Appendix C: Interview Guides and Summaries

Current State Report: An Evaluation of Reuse and Refill Systems and Covered Materials that Utilize Other Source Reduction Strategies

February 2026

Data and information used in this report provided as part of contract number DRR24062.

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54.

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Interview Key

Table 1: Industry and Expert Category Designation

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E	Food Service and Distributors
G	Packaging Manufacturers
T	Product Manufacturers
L	Retailers
P	Reuse, Refill, and Logistics Program Operators and Managers
N	Trade Association
S	Restaurants
D	Event Organizers, Stadiums, and Venues

Event Organizers, Stadiums, and Venues

Interview Guide

Background Context:

Scope of Services

[Add – check company website, news]

- What model(s) do they operate?
- Any operational details shared publicly?

Other Relevant Background

[Add – news search, etc.]

- Partners noted publicly.
- Mentions in the news.
- Other notable items.

Interview Questions:

Minutes 0-5: Introduction & Consent

- Introduce interviewers and purpose of the study.
- Confirm participant's role and title / purview.
- Explain how information will be used (anonymously unless otherwise agreed).
- Confirm consent to take notes.

Minutes 5–20: Understand Your Operations Today

Goal: Understand the elements of your operations today

Questions:

- What reuse / refill solutions have you tested and, overall, what have you learned about what works and does not work?
    - What would you call out as the biggest barriers or challenges in shifting to reuse and refill? Can you share examples?
    - Where do you see the greatest opportunity for additional transitions to reuse and refill and why? Please be as specific as you can.
- What have you learned from your tests and programs when it comes to:
    - Consumer behavior or readiness for specific reuse or refill models?

- Do you assess ease of use for reuse or refill solutions? How?
- Have you tested any incentives or rewards as part of reuse or refill programs?
    - Operational insights for reuse and refill solutions?
- Packaging characteristics that are particularly good or bad for reuse or refill formats.
- Product characteristics that are particularly good or bad for reuse or refill formats.
    - Operational insights.
- Implications for transaction and product workflow.
- Implications for return of reusable items.
- Implications for delivery models.
- Other?
    - Hygiene, safety or quality challenges for the reuse/refill formats?
    - Up front or ongoing costs vs single-use?
- How is the cost to the consumer impacted by reuse/refill solutions?
    - Impacts on jobs for different reuse or refill models?
    - Any other insights or concerns that emerged?
- What has limited your ability to scale promising pilots?
- Have Americans with Disabilities Act requirements been a consideration in your exploration of reuse and refill models to date? What have you learned?
- In your view, what are the most important enablers for reuse/refill solutions at this time?
- Looking industry wide, what trends do you observe when it comes to reuse and refill solutions? What is notable about what others are doing?
- What else is it important for us to understand about barriers and opportunities for reuse and refill solutions?
- Can you share any data about what you have learned to help us model generic solutions, where data will not be attributed to your company?

Minutes 20–45: Understand Operational Details

Goal: Capture data.

Questions:

- What source reduction actions have you explored and which ones have proven to be most successful? (Elimination, Concentration, Right sizing, Lightweighting, Format change, Replacement, others).

- For successful examples, we would love to hear more about:
    - Did this require new equipment or processes?
    - What were the implications for unit cost? Did any changes in cost impact the price to the consumer?
    - What feedback did you get from consumers about the changes? Any behavior insights?
    - What were the ripple effects of the new packaging on operations or costs through the supply chain?
- Which source reduction strategies do you think may have greater potential industry wide?
- What are some lessons you have learned about what does not work when it comes to source reduction approaches for certain packaging types or product types?
- Do you track packaging intensity per unit of product?
- Looking industry wide, what do you observe about the approaches others are taking? Who is doing something notable?
- What else is it important for us to understand about barriers and opportunities for source reduction?
- Do you track waste reduction, cost savings, or other environmental impacts? What data can you share?

55–60 minutes: Wrap Up & Final Thoughts

Goal: Capture unsolicited insights and identify next steps.

Questions:

- Is there anything else that you would want us or CalRecycle to understand about reuse/refill or other source reduction approaches from your perspective?
- Are there any misconceptions you'd like to correct?
- Are there others at your company or in your supply chain we should speak with?
- [If they will share data] We will be following up with a data request via email.

End of interview. Thank the participant.

Interview Summary – D19

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable cup and container programs.

Key Insights / Learnings

- Program Background and Expansion: D19 began exploring reuse years ago and launched a successful pilot using [reuse service provider] cups at the club level (5,700 seats). A full venue rollout is planned for 2025 (excluding suites), driven in part by legislation on reusables that was briefly introduced.
- Operational Learnings: Achieved an 88% cup return rate without a deposit system. Major challenges include scaling infrastructure (collection bins, storage, sorting), working within a tight venue footprint, and integrating cup types based on beverage (e.g., branded cups).
- Fan Experience: Minimal complaints, with fans mostly supportive or indifferent. Transition has been smooth, and future plans may include integrating [reuse service providers] rewards program to further incentivize returns.
- Space constraints: Limited space could prevent adding a fourth waste stream; may need to replace new landfill bins. Other organizations have shown interest, but few have implemented at this scale. Internal buy in came from demonstrating a strong business case to the stadium management and shared responsibility with the concessionaire.

Key Opportunities Identified

- Limited labor and operational changes: D19 already has a sorting process in place for other waste streams; it won't take much additional time/labor to sort cups. Vendors were concerned that the sorting would fall on them, so this made them more inclined to participate.
- Positive consumer reaction: Fans had a positive or neutral reaction to the cups, and no major food/drink safety concerns. Fan facing employees thought it would be much more negative.
- Other interest: some other venues are showing interest in D19's work, though it is still fairly limited.

Key Barriers Identified

- Scaling concerns: A reusable cup program has never been successfully implemented at a venue this size for a continuous period. D19 plans to market it widely on the scoreboard, televisions, and in the pregame email to make fans knowledgeable.
- Space constraints: Adding a 4th receptacle at every waste stream could get crowded. However, D19 is hoping this placement will limit confusion on return locations.

Key Data Point Provided in Interview

- Reusable cup pilot is on the club level this year with 5,700 seats and reusable cups for alcoholic drinks. Location selected because it is on the 2nd level and self-contained with discreet entry and exit points that can be staffed. [Reuse service provider] contract is five years, with two years of piloting with key performance indicators, environmental, and business outcomes (operating costs, fan experience, sponsorships). Full venue pilot next year after this year's pilot's success.
    - Looking at one million uses of reusable cups next year. This year at 150,000 uses with 83 games hosted at home and attendance of 25,000-30,000 people per game.
    - Currently there is no cup fee but looking at a rewards program for next year. Regardless they hit a return rate of 88% in the club level pilot.
- Non-canned beverage sales are decreasing, with one poured beverage for every 2.5-3 people.
- Washing: cups get trucked to third party washing facility 30 miles away.
- Financials: D19 has to cover all upfront infrastructure costs; they are trying to find a sponsor to offset 95% of costs. Hoping cost savings will come in years three to five when they are only replacing limited cups.

Additional Notes

- Partnership with a beverage producer means they are looking into a branded cup to sell their non-alcoholic beverages in the stadium. Multiple cups mean they will need to be sorted by stock keeping unit.
- Americans with Disabilities Act considerations: D19 is not planning to stock single-use plastic cups that can be substituted upon request and will encourage the fan to purchase a canned beverage instead.

Key Performance Indicator Provided by D19.

- Cup return rate.
- Wash cost per use.
- Incremental operating cost (this covers things like additional staffing needed on either the concessions or maintenance team side).
- Cost recovery through sponsorship revenue.
- Restocking response time.
- Concessions experience/rating impact.
- Negative guest comment volume specific to reusable cups (i.e. open text comments on our post event survey specific to the reusable cup program).

Interview Summary – D34

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable cup programs, compostable and disposable cups.

Key Insights / Learnings

Summarize high level takeaways from the interview (3-5 bullet points):

- Longstanding sustainability leadership: D34 staff member has been with D34 since 2002 and [automotive company] since 2010. The venue has led many green initiatives and earned green certifications through collaboration with local government.
- Three event dimensions of reusables:
    - Staff facing: Staff use bulk water stations and reusable bottles.
    - Fan facing: Fan reactions are mostly positive; challenges included cup size limitations and aesthetics at upscale events.
    - Artist facing: Reusables used backstage and in catering, though artists sometimes demand specific packaging (e.g., metal water bottles or single-use cups).
- [Live entertainment company] ties, but more agility locally: While [Live Entertainment Company] launched a green program nationally and internationally, D34 moves ahead of [Live entertainment company] due to fewer bureaucratic hurdles and a strong partnership with local agencies.
- Supplier and industry wide limitations: Packaging waste from vendors remains a challenge and is often unavoidable even at request. D34 aims to collaborate with other local event stakeholders for collective impact, finding it more practical than waiting for [Live entertainment company] change.

Key Opportunities Identified

- Washing options: D34 has retail space available for rent nearby to set up washing facilities and limit transport of cups in new [reuse service provider] pilots.
- D34 is looking at doing their own analysis and washing if funding and a local partner is available.
- General user perception: bands and audiences got on board quickly, D34 staff member said bright colored cups and bins in dark venue was smart. They used different cups for alcoholic and non-alcoholic options.

Key Barriers Identified

- Labor and driving: during pilots [reuse service provider] was trucking cups far distances to wash, but labor and truck drivers were hard to find so hired a third party company to do pickups.

