum PCR content requirements with those of adjacent states
- Evaluating carbon impact from a plastic life cycle perspective
- Ensuring products sold through online third-party sellers meet minimum PCR content requirements
- Assessing the market impacts of the minimum PCR content requirements
- Evaluating PP PCR content mandates for durable goods
- Reducing the overall amount of plastic used in packaging
- Evolving recycling technology to produce high-quality recycled food-grade material

Throughout this process, Advisory Committee members reiterated support for Washington State's efforts to advance measures to increase the amount of recycled content in plastic packaging. Advisory Committee members expressed appreciation for the opportunity to contribute to this effort.

Background and Process Overview

I. COMMITTEE BACKGROUND

Washington State's 2021 [Senate Bill E2SSB 5022](#) (E2SSB 5022) aims to reduce the use of single-use plastics and increase postconsumer recycled (PCR) content in plastic bottles, jugs and trash bags and supports many of the recommendations in the 2020 Plastic Packaging in Washington report.¹ Section 9 of E2SSB 5022 directed the Departments of Ecology and Commerce to select a neutral third-party facilitator to convene a Stakeholder Advisory Committee to develop recommendations on mandatory PCR content requirements for types of plastic packaging that are present in the municipal solid waste material stream or are regularly received by facilities that process recyclable materials from residential curbside recycling programs and are not covered by the law. The law directs the facilitator to submit a report to the Washington State legislature containing the recommendations of the Stakeholder Advisory Committee by December 1, 2021.

Ross Strategic, as the facilitator, convened the Plastic Packaging Stakeholder Advisory Committee in July 2021. E2SSB 5022 listed 32 distinct organizations for participation in the Advisory Committee. As outlined in the legislation, the committee included representatives from state government agencies, local governments, plastic manufacturers, plastic recyclers, municipal collectors, trade associations, material recovery facilities, environmental organizations, and consumer groups. Ross Strategic developed an initial list of proposed Advisory Committee members for each organizational type based on conversations with individuals involved with drafting E2SSB 5022 and supplemented this list based on outreach from interested individuals. Ross Strategic then reached out to these individuals to gauge their interest and availability in participating in the Advisory Committee.

Thirty-two members (plus alternates) participated on the Advisory Committee. The complete list of Advisory Committee organizations, including representatives and alternates as well as explanatory footnotes related to specific seats, is provided in [Appendix A](#) of this report. Technical support for the Advisory Committee and its work groups was provided by Dr. Karl Englund, associate research professor, Department of Civil and Environmental Engineering, Washington State University.

II. COMMITTEE CHARGE

As directed in section 9 of E2SSB 5022, "The advisory committee shall make recommendations to the appropriate committees of the legislature on the development of mandatory postconsumer recycled content requirements for types of plastic packaging not subject to the minimum postconsumer recycled content requirements established in this act, and that are present in the municipal solid waste material stream or are regularly received by facilities that process recyclable materials from residential curbside recycling programs. The recommendations may include rates of mandatory postconsumer recycled content required by material type, target implementation dates, and potential exemptions or alternate compliance pathways

¹ [Plastic Packaging in Washington: Assessing Use, Disposal, and Management](#). Prepared for the Washington State Department of Ecology by Cascadia Consulting Group and Eunomia Research & Consulting with support from Full Circle Environmental and MORE Recycling. Revised September 11, 2020

for some materials.” The Advisory Committee worked within the bounds of this charge throughout the process of developing its recommendations.

III. COMMITTEE PROCESS

The Advisory Committee formally met eight times during 2021 to gather information on potential plastic packaging for minimum PCR content requirements, develop recommendations around specific types of plastic packaging, and review the draft and final report. Ross Strategic strove to distribute agendas at minimum one week prior to Advisory Committee meetings and circulate draft summaries one week following meetings. The facilitation team posted meeting agendas, summaries, meeting recordings, and other materials online on a project website². Members of the public were provided opportunities to observe all Advisory Committee meetings and provide public comment. The Advisory Committee adopted a set of operating principles to guide its activities; the operating principles are provided in [Appendix B](#).

The Advisory Committee, recognizing the short time frame in which to develop a report with recommendations around minimum PCR content and target dates, developed a list of potential plastic packaging types to examine for PCR content recommendations. From this initial list, the Advisory Committee narrowed the packaging types under consideration to three.

- Polypropylene (PP) Tubs Marked with Resin ID Code Number 5 (#5 PP Tubs)
- Polyethylene Terephthalate Thermoform Containers³ (PET Thermoform Containers)
- PP, PET, and Polystyrene Single-use Plastic Cups (Single-Use Plastic Cups)

In addition to the eight Advisory Committee meetings, Ross Strategic convened a series of work group meetings related to these three specific types of plastic packaging. Ross Strategic invited Advisory Committee members to actively participate in up to two of the work groups and provided Advisory Committee members with the option to observe any or all work group meetings. Staff from Ross Strategic facilitated each work group meeting, took notes, and produced a summary for work group members. External subject matter experts participated in various work group meetings to provide insights on various aspects of the plastics recycling supply chain, based on information needs identified by work group members.

Each work group developed proposed minimum PCR content percentages and target implementation dates for their respective packaging types and presented these proposals to the full Advisory Committee for further review. The recommendations included multiple scenarios for Advisory Committee consideration.

The PCR content recommendations included in this report are the result of a two-step process:

1. Advisory Committee members provided feedback on the work groups’ proposed scenarios through an online survey between meeting 5 (November 3) and meeting 6 (November 10). Ross Strategic compiled the feedback from the survey to gauge support for the various scenarios and presented the results during the November 10 Advisory Committee meeting, for further discussion.

² The project website was active during the Stakeholder Advisory Committee’s work.

³ While the target packaging was originally described as “PET Clamshells,” the Advisory Committee adopted the work group’s definition to describe these as “PET Thermoform Containers” to better describe unhinged packaging included in this category.

2. During the November 10 meeting, Advisory Committee members participated in additional discussions and polling to gauge support for refinements to the #5 PP Tubs and PET Thermoform Containers recommendations and identify a preferred scenario. Members discussed alternative scenarios that could bridge the original two options discussed by the work groups. Members did not have additional refinements to the proposed scenario by the single-use plastics cups work group.

Results from these exercises are summarized in the following sections as indications of general levels of support and are included in [Appendix H](#).

IV. DEFINITIONS

The following working definitions are used in this report:

- **Chemical recycling:** A process by which plastics are broken down into their original monomers, or dissolved to purify by using chemicals or thermal methods.
- **Consumable goods:** Food items, as well as non-food items/supplies, designed for single or short-duration use.
- **Durable goods:** Non-food items designed to be used repeatedly and that typically have a useful life of three or more years.
- **Letter of No Objection:** [FDA](#) considers each proposed use of recycled plastic on a case-by-case basis and issues informal advice if the recycling process is expected to produce PCR plastic of suitable purity for food-contact applications.⁴ FDA issues a favorable opinion in the form of a Letter of No Objection (LNO) that specifies the company that made the request, the subject plastic, whether the recycling process is physical or chemical, and limitations on the conditions of use for the recycled plastic.⁵
- **Materials Recovery Facility:** Also sometimes called a recycling processor, an establishment primarily engaged in sorting fully or partially mixed recyclable materials into distinct categories and preparing them for shipment to recycling markets.⁶
- **Mechanical recycling:** Operations that recover plastics through mechanical processes such as grinding, washing, separating, drying, re-granulating and compounding, where no depolymerization or dissolution of the plastic is undertaken. Mechanical recycling is the traditional type of recycling used predominantly until now by recyclers.
- **Off-ramp:** An option to temporarily waive penalties for non-compliance with minimum PCR content requirements based on external conditions (for example, if there is insufficient market supply of recycled material to meet minimum PCR content requirements).
- **Post-consumer recycled content:** The content of a covered product made of recycled materials derived specifically from recycled material generated by households or by commercial, industrial, and institutional facilities in their role as end users of a product that can no longer be used for its intended purpose. Includes returns of material from the distribution chain.

⁴ FDA website, [Recycled Plastics in Food Packaging](#)

⁵ FDA website, [Submissions on Post-Consumer Recycled \(PCR\) Plastics for Food-Contact Articles](#)

⁶ [Plastic Packaging in Washington: Assessing Use, Disposal, and Management](#). Prepared for the Washington State Department of Ecology by Cascadia Consulting Group and Eunomia Research & Consulting with support from Full Circle Environmental and MORE Recycling. Revised September 11, 2020

- **Thermoform:** A product that results from the process of heating a thermoplastic sheet to its softening point, stamping or draping it into a single-sided mold, and holding it in place while it cools and solidifies into the desired shape.⁷ Not all thermoforms are made of PET resin.