- Private events: In early pilots, private events felt bright cups were tacky, especially to sip wine and champagne from. Reuse service provider ended up creating frosted white cups which had a better event response.
- Storage and cleanliness: Reusables take up more space, while sleeves of disposable cups come in plastic sleeves to stack. [Reuse service provider] cups did not stack so storage was difficult, but D34 was able to store enough for a few shows. Bartenders also had some issues with cleanliness of cups when they went to fill them.
- Signage and stickers: ended up being a big expense, even with [reuse service provider] providing bins, D34 had to change signage on their existing green bins.

Key Data Point Provided in Interview

- Stickers for bins were $25/sticker, and [reuse service provider] only covered purchase of 20 stickers once they discovered cost, so D34 had to front the rest to make sure signage was uniform throughout the venue.

Additional Notes

- Worked with [reuse service provider] on early 2000s pilots - they became unresponsive and financial issues started: D34 staff member indicated that the national pricing based on [city] pilots was not sustainable and they should be charging D34 a higher rate, which did not occur.
    - [Reuse service provider] delivered cups in plastic bins upcycled from cups but that made them very heavy.
- [Reuse service provider] had big pickup boxes that collapsed but they got filled with liquid and smelled like beer. Switched to a rolling plastic bins.
- Working with [reuse service provider 2.0] on newest pilots.
- Three main event dimensions:
    - Staff and crew during event setup, D34 offered bulk water stations and reusable cups and gave staff reusable water bottles.
    - Fan facing cups: ones used at bars/food service spots.
    - Artist facing, catering for band has been reusables for a while: Some artists/bands will only drink from specific packaging, Backstage has been mostly able to convert to reusable cups, but some requested products only exist with single-use options.

Food Service and Distributors

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- [If they will share data] We will be following up with a data request via email.

End of interview. Thank the participant.

Interview Summary – E8

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable cutlery, cups, bowls, plates, condiment containers (durables).

Key Insights / Learnings

- E8's biggest packaging footprint comes from back of house (tertiary) materials like films, wraps, and cartons; reduction opportunities are being pursued with suppliers.
- Full service dining model means little front of house single-use packaging; takeout is less than 15% of meals, limiting reuse pilots.
- Supplier collaboration focuses on reducing material mass/volume and upsizing product buys, though changes require investment and line conversions.
- Reuse/refill adoption is limited due to food safety, hygiene, and brand concerns; bring your own containers are not permitted.
- Strong emphasis on data analytics and waste audits to guide packaging reduction, revealing major gaps in vendor provided data.

Key Opportunities Identified

- Supplier engagement to reduce packaging mass/volume (e.g., upsizing butter/cream purchases) offers scalable reduction potential.
- Waste audits and data analytics create opportunities to optimize purchasing and operations, moving beyond vendor estimates.
- Films and wraps represent a high volume packaging stream with strong potential for targeted reduction.
- Standardized policies like default no cutlery and optional add-ons reduce unnecessary single-use items with minimal customer pushback.
- Collaboration across the restaurant sector can accelerate shared solutions and alignment on compliance challenges.

Key Barriers Identified

- Limited alternatives for problematic materials (e.g., expanded polystyrene, films, wraps) constrain substitution efforts.
- Supplier constraints: line conversions and investments are slow, making upstream changes difficult.
- Regulatory complexity (e.g., Senate Bill 54, Oregon and Washington policies) leaves restaurants underprepared and lacking clarity.
- Reuse/refill limitations: hygiene, safety, and brand reputation concerns prevent adoption of bring your own or refill practices.

- Data quality issues: reliance on vendor waste estimates obscures true impacts, creating uncertainty in setting and tracking reduction targets.

Key Data Point Provided in Interview

- 18% landfill diversion rate reported for 2025 fiscal year (United States owned and operated restaurants).
- Less than 15% of meals are takeout, limiting consumer facing packaging impacts.
- Waste audits revealed cutlery frequently ending up in trash, leading some sites to add magnets in bins and recover approximately 50% of cutlery.
- On site metering for water, gas, and electricity is underway, with results expected by 2026.

Additional Notes

Operational

- Films, wraps, bottles, and cartons are priority materials for reduction due to high volume.
- Third party delivery expansion (one food delivery partner, deployment has been broadened across brands) increases packaging exposure but hasn't integrated reuse.

Legislative

- Restaurant sector is often overlooked in policy discussions; more focus is on retail.
- Waste legislation is seen as confusing; the sector lacks synchronization and alignment.

Interview Summary – E14

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable water bottles, disposable, recyclable, and compostable food ware.

Key Insights / Learnings

- Unique Operational Challenges in Travel Venues: Travel locations like airports and train stations present distinctive hurdles for waste reduction due to space constraints, lack of back of house kitchen facilities, and high passenger turnover. Food and beverage units are often much smaller than street side counterparts (e.g., a quarter the size with double the volume), requiring packaging that fits into tight spaces like seatback pockets and doesn't leak.
- Barriers to Reuse and Packaging Changes: Safety concerns (e.g., inability to reseal canned beverages), packaging tariffs, and brand identity issues significantly limit the shift to reusable or standardized packaging. Modifying packaging size affects menu builds, food safety, and operational procedures, and many brands resist changes that alter customer perception or disrupt supply chain consistency.
- Waste Reduction and Source Minimization Strategies: E14 is actively pursuing packaging and waste reduction through compostables, right sizing shipments, reusable pallets/totes, and sourcing recycled materials.
- State Compliance and Sustainability Reporting: E14 complies with regulations like California's Senate Bill 54 and reports nonfinancial sustainability goals on a public website. Their initiatives often go beyond regulatory requirements, focusing on waste diversion, source reduction, and collaborating with suppliers to improve sustainability across operations.
- Consumer Behavior and Downstream Infrastructure: A major challenge lies in influencing traveler behavior - many dispose of recyclables as trash due to lack of clarity or infrastructure. Some airports have implemented artificial intelligence monitoring systems to guide waste sorting. E14 sees global inconsistency in waste handling infrastructure as a barrier to scaling composting or reuse efforts across different travel markets.

Key Opportunities Identified

- Back of house and transport reuse: reusable totes and pallets are already used, also a focus on getting the correct pack size from suppliers.
- Source reduction: work on right sizing, more recycled content, material change (from plastic to paper) and with product suppliers.
- Waste monitoring: use employees or artificial intelligence coaching to help travelers dispose of their waste in the correct places, which would be helpful for compostable and reusable products that could confuse users.

Key Barriers Identified

- Limited space: Food service establishments at venues like airports are typically a quarter of the size of a normal location and offer the same menu while doing double the business. They have little to no back of house space for storage or food preparation.
- Reuse systems: travelers are often getting food to go and not eating on site, making the logistics of returnable packaging difficult.
- Branded packaging: brands have built an image with their packaging and want to remain differentiated from competitors, not use unbranded or shared reusable packaging.
- Infrastructure costs: cannot retool equipment quickly without high costs, so more complicated source reduction options cannot happen in the short term.
    - Changing packaging size could also alter menus, nutrition information, and operations.
- Double charging: as costs go up with tariffs, food service companies are charged by the supplier and producer. Some charges would need to get passed onto consumers down the line.

Key Data Point Provided in Interview

- Sit down restaurants in airports/train stations almost always use durable drink and food service ware.
- E14 focused on downstream work, including waste reduction and diversion.

Interview Summary – E30

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable and disposable food ware, reusable pallets and crates.

Key Insights / Learnings

- Front of house source reduction is the focus area: E30's primarily targeting front of house packaging waste, like grab and go items, utensils, and to go containers, while back of house efforts are still in early stages. Initiatives include exploring reusable container systems and transitioning to bulk packaging for condiments and milk where feasible.
- Behavioral incentives drive better results than penalties alone: Programs that use consumer incentives (e.g., rewards for returning containers) have seen more success than those that rely on penalties. There's a psychological barrier to penalizing disposable use, though some research suggests that flipping the financial incentive (charging more for disposables) could be more effective.
- Industry needs systemic support for widespread change: Broader infrastructure, consistent regulations, and supplier engagement are critical to scaling sustainable practices. E30 emphasized that most operators need turnkey solutions and still default to compostables in the absence of clear guidance. Material concerns (e.g., need for transparent cups, cost of metals) also shape feasibility across segments.
- Sustainability initiatives are client driven, not E30 enforced: While E30 provides tools and guidance, most sustainability actions are led by client interest and approval. Any changes, such as adopting reusables or shifting packaging, must be agreed upon by the institution, which limits E30's ability to mandate broad change across sites. E30 has started to do scans (still in early stages) of where opportunities exist and what suppliers they should reach out to.
    - Some examples include shifting to reusable pallets and produce bins.
- Client variability limits standardization: Success in sustainability efforts depends heavily on client interest and willingness to implement change. Variability between universities and cost sensitivity among clients make it hard to create uniform policies, although universities are generally more receptive to sustainability initiatives than other segments. If E30 mandates a policy change and client isn't happy, E30 could have to absorb the cost or find another solution.
    - Labor and washing/drying infrastructure are other major barriers.

Key Opportunities Identified

- Consistent regulation: more helpful since it currently tends to be variable in different regions.
- College and universities: easier to make a blanket policy in the university segment that is more standardized; may still receive pushback.

- Large-format packaging: Bulk condiments and milk are more cost competitive; easier to get clients to support.
- Infrastructure: More consistent national infrastructure for recycling and reuse systems would help with adoption and limit friction.