V. ACRONYMS

EPS	Expanded Polystyrene
FDA	Food and Drug Administration
HDPE	High-Density Polyethylene
LNO	Letter of No Objection (FDA)
PCR	Post-Consumer Recycled
PE	Polyethylene
PET	Polyethylene Terephthalate
PP	Polypropylene
PS	Polystyrene
rPET	Recycled PET
rPP	Recycled PP

⁷ Definition from NAPCOR

Plastic Packaging Recommendations

E2SSB 5022 directs that “The stakeholder advisory committee shall make recommendations using consensus-based decision making. The report must include recommendations where general stakeholder consensus has been achieved and note dissenting opinions where stakeholder consensus has not been achieved.”

The Advisory Committee did not reach consensus agreement on its recommendations. Most Advisory Committee members that responded to online polling and assessments supported these PCR content percentages and target dates either fully or partially (see [Appendix H](#) for assessment results). Details around the Advisory Committee’s rationale for full or partial support are noted in the “key considerations” sections for each packaging type. All recommendations follow a 10-year time horizon and did not recommend minimum PCR content for dates beyond 2031.

The Advisory Committee chose to develop recommendations around three types of resin-specific packaging (see sections below). This approach varied from the resin-neutral approach taken in E2SSB 5022. Members advocating for a resin-neutral approach felt such recommendations would have better aligned with E2SSB 5022 and would be less likely to create unfair market advantages among resin types. Members recommending rates and dates by resin type for certain types of packaging felt that some resins are ahead of others in sorting and recycling technologies, and that there was a need to create a manageable next step for PCR content in Washington, rather than capturing an unmanageably wide array of products.

For all recommendations, the Advisory Committee opted to follow a 10-year time horizon and did not recommend minimum PCR content for dates beyond 2031.

Images depicting the types of packaging for each of the three categories of recommendations are included in [Appendix I](#).

I. POLYPROPYLENE TUBS (#5 PP TUBS)

A. Definition

The Advisory Committee defined polypropylene (PP) tubs as all polypropylene food-related tubs marked with resin ID code number five.⁸ Plastic tubs are typically wide-mouth containers that have a snap-on lid capable of multiple closures or are sealed with a tamper-proof film. They are used in a variety of applications in both single-serving and multiple serving containers for dairy consumer products like yogurt, cottage cheese, sour cream, margarine, and non-dairy consumer products like dips and salsa. Containers can have a maximum capacity or volume of 50 ounces volumetric fill. This definition and recommendation do not cover nonfood-related tubs or containers. [Appendix I](#) contains images representative of this packaging type.

⁸ These concepts are synonyms, i.e., resin ID code number 5 refers to polypropylene plastic, but are included in the definition for clarity.

B. PCR Content Recommendation

The Advisory Committee generally supported the following recommendation for PCR content for #5 PP tubs:

- 10% minimum PCR content by 2026
- 30% minimum PCR content by 2031

Most Advisory Committee members that responded to the in-meeting polling supported these PCR content percentages and target dates either fully or partially (see [Appendix H](#) for assessment results). Details around Advisory Committee’s rationale for full or partial support are described below.

Table 1: Minimum % PCR by Effective Dates for #5 Polypropylene Tubs

	2023	2024	2025	2026	2027	2028	2029	2030	2031
#5 Polypropylene Tubs				10%					30%

C. Key Considerations Informing the Recommendation

#5 PP tubs are currently included in recycling guides and collected by several municipalities in Washington State.⁹ Overall, #5 PP packaging represents the third most prevalent packaging in the state after PET and HPDE packaging materials (see [Appendix F](#), current landscape of Washington State plastic packaging).¹⁰ In considering potential PCR content and dates, members noted that recycled polypropylene (rPP) has several distinct challenges:

First is the nascent PP recycling market for food-contact packaging. The Committee discussed that PP recycling “is still maturing as compared to PET and HPDE”¹¹ and that currently, rPP is commonly used in non-food and durable goods. Companies that want to use recycled PP for food packaging can go through the Food and Drug Administration (FDA) evaluation process for a Letter of No Objection (LNO) certifying that post-consumer recycled PP content is suitable for food contact. FDA’s review process is meant to ensure that recycled material is of “suitable purity” from a contaminant residue standpoint.¹² The FDA website shows that, to date, there are few companies that have applied for and have received a favorable opinion from FDA to use recycled PP in food-contact packaging; from those companies, some use recycled PP in personal care product packaging, while others use it in food packaging.¹³⁻¹⁴

⁹ Some examples include the [King County recycling guide](#), [Pierce County recycling guide](#), and [City of Seattle recycling guide](#).

¹⁰ [Plastic Packaging in Washington - Assessing Use, Disposal, and Management](#), prepared for the Washington State Department of Ecology Revised September 11, 2020.

¹¹ [The Growing Market for Recycled Polypropylene](#), December 2, 2022, prepared for California Commission on Recycling Markets and Curbside Recycling by the Recycling Partnership and the Association of Plastic Recyclers.

¹² [Use of Recycled Plastics in Food Packaging \(Chemistry Considerations\): Guidance for Industry](#), issued by FDA, Center for Food Safety and Applied Nutrition, Office of Food Additive Safety, July 2021

¹³ As of December 1, 2021, there were 17 companies that have received a favorable opinion from FDA on the use of recycled PP for food contact; from those companies, all have applied for the traditional mechanical recycling process. For reference, FDA issued a favorable opinion until now for 183 companies on the use of recycled PET, 27 companies for the use of recycled HDPE, and 23 for use of recycled PS. Source: [FDA Submissions on Post-Consumer Recycled \(PCR\) Plastics for Food-Contact Articles](#)

¹⁴ The PP tubs work group reached out to two companies to discuss their experience with the FDA’s Letter of No Objection process and their use of rPP. One company noted that they are using recycled PP in packaging for personal care products, while the other company is using it in food contact packaging.

Second, upcoming developments in PP recycling technologies have the potential to open up more opportunities. Members discussed that traditional mechanical and chemical recycling technologies will need to further advance to produce the amount of high-quality recycled content needed for food-grade PCR material. The Committee noted that the amount of PP recycled content currently produced from these recycling technologies is below the amount of recycled material that manufacturers currently need for PCR content; therefore, increased consumer education and collection are needed. Some members pointed out that PP recycled content from traditional mechanical recycling can still retain some fragrance and color. Chemical recycling, which is still in the early stages, breaks down resins back to their original polymers and is seen as one pathway to achieve rPP with the necessary quality and safety for direct food contact. Members noted that PCR content requirements will hopefully drive innovation and spur continued development and scaling of both mechanical and chemical recycling.

Third, investments in separate PP sorting capabilities are needed. Currently, material recovery facilities in Washington state typically sort only PET and HDPE packaging separately. For these facilities to sort PP materials separately, they will need to continue to invest in advanced technologies.

The [Section on Cross-Cutting Considerations](#) elaborates on these specific considerations and enabling conditions for the PP recycling market for food content.

The proposed years for the different PP PCR content requirements account for anticipated developments in infrastructure including developments in recycling technologies, and more advancements of chemical recycling, while mechanical recycling is expected to continue developing at a steady pace. Advisory Committee members noted that starting with 10% PCR content in 2026 gives the recycling market an opportunity to grow before the next increase in recycled content. Advisory Committee members also indicated that two distinct dates offer predictability and make it easier for industry operations year-to-year, including for manufacturers, producers, and the grocery sector.

Although there was overall support for this recommendation, some members highlighted that feasibility was dependent on several factors. The nascent rPP market, and therefore, the lack of supply of rPP for food contact packaging remains a significant concern and more time might be needed for chemical and traditional mechanical recycling to expand and produce high-quality food-grade recycled material. For this reason, some members suggested a more conservative approach to start at 10% PCR content at a later date (e.g., 2027 or 2028), and be no higher than 20% PCR content in 2031 to allow infrastructure and supply availability more time to develop. Other members pointed out that, if supply is not available in any given future year, manufacturers should be able to receive a waiver for the PCR content requirement.

To ensure the targets are achievable, members recommended that the Ecology market study described in the E2SSB 5022 should also look at market conditions for the PP tubs to understand recycled material availability for food-grade rPP and determine if there is sufficient supply for the industry to meet higher rates.

II. PET THERMOFORM CONTAINERS

A. Definition

The Advisory Committee defined a “PET thermoform container” as a clear or colored plastic container, such as a clamshell, lid, tray, or similar rigid, non-bottle packaging, formed from sheets of extruded PET resin and used to package items that reach consumers/household end-users, including:¹⁵

- Packaging for consumable goods such as fresh produce, baked goods, nuts, deli, and some non-food items, such as nails and paperclips
- Packaging for durable goods with a longer expected lifespan, such as toys, electronics, and tools

Packaging Types Included in This Definition

[Appendix I](#) contains representative images:

- Hinged containers (clamshells)
- Two-piece/unhinged containers
- One-piece containers without lids (trays)
- Trifold/tent containers

Packaging Types Not Included under This Definition

- Single-use plastic cups
- Refillable containers, such as containers that are sufficiently durable for multiple rotations of their original or similar purpose and are intended to function in a system of reuse
- Rigid plastic containers that are or are used for medical devices, medical products that are required to be sterile, nonprescription and prescription drugs, or dietary supplements as defined in RCW 82.08.0293
- Packaging containing items that do NOT reach consumers/household end-users, i.e., items that would generally not find their way into curbside recycling bins (for example, PET thermoform containers used to ship electronic components between manufacturing settings).
- A lid or seal of a different material type from plastic
- Packaging covered under Washington E2SSB 5022

Exemption

The Advisory Committee generally recommended an exemption for PET thermoform containers (as defined) designed to accompany a durable good where that durable good model (and thus the associated packaging) as designed prior to the effective date of the PCR content requirement. When the next model cycle comes out, the packaging will need to comply with the PCR content requirements.