Key Barriers Identified

- Variable clients: Chain has multiple parts. Added layer of responsibility and leading a culture change can be harder than operations.
- Bring your own tests: Concerns about food safety and sanitation depending on means of product collection. Many accounts have done it, but others are still unsure if they are even allowed to. On college campuses, bring your own is an issue because they don't want students taking a large amount of food away from common area dining spaces.
    - Only traction is with coffee or instances where E30 is responsible for package cleaning.
- Labor: reuse/refill usually requires more labor forces, higher costs, or additional tasks being delegated to existing labor. If consumer adoption allows solution to scale, the effects on labor can be even more significant.
    - Biggest barriers are dishwashing and drying capacity.
    - Should technically see labor decrease in other areas (like waste management) but effects may be physically spread out and not felt in one region.

Key Data Point Provided in Interview

- Some pilots have been done for back of house work, but they are very new and opportunities are still be analyzed. Most of the current work is consumer facing.
- E30 to go programs exist more in retail and some in resident dining. Have had reusable to go programs for a long time, but it is difficult to track and get back. E30 mainly works with a number of container suppliers. Good return rates with [supplier] partnerships and have discovered rewards have been more helpful than fines.

Additional Notes

- Steps taken: some clients moved to concentrated chemicals, lightweighting, and reformulating.
    - Component changes: example of a straw and lid to a sip lid - could this actually be using more plastic?
- Space considerations: clients may want to switch to reusables but need to consider if they have the storage and washing space.

- University segment: greater leadership but variable between schools, focused on getting consistency across operations. Some clients are indifferent because they are so cost focused.
- Internal policy: E30 moving away from expanded polystyrene and wants this across universities.
- Reuse steps: Has the most success if clients are willing to add a fee to disposables, but others are not receptive or will even let tracking of reusables happen. This is frustrating because it is hard to assess the overall impact since it is not easy to mandate, ensure employees are trained adequately.
- Industry trends: E30 uses a scorecard to help select sustainable disposables or reusables. Currently, there are similar industry challenges all around.
- Material use: Challenges around materials needed for reusables, plastic is the most cost effective but still raises concerns. Are we trading benefit for new cost? Other materials like metals are cost prohibitive, and glass is not practical.

Interview Summary – E32

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable, compostable and disposable cups/containers.

Key Insights / Learnings

- Source reduction is a core focus: E32 is prioritizing packaging reductions in categories like seafood, bread, produce, and meat - transitioning from expanded polystyrene and plastics to alternatives like waxed corrugate, molded fiber, and cardboard.
    - In food service however, most packaging is already minimized due to cost and Food and Drug Administration and Department of Agriculture requirements.
- Reusable transport packaging promise and challenges: E32 uses reusable pallets and is exploring reusable plastic crates, but crate loss liability and the complexity of recovering items across many customer locations are key hurdles. Focus is currently on larger customer clusters where return logistics are more feasible.
- Growing demand for sustainable disposables: Plastic bans and shifting customer preferences, especially among national clients, are accelerating adoption of compostable or recyclable disposables. E32 sees these trends continuing regardless of regulatory pressure and remains open to innovative partnerships that support broader sustainability goals.
- Business breakdown: Split into local and national customers. Local is between one to five locations. National ones include schools, hotels, hospitals, prisons, which have the most interest in source reduction, especially higher education and corporate industry.
    - E32 sees sustainable disposables business grow much faster than nonsustainable because of plastic bans and consumer reception. Regardless of extended producer responsibility, E32 said it would continue to move forward with sustainable changes.

Key Opportunities Identified

- Source reduction: plastic clamshells to cardboard or paperboard, expanded polystyrene meat trays to molded fiber trays.
- Back of house: disposables are more expensive with extended producer responsibility, so it makes economics of returnable back of house more attractive.
- Plastic bans: have been helpful as customers generally understand reasoning and that the packaging is bad. It is also more straight forward than fees with extended producer responsibility.

Key Barriers Identified

- Mostly minimized: Food service is hard because mostly all bulk packaging is used, so everything remaining is there for food safety and to minimize damage.
- Transport packaging: already use mostly reusable pallets, but the issue of reusable crate is if a crate is lost, someone needs to pay, which would currently be E32. They are trying to get 10 major customers in one location to explain if a crate is lost, they would pay for it as a baseline. Three reusable plastic crates players in a discussion to take on role. Reusable pallet wrap is too labor intensive.
    - Reusable plastic crates also add some additional transport weight.

Key Data Point Provided in Interview

- Changes made: Transitioned from expanded polystyrene containers in seafood to wax corrugate box. Removed plastic clips from bread, moved to wood. Five gallon cooking oil jugs from polypropylene to polyethylene terephthalate also reduced weight of plastic by 25% and made bottles more rigid.
- 68% of packaging weight is corrugate packaging.
- E32 built a system for extended producer responsibility programs to have suppliers submit packaging and components for products and found they were overestimating packaging being used which helped save on extended producer responsibility program fees.

Additional Notes

- Feedback on Senate Bill 54 and extended producer responsibility: E32 wishes extended producer responsibility was more consistent throughout the United States and that the fees are guaranteed to get channeled into improving recycling legislation. Regardless, E32 sees themselves as being ahead of competitors regarding compliance.
- Cooking oil: retooling process takes too long. Looking at ways to fast track changes.
    - Passed change through at a neutral cost: The supplier switched from polypropylene to polyethylene terephthalate and used approximately 25% less material overall. Since the cooking oil used less material, E32 thought the packaging should be less expensive but the supplier kept the packaging at the same price to recover their own capital investment in retooling to make the new packaging.
    - Manufacturing cost savings in making packaging requiring less materials, but that, at least in this case, the cost to the customer (E32 in this case) remains neutral for the time being.

Packaging Manufacturers

Interview Guide

Background Context:

[Add]

Public Goals:

[Add – check Sustainability Report, company website, Ellen MacArthur Foundation Global Commitment signatories]

Collaborative engagement:

[Add – check company website, news, and press releases]

Packaging Portfolio:

[Add - check 2024 and past year, Ellen MacArthur Foundation Commitment reports]

Product Portfolio (from website):

[Add]

Interview Questions:

Minutes 0-5: Introduction & Consent

- Introduce interviewers and purpose of the study.
- Confirm participant's role and title / purview.
- Explain how information will be used (anonymously unless otherwise agreed).
- Confirm consent to take notes.
- We are most interested in insights that are relevant to the United States, which can include insights from projects elsewhere as long as they could be applicable in a United States / California context.
- We will spend most of our time on Source Reduction strategies and will save some time for Reuse and Refill strategies as well.

Minutes 5–35: Source Reduction Efforts

Goal: Understand potential for single-use plastic source reduction in packaging and food ware, including opportunities based on recent innovations.

Questions:

- What source reduction strategies hold the greatest potential for packaging and food ware at this moment in time?
    - Elimination.

    - Concentration.
    - Right sizing.
    - Lightweighting.
    - Format change.
    - Replacement.
- What are the barriers or opportunities to achieving additional source reduction through these strategies? What is needed?
- What are some lessons you have learned about what does not work when it comes to source reduction approaches for certain packaging types or product types?
- What new innovations are emerging that will enable further source reduction? For each of these, can you speak to:
    - Does this require new equipment or processes?
    - What are the unit cost implications? Will it impact the price to the consumer?
    - What feedback did you get from consumers about the changes? Any behavior insights?
    - What were the ripple effects of the new packaging on operations or costs through the supply chain?
- Looking industry wide, what do you observe about the approaches others are taking? Who is doing something notable?
- What else is it important for us to understand about barriers and opportunities for source reduction solutions?
- [If we haven't asked already] We are looking for data such as costs and operating metrics to inform modeling. Are you able to share data if we can anonymize it (not shared with CalRecycle)? If yes, we will follow up with a data request with more details on what would be most helpful.

Minutes 35–55: Reuse / Refill Engagement and Experience

Goal: Understand how packaging manufacturers are addressing the needs posed by reuse/refill solutions and how innovation is underway to meet the evolving needs of this industry.

Questions:

- What would you call out as the biggest barriers or challenges in designing and producing items to serve in reuse and refill formats? Can you share any examples?

- Where do you see the greatest opportunity for additional transitions to reuse and refill formats and why? Please be as specific as you can.
- What insights can you share from your exploration and testing of reuse/refill formats in these areas?
    - ...Consumer behavior or readiness for specific reuse or refill models?
- Do you assess ease of use for reuse or refill solutions? How?
- Have you tested any incentives or rewards as part of reuse or refill programs?
    - ...Operational insights for manufacturing and filling?
- Packaging characteristics that are particularly good or bad for reuse or refill formats.
- Product characteristics that are particularly good or bad for reuse or refill formats.
    - ...Hygiene, safety or quality challenges for the reuse/refill formats?
- Do cold chain requirements have implications for reuse/refill system viability
    - ...Up front or ongoing costs vs single-use?
- Do the products you are selling in reuse/refill models cost the same as the equivalent in single-use or is the pricing ever different?
- Are there any reuse/refill models that are lower cost per unit than single-use?
    - ...Impacts on jobs for different reuse or refill models.
    - Any other insights or concerns that emerged.
- Looking industry wide, what trends do you observe when it comes to packaging for reuse and refill solutions? What is notable about what others are doing?
- Have Americans with Disabilities Act requirements been a consideration in your exploration of reuse and refill packaging formats to date? What have you learned?
- What else is it important for us to understand about barriers and opportunities for providing packaging for reuse and refill solutions?
- [If we haven't asked already] We are looking for data such as costs and operating metrics to inform modelling. Are you able to share data if we can anonymize it (i.e., not shared with attribution with CalRecycle)? If yes, we will follow up with a data request with more details on what would be most helpful.

55–60 minutes: Wrap Up & Final Thoughts

Goal: Capture unsolicited insights and identify next steps.

- Is there anything else that you would want us or CalRecycle to understand about reuse/refill or other source reduction approaches from your perspective?

- Are there any misconceptions you'd like to correct?
- Are there others at your company or in your supply chain we should speak with?
- [If they will share data] We will be following up with a data request via email.

End of interview. Thank the participant.

Interview Summary – G1

List of Food Service Ware, Packaging Types, or Systems Discussed: rigid and flexible film plastic.

Key Insights / Learnings

- Viability of reuse/refill: pilots often fail due to low return rates (approximately 60%), high costs, and unclear environmental benefits. Most reuse systems aren't outperforming recycling in efficiency, especially when factoring in reverse logistics and product loss.
    - Design for reuse (e.g., refillable polyethylene terephthalate bottles) adds weight and cost, and reuse systems for home/personal care are difficult to scale due to inventory management and lower than needed return rates (approximately 80%).
- Lightweighting**:** high volume products are already near lightweighting limits, and low resin prices reduce customer motivation to pursue further reductions - especially if it risks manufacturing process changes.
    - Extended producer responsibility programs tied to weight (tons) could reintroduce interest in lightweighting if fees rise, but customer behavior hasn’t shifted significantly yet.
- Paper solutions: G1 is developing paper based packaging for snacks and low barrier items, but paper weighs more, increasing cost and carbon footprint. It's only viable for 10-15% of products, often where moisture and oxygen barriers are less critical. Categories like cheese and meat remain unsuitable for paper due to higher barrier requirements.
- Infrastructure challenges**:** Lack of demand for recycled content and high cost of recycled materials creates a risk of backsliding in recycling investment and capacity. G1 notes the need for wash line infrastructure and better sorting (artificial intelligence, Food and Drug Administration approved polypropylene plants in United Kingdom), emphasizing that mechanical recycling remains cheaper and more viable than chemical recycling in many cases.

Key Opportunities Identified

- Source reduction potential: flexible polypropylene into market and polyethylene flexible films. Room to convert to rigids to flexibles but not recycled.
- Changing materials: G1 seeing interest in paper and other categories. Developing paper performance packaging to keep recyclable but increase use. Can use for some snacks and confectionaries with lower barrier requirements.
- Best categories to convert: Home and personal care, laundry detergent, especially when using refill systems. Less options in food.
- Beverages are most attractive product for reuse: fast use, short travel distances.

- Can contract fillers be big enablers? They are set up to play this role, but are not doing it yet. Seeing shift in economics and technology. Customers moving from brands to retail and copackers do everything for private label.

Key Barriers Identified

- Lightweighting: for high volume packaging we are close to limits on lightweighting ability. Resin prices have been lower the last few years so customers are not motivated to lightweight, especially since it could force changes in production and manufacturing model. Extended producer responsibility program fees based on tons.
- Moving to paper: Paper weighs more than plastic so cost and carbon footprint will likely be higher, fewer packages per labor time. Paper only a solution to few products, 10-15% range. Mostly food (snacks like candy bars), dishwasher tabs, etc. Not cheese since it requires a higher barrier.
- Concentration: limited conversations. Detergent sheets, toothpaste tablets, haven't taken off how G1 thought it would; not many product innovations that would change packaging.
- Meat packaging probably cannot become recyclable.
- Liquid and flexible films: Only way to recycle flexible packaging (polyethylene shopping bags) is store drop off. Goes to Trex or similar, but no wash line so they are expecting clean films. Need to model more after rigids where a wash line is needed since existing infrastructure not working for this in United States.
- Pilots: They are sensitive to return rates (and 60% is too low to be successful).
    - Issues from Petaluma pilot: In most cases saw that economics don't work, Consumers usually can't use. Not really seeing an environmental benefit.
- Lack of demand for recycled content combined with higher cost of recycled materials, real risk that we may take a step back in recycling infrastructure and capacity. Look at impacts on recycling system from reuse/source reduction. Most reusable cups are polypropylene but less recyclable.

Key Data Point Provided in Interview

- How many times can refillable polyethylene terephthalate bottle be used: designed and tested for 20 cycles but being checked at testing facilities.
- When customer switches from glass to polyethylene terephthalate, it can cut freight costs by 30% since glass is so heavy. Weight advantage for recyclers since they have to haul back. Example: Ontario started campaign to move spirits and liquor out of glass bottles.
- Home and personal care needs a lot of inventory to justify long term use and only 80% return rate. More expensive. Who is holding this on balance sheet.

Additional Notes

- Consumer refill acceptance: Not widely accepted in the United States because drawn to convenience. Latin America or Japan has big cost diff between refill and dispenser. How much consumer incentives are needed to hit these targets?
- Customers are not asking much about Senate Bill 54. Looking category by category to convert into recyclable structures.
- Latin America refill industry: Sell reusable and single-use bottle in same market. Reusable goes to lower end bodegas and single-use plastic goes to upper class grocery stores. Can charge a higher price for a premium single-use plastic so going toward less reuse.
- Ensuring shelf life and product safety are priority. No research has been done on effects on food quality since mostly looking at home and personal care.
- Prefill: cannot say which formats are working yet. Maintaining quality is more important than what packaging design looks like.
- Anything can work in reuse/refill but matter of difficulty and price. One manufacturer was doing reusable ice cream containers in stainless steel. Powdered products are easiest, take cold chain considerations into account.

Interview Summary – G2

Key Insights / Learnings

- Focus on source reduction and lightweighting**:** G2 operates in low margin sectors like quick service restaurants, where minimizing material use is already core to product design. Their portfolio is largely optimized for lightweighting, with perhaps only 5-10% further reduction possible. Structural needs (e.g., ribbing for strength) limit further minimization. Mold changes for redesigns are costly (up to $500,000), making packaging right sizing a slow and deliberate process.
- Post consumer recycled content as primary strategy: Increasing post consumer recycled use, particularly in polyethylene terephthalate which has greater availability than polypropylene, is seen as the most viable path to meeting Senate Bill 54's early targets. However, food grade polypropylene recovery is hindered by low market value and weak demand. G2 single-use plastic ports initiatives like [organization]'s closed loop model, and believes Producer Responsibility Organizations should invest in materials recycling facility upgrades to create high quality polypropylene bales. Cost remains a key barrier, as brands can't absorb 10-15% price hikes for sustainable material without added value or regulation driven incentives.
- Reuse and refill seen as long term, infrastructure heavy shift**:** G2 views reusable packaging as a significant behavioral and logistical shift requiring industry wide coordination. Most customers lack space for dishwashing or collection infrastructure, and sanitation liability is a major concern. Based on experiences like Petaluma and France's dine in reuse mandates, they emphasize the need for phased rollouts, test and learn timeframes, and avoiding overengineered solutions that increase cost and waste without improving outcomes.
- Standardized, modular reusables could help**:** G2 is exploring standardized stock containers that can serve various food service formats with limited stock keeping units (e.g., small/medium/large containers for soups, entrées). These base and lid systems are more space efficient than hinged containers and reduce waste stream bulk. Still, real adoption depends on systemic investment, customer readiness, and clear, stable regulations.
- Industry collaboration and realistic policy timelines are essential: G2 expressed concern over Senate Bill 54's compressed timelines and the shifting regulatory landscape. They advocate for engaging cross industry groups like the Food Packaging Institute to align producers, regulators, and retailers. Policy changes must allow time for innovation and optimization, with a focus on performance, recyclability/compostability, and end of life recovery - not just compliance.

Key Opportunities Identified

- Cost saving: Have always worked to minimize material usage and shipping efficiency to lower costs and better the environment, also only selling into low margin businesses
- Materials: Some materials are more well positioned for reuse than others - lots of polyethylene terephthalate in California because they are highly recyclable but are not good for washing and reusing. Polypropylene is good for temperature range, commercial washing, and sanitization.
    - Polyethylene terephthalate has more availability for post consumer recycled, whereas polypropylene has more limited supply.
- Tradeoffs: Cost, weight, waste. Some products don't belong in plastic, but ones that do can save a lot of waste.
    - Pilot using seaweed for coating instead of flexible films, promising but need more development.
- Right sizing: will try it, but won't be a huge amount, and costs associated with changing the lines are high - it is a $500,000 exercise to change the molds.
- Reuse design for performance and end of life: You need to have enough stock keeping units to cover all the different kinds of needs without a huge proliferation of packages. In pilots, reusable packaging was over designed because timelines were not long enough to optimize.

Key Barriers Identified

- Customer perception: The user tends to only notice pain points of the packaging or products, not the benefits.
- Many companies still do not appear to be aware of Senate Bill 54 or its implications.
- Post consumer recycled: producer responsibility organization could invest in Material recovery facilities to be able to do polypropylene bales and help us develop that food grade bale.
- Infrastructure: G2 customers don't have the space for dishwashers, don't have space for consumers to bring things back in and can't take on that sanitation risk. Need infrastructure similar to what was supplied during the Petaluma pilot.

Key Data Point Provided in Interview

- Estimates 5-10% more lightweighting could be done.
- Reuse: have separate base and lid, hinged containers take up a lot of space, especially in waste bins in restaurant and in community.

Additional Notes

- Look at the [organization] closed loop study - it is a misconception that there isn't enough clear food grade polypropylene coming in; it is a market issue where there isn't enough value associated with it to get full bales. Economics don't support brands paying 10-15% more just because.
- Producers are part of the solution and the test - this would help with driving the adoption.

Interview Summary – G10

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable and disposable flexible films.