¹⁵ Advisory Committee members considered a “resin neutral” approach to thermoform packaging recommendations, as advocated by some members on the basis that resin-neutral recommendations would have better aligned with E2SSAB 5022 and would be less likely to create unfair market advantages among resin types. Due to the differences among different resins regarding recycled content technology requirements and availability, the Advisory Committee generally decided to focus its recommendations on PET thermoform containers.

B. PCR Content Recommendation

The Advisory Committee members generally supported the following recommendations for PCR content in PET thermoform containers (as defined):

- Packaging for consumable goods: 10% minimum PCR content by 2026, and 30% minimum PCR content by 2031
- Packaging for durable goods: 30% minimum PCR content by 2031

Most Advisory Committee members that responded to the in-meeting polling supported these PCR content percentages and target dates either fully or partially (see [Appendix H](#) for assessment results). Details around Advisory Committee’s rationale for full or partial support are described below.

Table 2: Minimum % PCR Content by Effective Dates for PET Thermoform Containers

	2023	2024	2025	2026	2027	2028	2029	2030	2031
Packaging for Consumable Goods				10%					30%
Packaging for Durable Goods									30%

C. Key Considerations Informing the Recommendation

PET thermoform containers represent the largest and most diverse set of packaging within the Advisory Committee’s recommendations. For this reason, members were particularly deliberate in establishing the definition of this packaging. In addition, this packaging category is the only one of the three that includes packaging for non-food items, including durable goods. Given that packaging and manufacturing lead times associated with durable goods are longer than for consumable goods, members recommended a “one rate, one date” approach for durable goods, with an exemption for packaging where the durable good model such as an electronic device (and associated packaging) was designed prior to the effective date of the PCR content requirement. This exception prevents the costly need to redesign and produce a package that meets the PCR content standard in the middle of the lifecycle of that durable good model.

Advisory Committee members noted that PCR content for PET thermoform containers is limited by supply rather than by technological capability. Advisory Committee members chose not to make PET thermoform-to-thermoform (circularity) requirements part of their recommendations due to sorting and market issues, though circularity would help ensure availability of recycled PET material (rPET) for thermoforms without competing with bottles for this material. Currently, PET thermoform packaging is not separated from other PET packaging, with thermoforms generally limited to 4-10% of PET bales from materials recovery facilities¹⁶. There is a high market demand for PET bales. Supply-generating initiatives that encourage more collection of post-consumer PET are an important future component to consider.¹⁷ Members noted, however, that in the event recycled PET material is not available at the date of compliance, under SB5022 the manufacturer may receive a waiver for any given year.

¹⁶ PET Thermoform Recycling Cost and Material Flow Analysis (RRS, Dec 2020); Personal communication from PET Clamshells work group members

¹⁷ PET Thermoform Recycling Cost and Material Flow Analysis (RRS, Dec 2020); Kate Eagles, APR, personal communication

Advisory Committee members further observed that additional sorting capabilities (e.g., investments in optical sorters) at materials recovery facilities would eventually be required to distinguish PET thermoforms from other types of thermoforms to increase PET thermoform container recovery. Sorting challenges are also compounded by material color. Black PET containers are a common color and are technically difficult to sort due to the resulting black-on-black on conveyor belts that hamper both optical and hand sorting. Members concluded that this should not prevent requiring recycled content in these materials and would, in fact, help to ensure a level playing field for clear and colored packaging manufacturers.

While most Advisory Committee members partially, mostly, or fully supported the recommended rates and dates of PCR content for PET thermoform containers, there were concerns that 30% rates for both consumable and durable goods may be constrained by rPET supply. While manufacturers would be protected by off-ramps in the event of insufficient material availability, non-supporting members expressed particular concern that mandating “unrealistic” targets may create a regulatory burden on Ecology. These members generally supported 15% PCR content by 2031 for both consumable and durable goods, believing this rate and date “sets industry and Ecology up for success” and reduces the risk of the administrative burden associated with off-ramps. Other members felt that 30% by 2031 was still too conservative and that 10 years is sufficient for advancements in technology for material recovery. These members further noted that the first effective rate and date of 10% minimum PCR content by 2026 for consumable packaging will stimulate market demand for the PET thermoform material, and increased recovery by materials recovery facilities.

III. SINGLE-USE PLASTIC CUPS

A. Definition

The Advisory Committee defined single-use plastic cups as all non-sealed, beverage serving cups except commercially or home compostable cups, expanded polystyrene (EPS), or plastic-lined fiber cups (i.e., composite cups). EPS cups were excluded because they are already banned under SB5022.

Appendix I contains images representative of this packaging type.

PCR Content Recommendation

The Advisory Committee members generally supported the following recommendations for PCR content in single-use plastic cups (as defined):

- 15% minimum PCR content for PP single-use plastic cups by 2029, increasing to 25% by 2031
- 20% minimum PCR content for PET and PS single-use cups by 2029, increasing to 30% by 2031

Most Advisory Committee members that responded to the online assessment supported these PCR content percentages and target dates either fully or partially (see Appendix H for assessment results) and Advisory Committee members did not object to the recommended percentages and target dates for single-use cups during Committee calls. Details around Advisory Committee’s rationale for full, partial, or non-support are described below.

Table 3: Minimum % PCR Content by Effective Dates for Single-Use Plastic Cups

	2023	2024	2025	2026	2027	2028	2029	2030	2031
PP Cups							15%		25%
PET and PS Cups							20%		30%

Key Considerations Informing the Recommendation

Some Advisory Committee members noted that the effective dates for both recommendations could be sooner (e.g., 2026 and 2030) and the percentage of PCR content could be higher; however, this did not affect their general support. Other Advisory Committee members expressed a preference for aligning the PP recommendations for single-use plastic cups with the recommendations for #5 PP tubs given the common resin type. One Advisory Committee member did not support the recommendation for PET and PS single-use cups, instead preferring a ban on such products or a point-of-sale charge.

Single-use plastic cups are made primarily from three resin types: PP, PET, and PS. Of these resins, PP is most common for single-use plastic cups. The Advisory Committee developed a lower minimum PCR content recommendation for PP single-use cups for several reasons, including current and projected chemical recycling capability, availability of rPP supply, and current collection and sorting practices. Further detail on PP considerations is provided in the following section. The Advisory Committee suggested that the legislature could provide Ecology the authority to consider additional resin types for single-use plastic cups that may require minimum PCR content requirements, noting that other types of plastic resin could become common in single-use plastic cups.

The Advisory Committee intentionally did not provide percentage or date targets prior to 2029 to account for technology to develop food-contact rPET and to allow manufacturers to meet the 2029 target at their own pace. The Advisory Committee likewise did not provide percentage or date targets after 2031, recognizing that multiple conditions will influence the ability of manufacturers to meet (or exceed) these targets. The Advisory Committee noted that E2SSB 5022 describes an Ecology assessment of these conditions, to be completed in 2029 if funding is provided; the Advisory Committee recommends that the results of this assessment inform the target percentages and dates for single-use plastic cups. If the 2028-2029 assessment indicates that the 2031 percentages are not achievable under current conditions, Ecology can recommend an adjustment to the target date. The assessment could also find that conditions allow for target dates to be adjusted earlier, with the Advisory Committee acknowledging that there is only a single year between the target dates.

IV. CROSS-CUTTING CONSIDERATIONS

This section captures cross-cutting considerations around the preceding PCR content recommendations, as identified by the Advisory Committee in the online survey and through discussions and information shared in Advisory Committee meetings and work group meetings.

A. Applicability of Provisions in E2SSB 5022

E2SSB 5022 contains several provisions related to the PCR content percentages and dates included in the legislation. During discussions, Advisory Committee members noted that such provisions in E2SSB 5022 should apply to the packaging types recommended in this report. Several of these provisions were discussed by the committee and are highlighted below.

Ecology Market Study

E2SSB 5022 calls for Ecology to contract with a research university or consultant to conduct a study of plastic resin markets to determine if market conditions are appropriate for meeting PCR content requirements. If funding is appropriated by January 1, 2028, the study will be completed by May 2029. The Advisory Committee supported providing funding for this study and recommends including the packaging types described in this report as well as further clarity and details around the study's purpose. The Advisory Committee recommends that Ecology receive authority to adjust the dates by which PCR content requirements must be reached based on the study results.

Exclusions/Waivers (Off-ramps) for Minimum PCR Content Requirements

The Advisory Committee noted that E2SSB 5022 provides producers with the ability to request an annual waiver in instances where compliance with federal laws or guidelines creates a situation where meeting PCR content requirements is not technically feasible. If Ecology determines that the producer has demonstrated lack of technical feasibility, the covered product should be excluded from the requirements.

B. Other Off-ramps, Alternative Compliance Measures, or Incentives

Throughout Advisory Committee discussions and during the online assessment, members suggested some additional considerations for off-ramps, alternative compliance options, and potential incentives. Some Advisory Committee members recommended that, if an off-ramp was applied in a situation, that same off-ramp should be available for all companies and all applications of the product to limit burden on the Department of Ecology to address individual requests for the same situation. Some members felt this would be an unnecessary accommodation, however.

While the Advisory Committee members did not reach agreement on this point, some members suggested considering compliance fees, such as per pound fees, which would be used to produce infrastructure grants to fund innovation in sortation by materials recovery facilities, collection, reprocessing capabilities, or reuse capabilities.

C. Availability of Recycled Material for Food Contact Packaging

Use of PCR material in food packaging applications must comply with FDA safety provisions. FDA's safety concerns with the use of PCR material in food-contact articles are: "1) that contaminants from the PCR material may appear in the final food-contact product made from the recycled material, 2) that PCR material may not be regulated for food-contact use may be incorporated into food-contact article, and 3) that adjuvants in the PCR plastic may not comply with the regulations for food-contact use."¹⁸

¹⁸ US FDA website, [Recycled Plastics in Food Packaging](#), accessed October 2021.

To determine whether recycled plastics are suitable for food packaging uses, companies can go through the FDA's process that will issue an LNO "on the suitability of a specific process for producing PCR plastic for food-contact uses"¹⁹. In their guidance for industry, FDA also notes that, "although not required by law or regulation, recyclers of plastics intended for the manufacture of food-contact articles are invited to submit information on their recycling process to the FDA".^{20,21}

For food grade rPP, there are currently few companies that have gone through the FDA's LNO process and for which the FDA issued a favorable opinion.²² Some of these companies market rPP for food contact, while others focus on personal care products. Some Advisory Committee members highlighted the need for FDA to fast-track the LNO process, which may take up to two years, and noted that, currently, FDA has limited resources allocated for the LNO review process.

D. Supply-building Initiatives

Advisory Committee members noted that increased collection is needed to ensure sufficient availability to meet minimum PCR content requirements. For most plastic resins, at present, there is insufficient supply of recycled material to meet both domestic and international food-contact demand. Adding minimum PCR content requirements to packaging will exacerbate this shortfall until more material is collected and the necessary processing infrastructure and technologies are in place.²³

For example, while PP tubs are currently collected by municipalities in Washington State, there is potential for increased collection. Based on current data, PP collection in the U.S. is relatively small-scale despite the potential for higher volumes: "Some limited data from capture studies suggest there may be as much as 17 pounds of PP available per year from a single-family household. This would place PP at higher generation rates than both natural and colored HDPE. Total annual PP tonnage by U.S. single-family households would be an estimated 827,000 tons or 1.65 billion pounds".²⁴ Consumer education will be essential to support increased collection to supply processing facilities.

E. Polypropylene in #5 Tubs and Single-Use Drinking Cups

Throughout the Advisory Committee and work group discussions, members identified several considerations for PCR content recommendations, as well as potential actions that, if implemented, could significantly advance the recycling market for PP, and reduce variability around feasibility of the proposed PCR content.

Nascent PP Recycling Market for Food Packaging

PP packaging is one of the most common types of plastic packaging found in the municipal waste stream (see [Appendix F](#)), and the most common uses of PP plastic packaging include food containers such as tubs and single-use drinking cups. The Committee's understanding is that PP tubs are included in local

¹⁹ FDA website, [Submissions on Post-Consumer Recycled \(PCR\) Plastics for Food-Contact Articles](#)

²⁰ [Use of Recycled Plastics in Food Packaging \(Chemistry Considerations\): Guidance for Industry](#), FDA, July 2021.

²¹ For more information on the FDA LNO process, please see the article by the Plastics Recycling Update, [A Lot to Digest](#), 2018.

²² List of FDA Submissions on Post-Consumer Recycled (PCR) Plastics for Food-Contact Articles, for which FDA issued a favorable opinion on the suitability of a specific process for producing PCR plastic to be used in the manufacturing of food-contact articles.

²³ US Company Recycled Plastic Content Goals Analysis – Supply and Demand (AMERIPEN, March 2021).

²⁴ The Recycling Partnership, [2020 State of Curbside Recycling Report](#).

government recycling guides for collection²⁵, while single-use drinking cups are not currently collected though they are often found in the municipal waste stream.

Current PP PCR material is mostly used in durable goods like “pallets, crates, buckets, auto parts, and lawn and garden products. Packaging use for PP PCR content is increasing but still in very early stages.”²⁶ To produce rPP suitable for food contact, companies need to demonstrate the safety of the recycled plastics. Currently, few companies have applied for and received a favorable opinion on their LNO requests from the FDA. Additionally, some committee members noted that traditional mechanical recycling processes show that rPP can retain some odor and color like haze and flecks, which impacts consumer preference.

Some Advisory Committee members commented that it would be helpful to look at recycled content incentives for PP durable goods to support developing PP recycling markets while food contact-suitable recycled resin technologies continue to develop. This effort would be a more immediate market driver since recyclers are currently working in this area.

Recycling Technology Development

The proposed timelines for incorporating PCR content into the PP tubs and PP single-use drinking cups are dependent on developments in recycling technologies, including advancements in chemical recycling that would complement the traditional mechanical recycling.²⁷ Advisory Committee members discussed a technology-neutral approach since recycled content can be derived from both chemical recycling and traditional mechanical recycling, expected to have a steady growth. Chemical recycling is progressing in the U.S. and has potential to create more opportunities, including solving the issue of recycled material quality related to rPP color, odor, and food grade quality.²⁸ Members noted that recycled content from chemical recycling would be of the same quality as virgin plastic material; however, issues of scale, material logistics, economics, and environmental implications are yet to be addressed.

Separate PP Sorting

Currently, PP packaging is not separately sorted by most material recovery facilities but commingled with other plastic types (other than PET and HDPE). To support the recycling market for food-grade PP, material recovery facilities will need to upgrade to optical sorters and/or robots. Advisory Committee members indicated that this type of advanced sorting could be more common within one to three years given the lead time required for equipment.

²⁵ Some examples include the [King County recycling guide](#), [Pierce County recycling guide](#), [City of Seattle recycling guide](#).

²⁶ [U.S. Company Recycled Plastic Content Goals Analysis – Supply & Demand](#), prepared by Circular Matters and Commissioned by AMERIPEN, March 2021.

²⁷ See for example the ExxonMobil press release: [ExxonMobil to build its first large-scale plastic waste advanced recycling facility](#), October 2021.

²⁸ ICIS, [INSIGHT: How the US can achieve high plastic recycling rates](#), by Prashanth Sabbineni, 2021/07/06

Future Considerations

During Advisory Committee discussions, several considerations arose that the Advisory Committee felt were out of scope for its task, but important for the legislature as it develops future legislation related to plastics recycling. These considerations are described below.

I. ADVANCING THE CIRCULAR ECONOMY

Some Advisory Committee members advocated for advancing a circular economy (i.e., recycling bottles to bottles, fiber to fiber, thermoform to thermoform, etc.) to stimulate recycled plastic content markets. While the recommendations in this report do not rely on circularity, some Advisory Committee members acknowledged the benefits and supported future development of this approach. Others cautioned that significant advancements in end markets are needed for a circular economy. Advancement towards circularity may mean adopting several solutions towards the end goal of plastic reuse, including the adoption of advanced recycling technologies. Some Advisory Committee members suggested that policies such as Extended Producer Responsibility for packaging are needed to ensure a sufficient supply of high-quality materials to help meet the PCR content demand created by these mandates.

II. ALIGNMENT WITH OTHER STATE AND/OR FEDERAL LEGISLATION

Some Advisory Committee members emphasized the importance of aligning Washington State minimum PCR content requirements with those of other states (and federal law) to both maximize opportunities for plastic recycling and stimulate markets for recycled content, while minimizing potential financial impacts from more restrictive state-mandated PCR content requirements.

III. CARBON ACCOUNTING

Some Advisory Committee members indicated that carbon reduction should be considered in plastic packaging and recommended evaluating plastics from a lifecycle perspective to understand cumulative carbon emissions.

IV. E-COMMERCE

Some Advisory Committee members noted that the e-commerce sector presents distinct challenges for ensuring PCR content requirements are met. This includes considerations such as ensuring covered products sold through third party sellers meet minimum PCR content requirements and ability for Washington State online consumers to purchase products that meet minimum PCR content requirements.