Key Insights / Learnings

Summarize high level takeaways from the interview (3-5 bullet points):

- Senate Bill 54 causing concern in flexible packaging: The uncertainty surrounding Senate Bill 54 is stalling R&D and packaging innovation across G10's customer base. Most companies are waiting to act, unsure how to interpret the law or meet requirements like 60% recyclability - especially for flexible packaging, which lacks viable recycling pathways.
    - Post consumer recycled is not practical in flexible films, but recyclable is even harder.
- Equipment and copacker limitations are major barriers: Paper based alternatives are often rejected by copackers due to slower speeds, quality issues (like wrinkling), and incompatibility with standard machines. G10 emphasized that many copackers, especially smaller ones, are at financial risk under Senate Bill 54 without support like tax credits or low interest loans for machinery upgrades.
- Shift is likely to begin with high margin products: G10 suggested the most realistic path forward is starting with premium categories (e.g., health and beauty, protein powders) where packaging cost increases are more tolerable. Low margin products like snacks (e.g., chips) are unlikely to adopt new materials soon due to tight cost structures.
- Promising innovations in select sectors: G10 cited the tea industry as a rare success story - billions of units now use a universal compostable paper wrapper compatible with existing infrastructure. Also mentioned were pilot projects like Made Good's recyclable paper wrappers, which use thin metallization that doesn't interfere with recycling - but these are costly, niche, and not yet scalable.

Key Opportunities Identified

- Lightweighting: G10 estimates a 20% increase is possible in lightweighting, but it is not a major focus.
- Reusables in prefill: Small copackers would have a great opportunity to retool equipment and take this on since they typically have more flexibility.
- Tea industry: Found a way to make over wrap industrially compostable, so use the exact same manufacturing equipment and model nationally. No other industry has this level of alignment.

Key Barriers Identified

- Post consumer recycled: post consumer recycled is easy with rigid plastics and much harder with flexible films, but it is also the only category within the new law that G10 feels confident moving into. No one is looking to do recyclable films.
- Format Change: Other than switching the top layer to paper, companies have struggled with converting to paper packaging because of increased time to manufacture and copacking equipment issues.

Key Data Point Provided in Interview

- After materials study, flexibles are nowhere near the 60% requirement for recyclability.
- Growth in recyclable paper with a barrier for food. Made Good and Chocolove both retooled packaging to qualify as recyclable.

Additional Notes

- Support from Senate Bill 54 that would be helpful: loans or tax write offs for copackers to make machine adjustments, similar for recyclable, paper, and compostable if able to keep compostable available.
- Senate Bill 54 will have an expensive packaging conversion period, and paired with inflation, will make many people unhappy.
- Suggested first shifts should be in the health/beauty/wellness products: since they are already more expensive there is more room to use more expensive packaging and pass off some of the cost to consumer. In comparison, small snacks would be to low value and feel price change faster.

Retailers

Interview Guide

Background Context:

Public Goals:

[Add – check Sustainability Report, company website, Ellen MacArthur Foundation Global Commitment signatories]

Other Relevant Background

[Add – news search, etc.]

- Partners noted publicly.
- Mentions in the news.
- Other notable items.

Interview Questions:

Minutes 0-5: Introduction & Consent

- Introduce interviewers and purpose of the study.
- Confirm participant's role and title / purview.
- Explain how information will be used (anonymously unless otherwise agreed).
- Confirm consent to take notes.
- We are most interested in insights that are relevant to the United States, which can include insights from projects elsewhere as long as they could be applicable in a United States / California context.
- We will spend most of our time on Source Reduction strategies and will save some time for Reuse and Refill strategies as well.

Minutes 5–35: Reuse / Refill Engagement and Experience

- Has your work on reuse / refill to date been working through your owned brands, with suppliers, with logistics providers, or a combination?
- What have you learned from your tests and programs when it comes to:
    - Consumer behavior or readiness for specific reuse or refill models?
    - Operational insights for manufacturing and filling?
    - Operational insights for retail operations?
    - Hygiene, safety or quality challenges for the reuse/refill formats?

    - Impacts on jobs for different reuse or refill models?
    - Any other insights or concerns that emerged.
- Would your retail locations be able to serve as drop off points for reusable / returnable packaging? Why/why not?
- Have Americans with Disabilities Act requirements been a consideration in your exploration of reuse and refill models to date? What have you learned?
- In your view, what are the most important enablers for reuse/refill solutions at this time?
    - Innovation: packaging, technology, business model, other?
    - Shared infrastructure: what specifically would you want?
    - Standards/standardized packaging?
    - Partnerships - with whom?
    - Funding/access to capital for company initiatives?
    - Other? (Please specify)
- Looking industry wide, what trends do you observe when it comes to reuse and refill solutions? What is notable about what others are doing?
- What else is it important for us to understand about barriers and opportunities for reuse and refill solutions?

Minutes 30–55: Source Reduction Efforts

- What source reduction actions have you explored and which ones have proven to be most successful? For example:
    - Elimination
    - Concentration
    - Right sizing
    - Lightweighting
    - Format change
    - Replacement
- For successful examples:
    - Did this require new equipment or processes?
    - What were the implications for unit cost? Did any changes in cost impact the price to the consumer?
    - What were the merchandising implications? Did it impact shelf space or product positioning?

    - What feedback did you get from consumers about the changes? Any behavior insights?
    - What were the ripple effects of the new packaging on operations or costs through the supply chain?
- Looking industry wide, what do you observe about the approaches others are taking? Who is doing something notable?
- Which source reduction strategies do you think may have greater potential industry wide?
- What are some lessons you have learned about what does not work when it comes to source reduction approaches for certain packaging types or product types?
- What else is it important for us to understand about barriers and opportunities for source reduction use and refill solutions?
- [If we haven't asked already] We are looking for data such as costs and operating metrics to inform modelling. Are you able to share data if we can anonymize it (not shared with CalRecycle)? If yes, we will follow up with a data request with more details on what would be most helpful.

55–60 minutes: Wrap Up & Final Thoughts

Goal: Capture unsolicited insights and identify next steps

- Is there anything else that you would want us or CalRecycle to understand about reuse/refill or other source reduction approaches from your perspective?
- Are there any misconceptions you'd like to correct?
- Are there others at your company or in your supply chain we should speak with?
- [If they will share the data] We will be following up with a data request via email.

End of interview. Thank the participant.

Interview Summary – L22

List of Food Service Ware, Packaging Types, or Systems Discussed: in store refill and dispensing.

Key Insights / Learnings

- Strong Customer Loyalty/Engagement: L22 attracts businesses seeking inspiration due to its committed bulk buying customer base and participatory culture, including customer feedback forms and an internal ecology committee driving sustainability.
- Bulk Product Strategy and Operations: Nearly all packaged products are also offered in bulk, with departments operating semi-independently to test and introduce customer suggested items. Quality and safety are maintained through high turnover and rigorous cleaning of retail space, similar to deli standards.
- Packaging and Waste Reduction Leadership: L22 banned single-use plastic in the early 2000s, offers compostable bags, and incentivizes reusable containers with discounts. They partner with [California City]'s Department of the Environment to promote zero waste practices.
- Systemic Challenges and Industry Leadership: L22 helps incubate other organizations instead of franchising. They face hurdles in California redemption value recycling law compliance due to logistical and legal constraints, echoing broader systemic issues in California's recycling infrastructure.

Key Opportunities Identified

- Suppliers are open minded: Many suppliers are willing to work with companies like L22 to provide products in bulk for the right price, and less packaging makes their job easier.
- Incentivize the better option: offer points/rewards. L22 celebrates zero waste month in April with competitions and posts to make zero waste as attractive as possible.
- Reuse is trending: there is less judgement around reuse and bringing your own containers to stores/restaurants than decades prior - capitalize on this.
- Make reuse accessible: Offer reusable containers for low costs in store (L22 sells mason jars for under $1.50).

Key Barriers Identified

- Bulk vs freshness: Some products cannot be sold in bulk because of freshness requirements and could actually lead to more food waste and profit loss (example: tortilla chips, crackers).
- Online orders: [grocery delivery service] and similar shoppers never bring own bags, time pressure means grabbing first bags they see and sometimes wasting them if they aren't used.

- Shared infrastructure: Cannot have drop off spaces for reusable items because of food safety concerns and liability.
- Single-use is necessary: A grocery store must offer some sort of packaging for customers to use (usually single-use), but it is possible to make it harder to use/find or more expensive.

Key Data Point Provided in Interview

- Incentivize bring your own containers by offering discount at checkout, also charges for paper bags used.

Additional Notes

- Very loyal and interactive customer base, main driver for changing products but hard to replicate elsewhere.
- Bulk is usually cheaper per unit than the packaged alternative, except for staple products like rice/beans/oatmeal that you can get in large-format bags.
- Instead of expanding or franchising, L22 has helped other organizations start by donating equipment or raising money.

Interview Summary – L33

List of Food Service Ware, Packaging Types, or Systems Discussed: refill at home, reuse, paper solutions.

Key Insights / Learnings

Reuse/refill

- **Consumer behaviors and store capacities as main barriers**

L33 noted that they have done a significant amount of testing and piloting through their commitments with the Ellen MacArthur Foundation, but they found that their consumer base was not ready for those models. They are now interested in analyzing customer behavior to determine whether this is due to consumer loyalty to existing products, or if the refill format itself is not resonating with them.

From a store operations standpoint, there is the question of what can be realistically implemented, and what logistical challenges might arise. Issues mentioned with giving up shelf space or space from their car park for collection or storing empties. Additionally, they got some feedback from their Government Affairs about learnings from bottle bill programs in certain states.