V. MARKET IMPACTS

Several Advisory Committee members highlighted concerns around uncertainty around future availability of recycled material. The amount of recycled PET, PP and other resins that will be available in the next 5-10 years is not clear. Over 95% of currently available recycled plastics are derived from mechanical recycling methods. Given the status of collection and sorting capabilities, the industry is limited in the volume of

usable recycled material for inputs to existing recycling technologies. To achieve the proposed PCR content requirements, consistent recycled material supply will be needed to meet demand. Shortage in recycled material availability could also impact product availability.

The Advisory Committee also discussed unintended consequences from requiring minimum PCR content in certain types of packaging. For example, increasing the minimum PCR content in some types of packaging could result in producers increasing the packaging thickness (thereby using more virgin resin) to meet the PCR content percentage requirement or to ensure that the package is sufficiently rigid.

VI. POLYPROPYLENE DURABLE GOODS

Overall, the Advisory Committee indicated that it would be valuable for the legislature to also look at PP durable goods content mandates, recognizing that durable goods are outside the scope of the Advisory Committee. Recycled content incentives for PP non-food and durable goods (buckets, pallets, kitty litter trays, pipes, and other) are an effective way to rapidly support developing PP recycling markets while food contact-suitable recycled resin technologies continue to develop. This effort would be a more immediate market driver since it is not food contact recycled content and is something that recyclers are currently doing. One member suggested for further consideration a potential phased approach to set dates for PP non-food durable goods earlier, and then phase to PCR content and dates for PP packaging for food content.

VII. REDUCING OVERALL AMOUNT OF PLASTIC USED IN PACKAGING

Some Advisory Group members noted that while setting minimum PCR content requirements for plastic packaging is helpful, the larger goal should be to reduce the total amount of plastic used in packaging. To that end, targeting specific packaging for minimum PCR content is more useful when accompanied by policies that encourage reducing plastic packaging using alternative materials, minimizing container sizes and layers, or other methods. Source reduction is also a potential alternative compliance route for PCR content requirements.

VIII. TECHNOLOGY

Several Advisory Committee members acknowledged that traditional mechanical recycling continues to evolve and many material recovery facilities are updating their equipment to meet sorting and recycling needs, including anticipated demand for recycled material. The Advisory Committee noted, for example, that there are few mechanical recycling companies that have received a favorable opinion from FDA for rPP for food contact to date. Some materials will also rely on chemical recycling, which is often regarded as an option to obtain higher volumes of recycled plastics. Several companies are working on methanolysis and thermal anaerobic conversion technologies to break down post-consumer plastics and rebuild them into new virgin-like plastics; however, the speed of commercialization and the volumes provided are yet to be determined. Members discussed anticipated developments, including some companies' plans to open chemical recycling plants as early as 2022 and further expand to multiple locations in 2026. Some members suggested that state support is needed to recognize chemical recycling as an acceptable PCR material-generating process, including support for siting chemical recycling facilities.

APPENDICES

APPENDIX A: ADVISORY COMMITTEE MEMBERS AND ALTERNATES

Seat per Section 9, E2SSB 5022	Name	Affiliation	Alternate
1. Department of Commerce	Brian Young	Washington State Department of Commerce	---
2. Department of Ecology	Laurie Davies	Washington State Department of Ecology	Alli Kingfisher
3. Utilities and Transportation Commission	Jason Lewis	Utilities and Transportation Commission	Mike Young
4. Cities (small/large; rural/urban) ²⁹	---	---	---
5. Counties (small/large; rural/urban)	Ruby Irving Travis Dutton	Klickitat County Clark County	Michelle Mulroney ---
6. Municipal collectors	Preston Peck	City of Tacoma	Maria Teresa Gamez
7. A representative from the private sector waste and recycling industry that owns or operates a curbside recycling program and a material recovery facility	Steve Gilmore	Republic Services	Wendy Weiker
8. A solid waste collection company regulated under chapter 81.77 RCW that provides curbside recycling services	Steve Wulf	Sunshine Disposal and Recycling	---
9. A material recovery facility operator that processes municipal solid waste from curbside recycling programs	Dave Claugus	Pioneer Recycling	---
10. A company that provides curbside recycling service pursuant to a municipal contract under RCW 81.77.020	Rick Vahl	LeMay, Inc. Pierce County Refuse	---
11. A trade association that represents the private sector solid waste industry	Vicki Christophersen	Washington Refuse and Recycling Association	Brad Lovaas
12. Recycled plastic feedstock users	Phil Rozenski	Novolex	Amber Carter
13. A trade association representing the plastics recycling industry	Steve Alexander	Association of Plastic Recyclers	Kate Eagles
14. A recycled content certification organization	Nina Goodrich	GreenBlue	---
15. An environmental justice organization	Giovanni Severino	The Latino Fund	---

²⁹ The Association of Washington Cities represented city interests, and conveyed to the facilitation team after reaching out to numerous potential candidates that individual city representatives to serve on the committee were not available.

Seat per Section 9, E2SSB 5022	Name	Affiliation	Alternate
16. An environmental nonprofit organization	David Perk	350 Seattle	---
17. An environmental nonprofit organization that specializes in waste and recycling issues	Heather Trim	Zero Waste Washington	---
18. Plastic converters/manufacturers of resins	Jennifer Ronk	Dow	Carmelo Declet-Perez
19. A manufacturer of plastic packaging	Kyla Fisher	AMERIPEN	---
20. A statewide general business trade association	Peter Godlewski	Association of Washington Businesses	---
21. Associations that represent consumer brand companies	John Hewitt	Consumer Brands Association	---
22. Representatives of consumer brands – Local	Emily Alexander	Darigold	---
23. Representatives of consumer brands – National/International	Mark Smith	Clorox	Christine Brewer
24. A consumer-oriented organization	Alex Truelove	US PIRG	---
25. Representatives of the state's most marginalized communities ³⁰	---	---	---
26. A retailer or representative of the retail association	Mark Johnson	Washington Retail Association	Bruce Beckett
27. A representative of an advanced recycling technology provider that processes plastic material	John Desmarteau	Cyclyx International	---
28. An association that represents cities	Shannon McClelland	Association of Washington Cities	Carl Schroeder
29. An association that represents county solid waste managers	Paul Jewell	Washington Association of County Solid Waste Managers	---
30. A representative from a retail grocery association	Holly Chisa	Northwest Grocery Association; Washington Food Industry Association	Cat Holm
31. A representative from a Washington headquartered online retailer	Charles Knutson	Amazon	---
32. A representative from a national consumer electronics association	Katie Reilly	Consumer Technology Association	---
33. A representative from the personal care products industry	Nora Burnes ³¹	Personal Care Products Council	---
34. A representative from the hospitality industry ³²	Samantha Louderback	Washington Hospitality Association	

³⁰ Entities contacted to represent “the state’s most marginalized communities” declined participation due to other priorities.

³¹ Melissa Gombosky represented this seat through November 4, 2021.

³² This seat was added based on input from the Stakeholder Advisory Committee after the first meeting and following notification of Senators Das and Representation Berry.

APPENDIX B: COMMITTEE OPERATING PRINCIPLES

2021 Plastic Packaging Stakeholder Advisory Committee

Operating Principles

Background

Washington State's 2021 [Senate Bill E2SSB 5022](#) (E2SSB 5022) provides minimum recycled content requirements for plastic beverage containers, trash bags, and household cleaning and personal care product containers; bans problematic and unnecessary plastic packaging, and provides standards for customer opt-in for food service packaging and accessories. These requirements were enacted by the legislature to improve Washington State's recycling system as well as reduce litter. The law reflects many of the recommendations in Washington's [plastics study](#).

The Plastic Packaging Stakeholder Advisory Committee (SAC) has been convened as directed under the provisions of E2SSB 5022, Section 9 to develop recommendations to the legislature on mandatory postconsumer recycled content requirements for types of plastic packaging not covered by E2SSB 5022. A report to the legislature on SAC recommendations must be completed by **December 1, 2021**.

The departments of commerce and ecology jointly selected Ross Strategic, an independent environmental consulting firm based in Seattle, WA, to convene the SAC and provide facilitation and report-writing services in support of its work.

Stakeholder Advisory Committee Purpose

1. To develop recommendations to the legislature on mandatory post-consumer recycled (PCR) content requirements for types of plastic packaging not subject to the minimum PCR content established in E2SSB 5022, and that are present in the municipal solid waste material stream and/or are regularly received by facilities that process recyclable materials from residential curbside recycling programs.
2. Recommendations may include:
 - a. Rates of mandatory postconsumer recycled content required by material type
 - b. Target implementation dates
 - c. Potential exemptions or alternate compliance pathways for some materials
3. To achieve its purpose, the SAC will:
 - a. Consider information and findings by a variety of authoritative bodies related to recycled content, including mechanical and advanced recycling technologies
 - b. Provide insights and information related to the pressures, issues, and trends impacting constituencies and businesses throughout the state
 - c. Provide insights on high-level implications, trade-offs, and opportunities associated with proposed strategies as they relate to mandatory postconsumer recycled content requirements for plastic packaging
 - d. Provide review and feedback on the draft recommendations to be submitted to the legislature
4. The SAC will not revisit requirements enacted through E2SSB 5022.