- **Not inclined to move forward with the in store refill approach**

L33 shared an example from one of their internal pilots: a 'Make Your Own Trail Mix' concept. This initiative was tested at their headquarters to gauge interest, but the results were not conclusive. The Food Safety and Quality Assurance team raised significant concerns, particularly around allergens. Given the risks associated with nuts and open food containers in a retail environment, they expressed a strong reluctance to pursue this type of in store refill model. These concerns reflect longstanding policies, spanning over a decade, regarding allergen control, and the team is not inclined to revisit or test these boundaries at this time.

- **Refill at home as the preferred option**

Many sustainable brands have partnered with TerraCycle Loop, which operates as a mail back program. However, L33 is concerned that asking consumers to mail items in creates unnecessary friction - it’s not a particularly convenient or user friendly model. Ideally, they would like to avoid placing that burden on the consumer, such as collecting used packaging or managing returns. Additionally, they are hesitant to dedicate in store space to non-saleable items like mail back bags or drop off bins. That is why they are more interested in refill at home solutions.

- **A more complex and wide ranging approach to refill and return models**

L33 reminded that they do not have direct control over both manufacturing and packaging design (contrary to consumer packaged goods). Besides, they manage a much broader range of categories. They also operate physical stores and interact directly with the public, so they must carefully consider how any refill or reuse model impacts the in store experience and environment.

This complexity spans two key areas of their business: 'frequency' categories (like food, beverage, and everyday care) and 'discretionary' categories (like home decor, bedding, apparel, and accessories). They are managing a portfolio of over 20,000 products, not even accounting for the extensive range of sizes and variants within categories like apparel and accessories. It's a massive and highly diverse assortment to consider in any refill or reuse strategy.

Other source reduction measures

- **Main opportunity in standardization and a holistic approach to packaging**

In order to identify the right source reduction measures a mapping is needed on the current packaging formats. And holistic approach needs to apply to select product categories and the potential source reduction measure. In recent brand launches, L33 has strongly focused on platform based designs - taking a holistic approach and ensuring consistency across the brand. While there is some variation, it's limited, especially in categories where they use off the shelf components (e.g. shampoo or soap packaging). In contrast, their approach to food and beverage has been less developed in terms of standardization. There is clear opportunity, but transitioning will not be simple. Note, building the necessary volume and capacity across different tooling systems typically requires a development timeline of 18 to 24 months.

- **Paperization as the main lever for source reduction**

L33 has been developing bottle designs that incorporate post consumer recycled content to reduce the use of virgin resin. Across multiple categories, they have achieved over 20% post consumer recycled incorporation. However, Senate Bill 54 places certain limitations on how reductions in virgin plastic (through the use of post consumer recycled content) can be accounted for.

From an optimization standpoint, their goal is to reduce, but they remain highly sensitive to product damage. Any damage negates the sustainability gains achieved through packaging reduction. As they explore paper based alternatives, they are being especially thoughtful about design - considering not just the retail experience, but also how the product moves through secondary and tertiary packaging systems to ensure it arrives safely from source to consumer.

Key Opportunities Identified

- Refill at home products.
- Paper solutions.
- There must be a shared responsibility across all stakeholders when it comes to reuse/refill - it can't fall solely on the retailer. To ensure fairness and equity, infrastructure investments need to be collaborative, involving coinvestment from Consumer packaged goods companies, major national brands, and L33 - as both a halo brand and through its owned sub-brands.

Key Barriers Identified

- Low consumer adoption.
- Operational challenges limit reuse/refill options, including:
    - Managing returns.
    - Limited store space.
    - Hygiene risks.
- The fragmented approach to extended producer responsibility in the United States creates a significant administrative burden, requiring substantial effort just to understand the varying obligations and expectations across states.
- There appears to be some tension between the source reduction requirements and the signals from CalRecycle and Circular Action Alliance regarding potential bans.
- L33 does not have their own fleet for home deliveries, so returnable packaging is not an option.

Additional Notes

L33 noted that five years ago, when they began evaluating their progress against external commitments, they had very limited visibility into the components and materials used in their packaging. Since then, through strategic investments and partnerships, they have focused on collecting detailed Bills of Materials for packaging. Over the past 12-18 months, that data has been modernized and fully digitized within their Product Lifecycle Management systems. They are proud of the progress - now achieving over 90% coverage across these products. This enhanced visibility allows them to better identify opportunities for source reduction and further improve their sustainability efforts.

Interview Summary – L35

Key Insights / Learnings

- Plastic is deeply embedded in operations: Flexible plastics such as poly bags, shrink wrap, and plastic hangers are widely used across the supply chain. There's internal pressure to revert in states where plastic bags are not banned due to paper bags' fragility. Plastic hangers, used at production sites and in store, are technically single-use but recycled, potentially exempt from extended producer responsibility program fees.
    - Senate Bill 54 brings high risks to L35 because they would have to change all packaging globally.
- Paper alternatives pose major barriers: Paper mailers/bags are significantly more expensive, noisier on conveyors, and incompatible with existing automation (e.g., robotic arms and auto-baggers). Additionally, paper bags often fail durability and scanning requirements at distribution centers.
- Reverse logistics is a bottleneck for circularity: L35 does not own its reverse logistics network, relying instead on third party poolers, which limits the ability to consolidate or transport reusable or recyclable materials (e.g., hangers, plastic film). This makes scaling in store take back programs very difficult.
- Leadership buy-in and consumer behavior levers: Despite employee led sustainability wins, large scale change is hindered by leadership's cost sensitivity and short term focus. There's acknowledgment that behavioral economics and storytelling could be effective tools to shift both consumer and internal decision maker mindsets.

Key Opportunities Identified

- Right sizing: L35 created garment folding standards to fit more into smaller bags, taking some additional labor but saving costs on bags.
- Back of house reusable totes: to replace polybags shipping garments between distribution center and store, could help with quality control. Have never piloted.
- Take back programs: Interested in centralized drop off locations that tenants can pay to use and customers can use for flexible film return.
- Industry alignment: having brands make packaging and reverse logistics changes simultaneously so one cannot use the other as an example to hold off.
    - Consumer behavior and leadership buy-in: getting consumers to care and leadership to see the benefits/savings are two biggest factors of making change quickly.
- Hanger recycling program is a result of a public video of the waste and a call for action.

- Auto-bagger: Replaces polybags with machine that heats two pieces of plastic together around garments. Excess pieces be recycled through their film recycling program.
    - Can retrofit auto-bagger to seal paper together, but it would be an investment.

Key Barriers Identified

- Cross retail reusable tote: Marketing teams are not interested because they want customers to be seen with their bags and products.
- Removing shipping material: Piloted removing the internal polybag around the garment, but items were arriving dirty and at a lower quality, eventually costing the company more time and resources.
- No reverse logistics ownership: brand uses poolers to ship items, which are very prohibitive for waste and circularity initiatives and returnability.
- Paper mailers: require retrofitting machines, noisy on the conveyor belts, and giving employees paper cuts. Robot arm that moves packages around would puncture paper option. Also do not meet spec requirements for barcodes needing to be scanned on the packaging at facilities. Does not stretch so holds less items than the polybag (two to three vs three to five garments).

Key Data Point Provided in Interview

- Current plastic usage: flexible films like poly bags and mailers, shrink wrap for pallets, tape, plastic labels, size stickers.
- Currently using paper bags, but they are not as robust and states where plastic bags are not banned are considering reverting back to plastic.
- One L35 brand purchases 14 million single-use plastic hangers annually for five cents each. All other brands use wooden or reusable hangers.
- Ecommerce returns: Offer package-less returns through [return bar], poly mailers had extra strip to return in same bag, and L35 brands could recycle this bag back at DC facility. Customer usage rate ended up being only 15-20% of returns.
- Paper mailers are two to three times more expensive than polybags and take up more space when shipping empty to distribution centers.
- Reusable poly mailers through [reusable shipping and logistics provider] were five to six times the cost, and they weren't interested in scaling in the United States because of low return rates.

Additional Notes

- In vs out of scope: Recycling program means not getting charged extended producer responsibility program fees, but other items are easier to convince leadership to phase out because of millions of dollars in fees.

- Option of woven polyester bags, which need many uses to replace a single-use one.
- Removing size stickers could help with plastic reduction, but even paper alternatives are not recyclable because of the adhesive.
- L35 was actually encouraged not to convert to paper packaging because of deforestation - need to figure out a reusable solution that is not paper.

Interview Summary – L39

List of Food Service Ware, Packaging Types, or Systems Discussed: refill at home (via single-use packaging), prefill, refill in store.

Key Insights / Learnings

- Consumer behavior is the primary barrier: L39 sees consumer readiness and behavior change as the central challenge to scaling reuse/refill solutions. Without demonstrated customer demand or willingness to adopt, L39 cannot eliminate single-use options. Convenience is the primary driver of consumer adoption - often more influential than incentives.
- Convenience and standardization are critical for scale: Achieving scale requires reuse/refill models to match single-use convenience and build upon existing consumer behaviors (e.g., at home refill). Standardized packaging and shared infrastructure are viewed as essential to streamline operations and support industry wide adoption, as exemplified by the Ottawa pilot.
- Prefill and refill at home models are favored: Refill at home formats are currently the most promising, given their compatibility with existing logistics and retail operations. Prefill models are seen as more operationally feasible than in store refill due to store space constraints, messiness, and hygiene concerns for customer provided containers.
- Source reduction efforts face feasibility gaps under Senate Bill 54: L39 lacks a clear, reliable strategy for meeting California's Senate Bill 54 source reduction mandates. Opportunities are seen in concentrates, fiber substitutions, and expanded post consumer recycled use, but technical, regulatory, and consumer preference barriers persist.
- Thinking holistically about cost: A shift toward total system cost evaluation, rather than per material cost, is seen as necessary to unlock broader adoption. For example, when considering a source reduced package format, the change is assessed not just as old package cost vs new package cost, but it considers difference in weight (i.e. changes in fuel cost), more efficient stacking or packing (i.e. more units per truck, lower transport cost per item), implications for secondary packaging weight/waste, etc.
- There are greater opportunities for source reduction on the General Merchandise side than on the grocery side. More flexibility / options to meet technical requirements compared to food, beverage, personal and home care.

Key Opportunities Identified

- Advance refill at home models, which align with existing consumer behaviors and retail operations.
- Expand prefill systems supported by standardized packaging and shared infrastructure to streamline collection and processing.

- Scale concentrated product formats, especially in low resistance categories like household cleaning.
- Substitute fiber for plastic packaging in select product categories.
- Unlock greater use of post consumer recycled content through improved supply chain partnerships.
- Shift toward evaluating total system costs rather than just material costs.
- Promote collaboration, including public-private and industry wide efforts, as essential to enabling these opportunities.

Key Barriers Identified

- Low consumer adoption is a key barrier, with convenience being the primary hurdle - reuse and refill models must match the ease of single-use to gain traction.
- Operational challenges limit in store refill options, including:
    - Managing returns.
    - Limited store space.
    - Hygiene risks.
- Lack of standardized packaging and shared infrastructure hinders scalability.
- Source reduction barriers include:
    - Technical constraints.
    - Consumer resistance.
    - Limited supply of competitively priced post consumer recycled materials.
- Uncertainty around funding and operations for backend systems needed to support reuse and prefill remains a core barrier.

Key Data Point Provided in Interview

No quantitative data was provided in the interview, however the following qualitative insights were shared regarding internal data analysis:

- Products most suited to reuse/refill:
    - Health and safety trumps all: household cleaning is much easier than personal care (goods that touch the body) and food. Baby food is at ultimate end of spectrum (from regulatory sensitivity point of view).
    - Fast turns: time between purchase and completion of use / replacement - because the consumer remembers that they need to return the package.
    - Household cleaning and personal care and some beauty are where they've seen the most movement.

- Bleach and other products with chemicals cannot use post consumer recycled packaging.
- L39 has tested a lottery style deposit system to gamify returns and found this to be effective at engaging customers, but no quantitative results were shared.
- Net promoter score and general satisfaction metrics are used as proxies for “ease of use” in some programs, though these are not tracked consistently across all reuse/refill pilots.
- Innovative packaging formats including refill via single-use packaging that are not successful enough to warrant shelf space in store can still be offered online for customers that want them, and if they get enough traction they can get considered for in store sale.
- L39’s internal modeling indicates that prefill systems could be economically viable, but success is contingent on consumer behavior and having the whole supporting backend to enable these systems to work efficiently and at scale.
- Retailers would need to be compensated for space and labor for store drop off return systems.
- Significant operational concerns for store drop off with cash deposit return, as they have led to theft, shrinkage, and store closures, were highlighted, though again without numeric data.

Trade Associations

Interview Guide

Background Context:

Scope of Services

[Add - check org website, news]

- What is their focus?
- Do they have public positions on Senate Bill 54 or packaging reduction in general?
- Who are their members?

Other Relevant Background

[Add - news search, etc.]

- Mentions in the news.
- Other notable items.

Interview Questions:

[Depending on the trade group focus, these may need to be adapted somewhat]

Minutes 0-5: Introduction and Consent

- Introduce interviewers and purpose of the study.
- Confirm participant's role and title / purview.
- Explain how information will be used (anonymously unless otherwise agreed).
- Confirm consent to take notes.

Minutes 5-15: Overall

Goal: understand the discussions being had at the industry level on Senate Bill 54

Questions:

- How is your membership feeling Senate Bill 54? About their ability to achieve the Senate Bill 54 targets?
    - What have been the main concerns or points of discussion in industry conversations?
- Senate Bill 54 has both component and mass based targets for reductions. Has there been any discussion about challenges of meeting either the component or the mass based targets specifically?

- How are different types of your members reacting to Senate Bill 54? Are you getting different feedback from large vs small, [other characteristics]?
    - Could you characterize which types of your member businesses are best and worst positioned/prepared to comply with Senate Bill 54 and why?

Minutes 15-35: Reuse and Refill Solutions

Goal: Understand opportunities and barriers for reuse and refill solutions in this industry, and how members are coping.

Questions:

- In general, where does the industry see opportunity for greater adoption of reuse and refill solutions and why?
    - Is there more focus on business to business or business to consumer?
- Which companies do you see leading on business to business or business to consumer reuse and refill solutions? Which types of solutions are they leaning into?
    - Are there specific pilots or programs that generated a lot of insight into what works / doesn't work? Is any of this info public or could you connect us to the folks who did the testing?
- What are the biggest barriers to reuse and refill solutions for industry?
    - Would you say the biggest barriers are mostly economic, consumer behavior, operational, available technology/systems, or other?
- Are there specific companies for whom reuse/refill is more challenging? Why?
- What enablers are your members looking for to support them in meeting these targets? Collaboration, standardization, funding, shared infrastructure, other? Any specifics are very helpful here.
- In general, in industry, where there are changes in price for packaging, are these absorbed by the business or passed on to the consumer or both?

Minutes 35-50: Other Source Reduction Strategies

Goal: understand barriers and enablers for other source reduction efforts and how members are coping.

Questions:

- Which other types of single-use plastic source reduction strategies do your members see as having the greatest opportunity for further reductions? Lightweighting, elimination, format shifts, concentration, etc.
- For your member businesses, which of these strategies tends to be the most cost effective?

- What are other pros and cons of these source reduction strategies in your industry context?
- Are there companies that have already done a lot in this area that might have data to share about what they have been able to accomplish?

50-60 minutes: Wrap Up and Final Thoughts

Goal: capture unsolicited insights and identify next steps.

Questions:

- Anything else we haven't talked about yet that we should have asked you? Any other thoughts to share?
- Does your organization capture data from members that could be shared in aggregate to support the analysis this project is doing?

End of interview. Thank the participant.

Interview Summary – N13

List of Food Service Ware, Packaging Types, or Systems Discussed: single-use plastic, reusable, and compostable cups; reusable food trays.

Key Insights / Learnings

- Early adoption and leadership in reuse: Smaller sports venues (15,000-20,000 seats) are leading the way in implementing reusable cup systems, with pioneers like the Portland Trailblazers and Crypto.com Arena achieving 100% reuse. Larger venues like NFL stadiums are slower to adopt due to limited event frequency and operational scale.
- Los Angeles 2028 Olympics preparation: N13 is building infrastructure and momentum for reuse systems ahead of the Los Angeles 2028 Olympics, with projections estimating 1.4 million reusable items used daily across all venues – stadium specific data and projections are pending internal clearance to be shared with our team.
- Innovative source reduction
  Pilots: Beyond reusable cup programs, N13 members are testing reuse and reduction strategies like powdered condiments (e.g., Get Sauz), reusable food trays (e.g., Lotus Center), and buy a cup refill programs (e.g., State Farm Arena).

Key Opportunities Identified

- Reuse gaining momentum in smaller venues: 15,000-20,000 person arenas are adopters. There are a lot more options to try things because they have events much more often.
- Reaching the corporate sector: Levy, Coca-Cola, and others funding own pilots in clubs and similar spaces.
- Policy shifts momentum; example: San Francisco was pushing reuse and when the policy was stopped, everyone stopped converting to reuse except San Francisco Giants.

Key Barriers Identified

- Operators make the call: more reuse buy in from concessioners, but driven by operators.
    - Golden state warriors, San Francisco Giants are thinking about reuse but unless operators give the okay nothing will change.
- Operations: Storage space, concession feasibility, age of venues, can you move cups in and out every day? (and venues realized not much different than single-use plastic).
- Cost: makes people hesitant and one of the first discussions, but most stadium/arena owners aren't fully against reuse.

- Source reduction barrier: Venues adopting bottles and cans over dispensers, becoming less common because no staff needed; can grab bottle and pay on camera with no interactions.
- Safety concerns: a priority in sports. Example: you rarely see venues give bottle with cap. Would have to limit options that could be used as a projectile like a reusable metal cup, resort to lightweight reusable plastic ones.

Key Data Point Provided in Interview

- No venue is setup for washing; all using third party vendors but could use Germany as a model to change this.
- Various use models: r.World charges nonreturn fee; Bold has no fee; some venues purchase own cups and pay for washing.

Additional Notes

- They classify venues as adopters, pilots, and leaders. Portland Trailblazers first to launch reuse at venues, Crypto.com arena also 100% reusable cups. First to market model venues.
- N13 setting up infrastructure; trying to foster reuse for Los Angeles 2028 Olympics.
- More momentum in smaller venues: 15,000-20,000 person arenas are adopters. There are a lot more options to try things because they have events more often. Easier than 85,000 National Football League games that only have eight to nine home games.
    - National Football League last to adopt, smaller leading the way, MLB (30,000-40,000) similar to National Football League but more games so testing out more pilots.
- Sports are crucial for reuse. Don’t usually have this type opportunity for reuse anywhere else. Mostly cup focused but some food ware and tray pilots in VIP and club areas.
- State Farm Arena can buy cup and have unlimited refills with fountain machines everywhere.
- Source Reduction: Have different members using efficiency plus reduction play. Get Sauz bulk condiments are powder instead of ketchup bottles; can do mustard and barbeque. Not too different from sending syrups for Coca Cola.