Desired Outcomes

1. Recommendations align with the legislative intent described in E2SSB 5022 Section 9.
2. Insights and perspectives of all SAC members have been meaningfully considered and incorporated.
3. Meeting documentation and the final report to the legislature provide a fair and accurate record of SAC deliberations.
4. The final report to the legislature notes areas of agreement/consensus and areas of disagreement, along with reasons for any disagreement.

Authority

1. The SAC has no designated authority to commit the legislature to any action or expenditure of funds.
2. Individual members will represent their affiliated organization's perspective and interests. Members are encouraged to reach out to constituencies whose interests they represent and, as appropriate, to other interested and impacted parties to gather input and ideas for the effort.

Term: The SAC will convene in August 2021, and conclude its work by December 2021.

Member Selection Criteria:

1. Represent a type of stakeholder organization listed in E2SSB 5022, Section 9.
2. Contribute to a diversity of interests and stakeholder groups.
3. Have experience collaborating with people who have different perspectives or values to work together toward consensus.
4. Understand that each participant will have an equal voice in the discussions.
5. Commit to attending approximately eight 4-hour SAC meetings and up to sixteen additional work group meetings between August and December of 2021.
6. Bring an interest-based perspective to the deliberations.
7. Are well-connected to their respective interest group, agree to reach out to their broader community of interest, and strive to represent their organization/community's perspective in deliberations.
8. Are willing to learn about issues relevant to plastic packaging management and have an openness to new information.
9. Have a background in a subject area relevant to the management of plastic packaging (e.g., recycling, reuse, waste management, etc.)

Facilitation

1. Advisory Committee meetings will be supported by a neutral third-party facilitation team. Though contracted through Washington State's Recycling Development Center, the facilitation team works on behalf of all SAC members, advocating for an equitable process yielding durable outcomes.
2. The facilitation team will notify members of meeting details and distribute materials by email in advance of meetings and will provide summaries via email following meetings. Meeting information will also be posted on a dedicated website for this effort.

3. The facilitator will manage any meeting disruptions, as needed.
4. The final Advisory Committee recommendations for the legislature, prepared by the third-party facilitation team in close consultation with and on behalf of the Advisory Committee membership, will be the written record of member deliberations. The facilitator will submit a report to the Washington State legislature containing the recommendations of the Stakeholder Advisory Committee by December 1, 2021.

Technical Support

1. The Recycling Development Center has contracted with Dr. Karl Englund, Washington State University, to provide the SAC with neutral technical support. Such support includes information and expertise as needed or requested by the SAC regarding recycled plastic market conditions and barriers to the use of recycled content to aid the SAC in its development of recommendations, to the extent practicable.
2. SAC and work group meetings may include participation from the technical contractor and/or other subject matter experts as collaboratively determined by the SAC facilitator and technical contractor.

Committee Operations

1. *Types of meetings:* The SAC will generally meet in full plenary session, but work groups may be used for topic-based discussions. Members may participate in work groups of their choosing.
2. *Meeting dates:* SAC meetings will be scheduled twice-monthly on a recurring day of the week and at a recurring time acceptable to all members. The Facilitation Team will provide calendar invitations with Zoom links to members. Additional work group meetings between bimonthly SAC meetings will be scheduled as needed.
3. *Quorum Requirement:* There is no quorum requirement—members present and active at each meeting have the authority to continue to work in the absence of others. Primary members may designate one alternate to represent their organization/interest in their absence. In this instance, primary members will ensure the alternate is fully informed and prepared for the meeting.
4. *Meeting location:* All SAC meetings, including work group meetings, will be held virtually via Zoom.
5. *Documentation*
 - a. SAC meetings are public meetings. Recordings of virtual meetings will be posted to the project website, <https://www.plastic-packaging-advisory-process.com/>.
 - b. Brief written summaries of each meeting that include key discussion points, areas of agreement and disagreement, and next steps will be prepared by the facilitation team will be circulated to SAC members within 10 calendar days of each meeting and posted to the project website within two weeks following each meeting.
6. *Communication:* Information about the SAC process will be posted to the project website, <https://www.plastic-packaging-advisory-process.com/>. SAC members will also have access to a shared document site for draft work products, and will communicate with the facilitation team via email and phone.

7. *Decision-making:* The SAC shall make recommendations using consensus-based decision making. The final report will include recommendations where stakeholder consensus has been achieved. In instances where consensus cannot be reached, the facilitation team will keep the process and deliberations moving forward. Areas of disagreement and their cause(s) shall be documented in the final report.
8. *Media /public statements:* *Recognizing that public characterizations of SAC deliberations could affect the committee's collegiality, SAC members are specifically requested to refrain from characterizing the views of other members in any public statements they may make.*
9. *Conduct.* Members will
 - a. Actively listen to and appreciate a diversity of views and opinions
 - b. Actively participate in the group
 - c. Behave constructively and respectfully towards all participants
 - d. Attend all meetings in a timely manner
 - e. Respect the role of the facilitator to guide the group process

Members are encouraged to frame observations in terms of needs and interests, not in terms of positions. Opportunities for finding solutions increase dramatically when discussion focuses on needs and interests. Should conflict arise, it will be addressed with the guidance of the facilitator.

Public Participation during the Stakeholder Advisory Committee Process

1. Public observers are welcome at Advisory Committee meetings, but will not participate in the SAC deliberations. Meeting agendas will include time for up to two-minute public statements (timing at the discretion of the facilitator).
2. All SAC meeting agendas and summaries will be posted to the dedicated website (<https://www.plastic-packaging-advisory-process.com/>). Agendas will be posted at least one week in advance of meetings, and summaries within two weeks after meetings.

APPENDIX C: COMMITTEE MEETING SCHEDULE

All full Advisory Committee meetings were convened virtually via Zoom video conference, generally from 12:00 pm to 3:00 pm Pacific time.

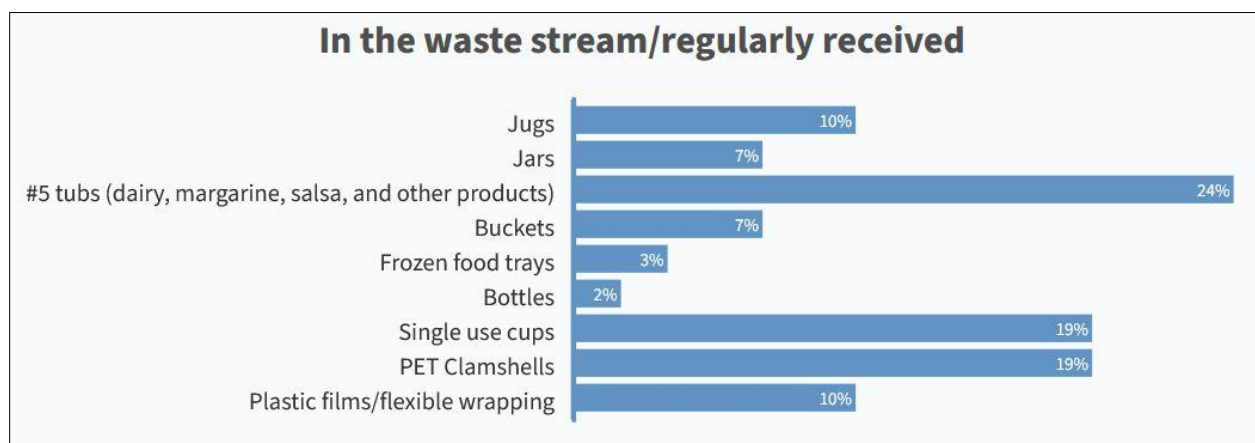
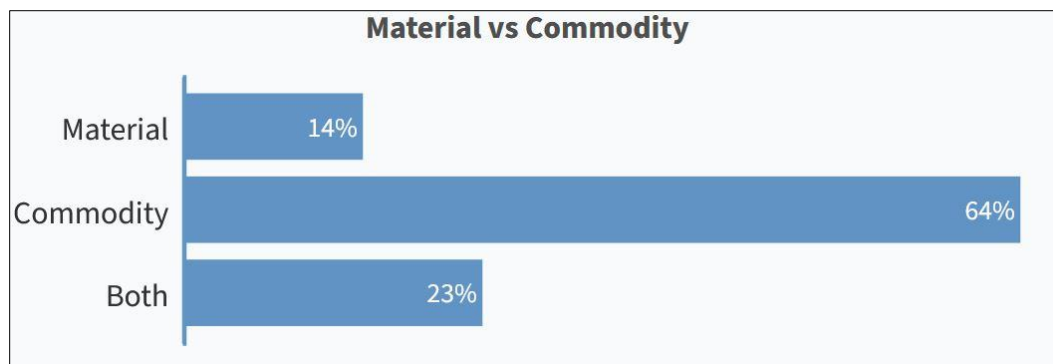
- | | |
|-----------------------|----------------------|
| 1. August 31, 2021 | 5. November 3, 2021 |
| 2. September 9, 2021 | 6. November 10, 2021 |
| 3. September 21, 2021 | 7. November 23, 2021 |
| 4. October 13, 2021 | 8. December 8, 2021 |

Three convened work groups (#5 PP Tubs, PET Thermoform Containers, and Single Use Cups) met separately via Zoom videoconference for generally 90 minutes per meeting on the following dates:

1. *September 29, 2021*
2. *October 6, 2021*
3. *October 19, 2021*
4. *October 27, 2021.*

APPENDIX D: ADVISORY COMMITTEE POLL RESULTS – COMMON MATERIALS FOUND IN THE WASHINGTON WASTE STREAM

At the September 21, 2021, meeting, the Plastic Packaging Stakeholder Advisory Committee participated in a polling activity where members determined to approach developing PCR content from a commodity (packaging type) basis, rather than type of plastic material. They also identified which common materials found in the Washington waste stream would be most useful to form working groups around and begin developing PCR content recommendations. Through the polling activity, #5 tubs, single-use cups, and PET clamshells were highlighted as priority packaging type among the Advisory Committee members.



APPENDIX E: WASTE STREAM COMPOSITION BY MATERIAL TYPE

Table 14. Composition by Material Type – Inbound Single-Family Residential Recycling

Material	Estimated Percent	+ / -	Estimated Tons
RECYCLABLE PAPER	59.0%	4.9%	71,476.6
Cardboard	29.8%	6.5%	36,151.6
Newspaper	3.9%	1.0%	4,684.5
Aseptic and Gable Top Cartons	0.6%	0.2%	707.1
Mixed Paper	24.7%	4.8%	29,933.4
NON-RECYCLABLE PAPER	4.0%	1.5%	4,846.3
Compostable Paper	1.4%	0.6%	1,691.9
Other Paper	2.6%	1.1%	3,154.4
RECYCLABLE GLASS	11.9%	3.6%	14,423.7
Glass Containers	11.9%	3.6%	14,423.7
NON-RECYCLABLE GLASS	4.1%	1.5%	5,003.4
Other Glass	4.1%	1.5%	5,003.4
RECYCLABLE METAL	4.1%	1.5%	4,975.8
Aluminum Cans	2.1%	0.8%	2,506.2
Aluminum Foil and Trays	0.5%	0.7%	624.6
Tin Food Cans	1.4%	0.3%	1,728.5
Empty Aerosol Cans	0.1%	0.1%	116.6
NON-RECYCLABLE METAL	1.1%	0.8%	1,345.1
Other Metal	1.1%	0.8%	1,345.1
RECYCLABLE PLASTIC	6.4%	0.8%	7,767.0
PET (#1) Bottles and Jars	2.9%	0.4%	3,514.5
PET (#1) Small Rigid Plastics	0.7%	0.2%	819.4
Clear HDPE Bottles and Jars	0.6%	0.1%	745.6
Colored HDPE (#2) Bottles and Jars	0.9%	0.2%	1,037.5
HDPE (#2) Other Containers	0.3%	0.2%	320.9
LDPE (#4)	0.0%	0.0%	19.5
PP (#5) Bottles and Jars	0.2%	0.1%	297.8
PP (#5) Small Other Rigid Plastics	0.5%	0.2%	662.9
PS Rigid Plastics	0.3%	0.2%	349.0
FOAM PLASTIC	0.2%	0.1%	233.2
EPS Food Packaging	0.1%	0.0%	79.9
EPS Foam Blocks and Shapes	0.1%	0.1%	153.2
NON-RECYCLABLE PLASTIC	2.7%	1.3%	3,242.7
Bulky Rigid Plastics	0.2%	0.1%	191.4
Compostable Plastics	0.0%	0.0%	46.6
Other Plastic	2.5%	1.3%	3,004.8
FILM PLASTIC	1.3%	0.3%	1,618.1
Clean Plastic Bags Film	0.5%	0.1%	558.6
Disposal Bags	0.2%	0.1%	218.1
Other Plastic Film	0.7%	0.2%	841.4
ORGANICS	1.4%	0.7%	1,649.2
Edible Food	0.7%	0.3%	873.1
Non-edible Food	0.2%	0.2%	289.7
Other Compostables	0.4%	0.6%	483.1
Yard Debris	0.0%	0.0%	3.3
CONTAMINANTS	3.8%	1.1%	4,597.9
Tanglers	0.3%	0.4%	347.5
Household Hazardous Waste	0.2%	0.2%	207.1
Electronics and Small Appliances	0.0%	0.0%	16.8
Diapers	0.0%	0.0%	23.2
Textiles Shoes	0.5%	0.2%	569.3
Construction and Demolition Debris	0.1%	0.0%	102.2
Furniture	0.1%	0.1%	161.6
Mixed Residue	2.6%	0.8%	3,170.3
TOTAL	100.0%		121,179

Confidence intervals calculated at the 90% confidence level. Percentages for material types may differ due to rounding.

APPENDIX F: CURRENT LANDSCAPE OF PLASTIC PACKAGING WASTE IN WASHINGTON

Source: Plastic Packaging in Washington - Assessing Use, Disposal, and Management
Prepared for the Washington State Department of Ecology Revised September 11, 2020

Table 6 Types and Amounts of Plastic Packaging Waste Generated Statewide, 2017

Plastic Packaging Waste Material Type	Est. Tons Generated	Est. Tons Range (Low - High)	% Residential Generation	% Commercial Generation
Rigid & Foam Plastic Packaging	211,340	<i>(161,100 - 261,580)</i>	55%	45%
#1 PET Bottles	55,730	<i>(44,880 - 66,560)</i>	61%	39%
#1 PET Other Packaging	35,950	<i>(27,970 - 43,930)</i>	55%	45%
#2 HDPE Natural Bottles	22,260	<i>(17,560 - 26,970)</i>	41%	59%
#2 HDPE Colored Bottles	19,870	<i>(16,260 - 23,470)</i>	64%	36%
#2 HDPE/LDPE Other Packaging	9,580	<i>(6,220 - 12,960)</i>	49%	51%
#5 PP Packaging	24,290	<i>(20,010 - 28,560)</i>	54%	46%
Other Rigid Plastic Packaging	12,930	<i>(8,870 - 16,980)</i>	62%	38%
Polystyrene Foam Packaging	23,350	<i>(15,660 - 31,030)</i>	57%	43%
Plastic Composite Packaging	7,490	<i>(3,760 - 11,210)</i>	24%	76%
Plastic Film & Flexible Packaging	198,960	<i>(155,120 - 242,800)</i>	36%	64%
PE Plastic Bags & Film	89,030	<i>(68,350 - 109,700)</i>	24%	76%
Other Plastic Film & Flexibles	109,930	<i>(86,760 - 133,090)</i>	46%	54%
Total Tons	410,300	<i>(316,190 - 504,350)</i>	46%	54%
Pounds Per Person Per Year	112	<i>(87 - 138)</i>		

APPENDIX G: OVERALL STATEWIDE DISPOSED WASTE STREAM

Source: 2020-2021 Cascadia Report

Table 14: Overall Statewide Disposed Waste Stream, Detailed Composition, 2020-2021

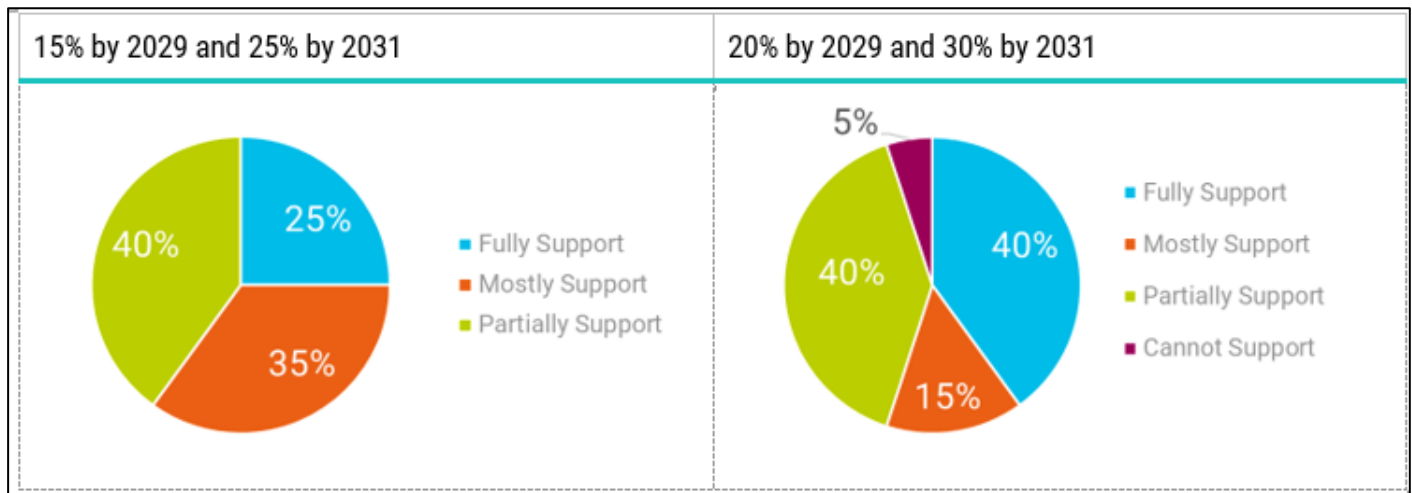
Material	Est. Percent	+ / -	Est. Tons	Tons + / -
PLASTIC	13.1%	0.9%	692,798	45,145
PLASTIC PACKAGING	7.4%	0.6%	388,526	33,655
#1 PETE Plastic Bottles	0.7%	0.1%	36,210	4,818
#1 PETE Plastic Non-bottles	0.4%	0.0%	19,792	2,027
#2 HDPE Plastic Natural Bottles	0.2%	0.0%	9,520	1,526
#2 HDPE Plastic Jars and Tubs	0.3%	0.1%	14,344	2,897
#2 HDPE Plastic Colored Bottles	0.2%	0.0%	10,649	1,686
#3 PVC Plastic Packaging	0.0%	0.0%	48	41
#4 LDPE Plastic Packaging	0.0%	0.0%	85	58
#5 PP Plastic Packaging	0.7%	0.1%	38,636	4,677
#6 PS Plastic Packaging	0.1%	0.0%	5,387	650
#7 Other/Unknown Plastic Packaging	0.7%	0.2%	36,326	12,573
Expanded Polystyrene Packaging	0.6%	0.1%	29,835	5,137
PLA Compostable Packaging	0.0%	0.0%	1,355	485
Plastic Merchandise Bags	0.4%	0.1%	21,902	4,015
Packaging Film Plastic	2.4%	0.2%	123,992	12,869
Transportation Packaging Film Plastic	0.5%	0.1%	25,730	5,851
Flexible Plastic Packaging	0.1%	0.0%	5,124	1,316
R/C Plastic Packaging	0.2%	0.2%	9,590	8,224

APPENDIX H: ONLINE POLLING AND ASSESSMENTS

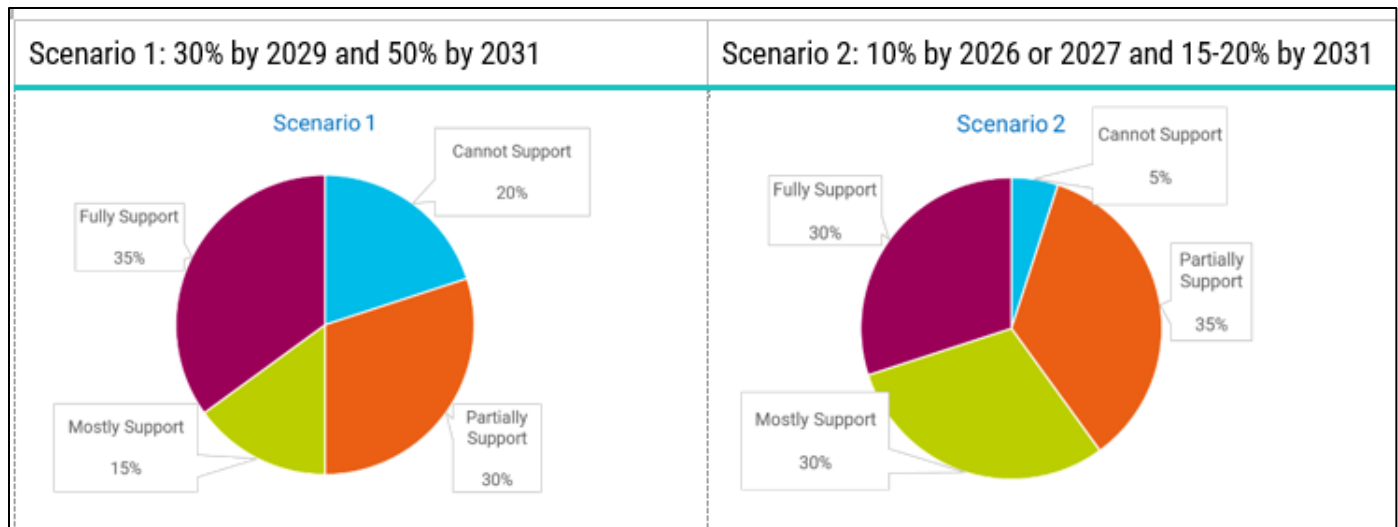
November 3-8 Online Assessment:

Between November 3 and November 8 Advisory Committee members responded to an online assessment of support for the minimum PCR content recommendations proposed by the work groups. Results of this assessment by packaging type are provided below.

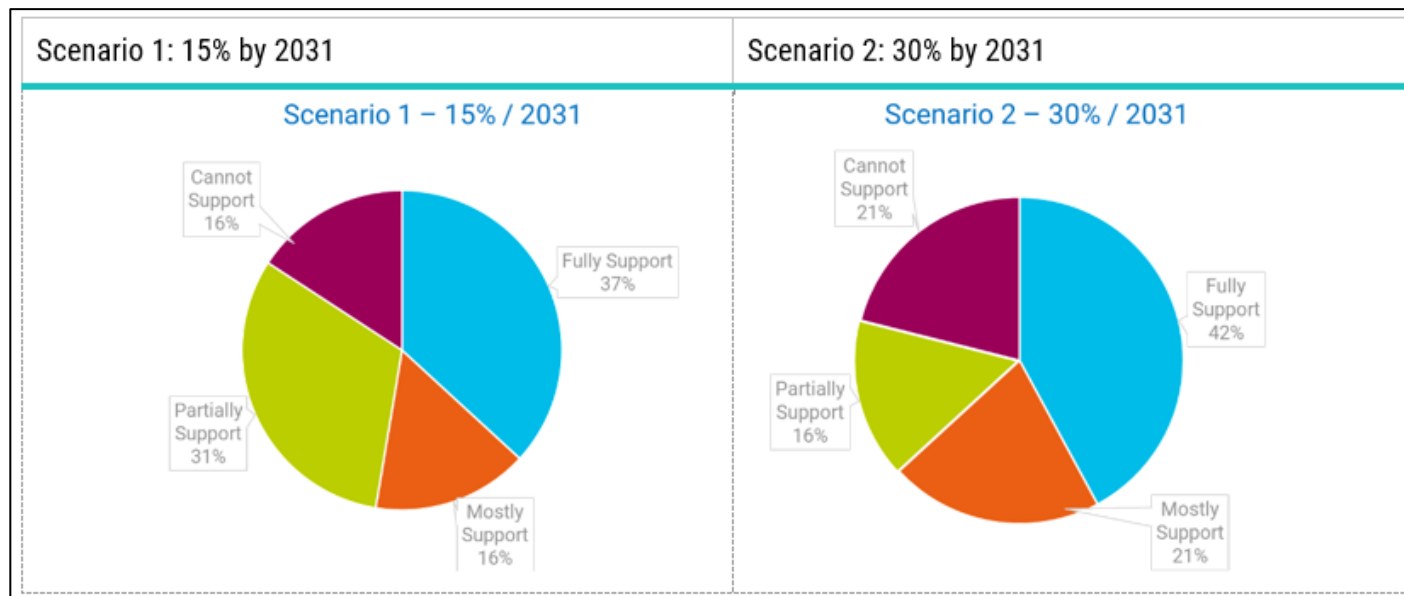
Single-Use Plastic Cups



#5 PP Tubs



PET Thermoform Containers



November 10 Online Meeting Polling:

At the November 10 Advisory Committee meeting, following review and discussion of the responses to proposed rates and dates from the online assessment (see above), members were polled again on revised potential scenarios for #5 PP tubs and PET Thermoform Containers to determine the level of support for the modified rates and dates. Results indicated a general level of support (responses included fully support, mostly support, and partially support) for the revised proposed rates and dates for #5 tubs and PET thermoforms.

For #5 PP tubs, no members responding to the poll stated that they could not support the proposal for 10% PCR content in 2026 and 30% PCR in 2031.

#5 PP Tubs

2. Please indicate your level of support for the following scenario for #5 Tubs: 2026: 10%; 2031: 30%

[More Details](#)

Fully Support	9
Mostly Support	7
Partially Support	5
Cannot Support	0



For PET Thermoform Containers, only two members of those responding to the poll could not support the revised proposal for 10% PCR content in 2026 and 30% PCR content in 2031 for packaging containing consumable goods. For packaging of durable goods, most members responded favorably to 30% PCR content for packaging containing durable goods in 2031.

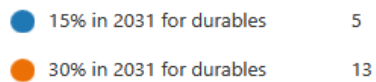
☐ Please indicate your level of support for the following scenario for PET thermoforms: 10% PCR in 2026 and 30% PCR in 2031 for consumables.

[More Details](#)



☐ Please select your preferred alternative for durables:

[More Details](#)



APPENDIX I: PLASTIC PACKAGING EXAMPLES

PET Thermoforms



Single-Use Plastic Cups



#5 PP Tubs