Interview Summary – N16

List of Food Service Ware, Packaging Types, or Systems Discussed: quick service restaurants, single-use plastic options, reusable cups and containers.

Key Insights / Learnings

- Reuse/Refill adoption remains low: Few restaurant chains are leading on reuse/refill systems; even pilots from major players like [restaurant] have struggled, making others hesitant to invest without clearer benefits or shared infrastructure.
    - Quick service restaurants are especially resistant due to strong brand identity in packaging (e.g., fry containers, branded cups). Changes often create operational, food waste, and marketing challenges.
- Petaluma Project seen as cost prohibitive: Some chains found the cost of joining the Petaluma reusable packaging initiative too high (e.g., $80,000 or more), in addition to product costs with unclear returns, limiting participation and scaling.
- Concern over change: N16 wondering what they are going to get out of Senate Bill 54 and complying? What can they sell to supervisors/executives to justify the switch?

Key Opportunities Identified

- Some pilots happening within bigger partners, but N16 staff member not aware of specific solutions being tested.
- Need to show restaurants/brands what they could get out of converting to reuse/refill and where it is going, potential to address whole group.
- Shared infrastructure would be very useful.
- Funding assistance? Is there funding available to offset costs.

Key Barriers Identified

- Competitive market means all companies responsible for their own roles, need to focus on ways to outcompete at the end of day (reduce prices, labor costs, etc.).
- Cost of the conversion.
- Lack of existing and shared infrastructure.
- Brand identity is heavily tied to packaging: companies don’t want to alter that.
- Some brands have specific departments for every task, but very rare as it’s usually less people trying to do more. Number of factors and changes being addressed with brands all at once makes the messages confusing.
- Costs often get passed onto customers. Restaurants are usually elastic, but some cannot take the hit of price change.

- Example: While innovation is at a margin, don't know how would do a reusable clamshell for something like a hamburger in the United States culture.

Key Data Point Provided in Interview

- Concerns on the tradeoff of labor, adding 15-30 minutes a day of cleaning reusable dispensers/etc. can get expensive. Will be different brand by brand.

Additional Notes

- N16 indicated that producers are confused and frustrated. National brands need to know where they do what and how to comply. Other brands are wondering if they actually need to comply with changes or just take the hit of additional fines and remain the same.
- **Reactions to reuse/refill by category**
    - Quick service restaurants: so much of brand tied into packaging it is hard to commit to changing. Example: a McDonald cups vs Burger King. Marketing does not want to make a change. Fries, for example, need a certain size of potato to fit properly in the fry container, leads to even more food waste.
    - Factor in a certain percentage of reusable food service ware being removed/lost (example in Petaluma when cups left the city).
    - Fast casual: Less brand ID tied to food service ware, but still try to use it to separate from one another (example: Cava vs Chipotle bowl). Pressed fiber bowls are 30% cheaper/less material than other options.
- **Source reduction**
    - Lightweighting, [restaurant] switched to primarily paper packaging, [restaurant] moved away from polystyrene.
    - N16 staff member doesn't know much about removing sachets (example ketchup packets to pump). Some restaurants have changed, but others have been using condiment sachets forever, so it is harder to change.
- Food/product manufactures concerned about overhauling supply chain vs switching to reusable service ware - watching how it is playing out with members as Circular Action Alliance gets closer.
- If opportunity to engage on specifics of where/how/why burden and funding for fees with members would help. Many are just trying to get the basics done, don't want to drastically uproot and change operations.
- Some communication with producer responsibility organization on Circular Action Alliance, but many factors in play.

Interview Summary – N23

List of Food Service Ware, Packaging Types, or Systems Discussed: business to business supply chain systems (pallets, bulk bins, containers, trays, packaging), reusable pallet wrap, garment hangers/security tags.

Key Insights / Learnings

- Third party poolers are essential players, owning and managing reusable packaging assets, offering sustainability metrics, and supporting logistics for suppliers and retailers.
- Reusable pallet wrap is a growing area of interest, driven by Senate Bill 54 and the need to reduce overused single-use stretch film. Companies are pioneering solutions, but standardization and return logistics remain challenges.
- Reusable packaging has strategic return on investment potential but requires upfront investment, infrastructure coordination, and policy alignment. Emphasis should be placed on systems change over material swaps (e.g., replacing corrugated cardboard with durable, trackable assets). Garment hangers and reusable retail accessories are a niche area with emerging interest.
- Aim to reduce labor and cost requirements in warehouses by changing to automation ("dark warehouses") using radio frequency identification on durable materials, automated tracking (of packaging and products), and digitized inventory systems.

Key Opportunities Identified

- There are still a lot of growth opportunities in business to business reuse, as still in a linear economy. Just how things have been done, not enabling a change to reuse - look to minimize product variability and standardize sizes/dimensions. Reusable packaging for finished goods/produce further along.
- Supply chain reuse could be extended and leveraged to support business to consumer infrastructure. Could take snapshots of metrics from companies like [logistics/washing] to customers like [retailer] to show how much they are saving/waste they are reducing.
- Improve durability of reuse to digitize the supply chain to have access to inventory of packaging as well as merchandise. Reusables to get the job done with a return on investment and even payback to create new volume. Will not add a radio frequency identification tag to a cheap single-use plastic, but would add it to something durable. Reusable packaging could come in and operate in this type of facility. Automated tote potential.

Key Barriers Identified

- Labor can get expensive, reduced through use of automation in wash centers. Sensors can scan for bacteria/other things, so no manual checks are needed. Anything to reduce costs and improve development; will try to get to 10-15 cents per unit cost for washing if possible.
- Cafeterias and reusables: small washing machine cannot keep up with products, need to invest in tech to speed up washing while reducing costs.
- Water limitations so choosing location with water access, some even recycling used water/greywater to help conserve.

- Get more stats on industry standard metrics/values. Other variable costs: sorting, washing, transportation to/from event locations. Transportation is usually most expensive portion.

Key Data Point Provided in Interview

- Two 10 hour shifts or three 8 hour shifts for washing at largest facilities during peak time; would try to get to 10-15 cents per unit cost for washing if possible.

Interview Summary – N37

List of Food Service Ware, Packaging Types, or Systems Discussed: beverage, food ware, personal care - other packaging types.

Key Insights / Learnings

- Senate Bill 54 is top of mind for activators, with film and flexible packaging seen as the hardest challenge for both recyclability and source reduction. Anybody that has a significant percentage of their portfolio in film totally focused on film.
- Many activators are not being able to do voluntary commitments (in theory should go beyond legislation); they expect compliance to spread beyond California, influencing other states.
- Companies see Senate Bill 54 as ambitious to the point of unachievability, prompting likely lobbying or litigation efforts.
- Portfolio mix drives perspective: brands worry about consumer engagement, retailers about private labels, municipalities about infrastructure.
- Harmonization between brands and retailers is viewed as the most critical enabler for reuse/refill success.
- At high level, regarding actions and investments to get to target, a constraint is the lack of consensus across the value chain.

Key Opportunities Identified

- Beverages represent a major reuse/refill opportunity, with interest in return and refill systems.
- Prepared foods (produced in house) are easier to shift toward reuse.
- N37 can position itself as a hub for harmonization and precompetitive collaboration to accelerate compliance.
- Consumer willingness to engage with reuse/refill solutions is emerging, especially where systems are simple and standardized.

Key Barriers Identified

- Lack of infrastructure for reuse/refill, with companies reluctant to fund it.
- Consumer safety and sanitation concerns.
- High retailer costs for in store refills. Brands would prefer in store refill but that’s a lot of training and floor space for retailers - causing some tension.
- Risk aversion: some companies are hesitant to take leadership roles due to potential shareholder or reputational pushback.
- Fragmentation in approaches/messaging creates consumer confusion.

Key Data Point Provided in Interview

- At least two-thirds of activators are directly or indirectly affected by Senate Bill 54.

Interview Summary – N41

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable water bottles; disposable, recyclable, and compostable food ware.

Interview Summary

Key Insights / Learnings

- Regulatory complexity and contradictions: N41 sees Senate Bill 54 implementation as unworkable, with contradictory overlap from other bills (e.g., Assembly Bill 1201, Senate Bill 343), unclear health department roles, and no statutory preemption. They emphasize the need for streamlined statutes and flexibility to make compliance feasible.
- Retailer concerns and lack of inclusion: Businesses are alarmed by fee structures (citing Oregon's model), labor costs tied to reuse, and the absence of organization's representation on advisory boards or work groups. They feel excluded from shaping rules that significantly impact them, creating mistrust and fear of litigation.
- Support for sustainability but need for pragmatism: While businesses are already pursuing source reduction and reuse initiatives (e.g., textiles, personal care), N41 stress that consumer education, realistic cost considerations, and recognition of existing efforts must come before mandates. They want policies that enable compliance without driving businesses out of the market.

Key Opportunities Identified

- Advancing source reduction and reuse in select sectors: N41 noted that personal care and textiles present viable reuse opportunities, with some businesses already running take back programs (e.g., make up) and dissolvable products emerging.
- Building on existing sustainability efforts: Many businesses are already moving toward source reduction and sustainability initiatives; the opportunity lies in aligning regulations to support and amplify these efforts rather than penalize them.
- Consumer education as a foundation: A strong opportunity exists to focus first on educating consumers about reuse and sustainable practices, creating cultural readiness before imposing regulations.
- Policy streamlining and harmonization: If statutes can be better coordinated and streamlined, there is an opportunity to reduce compliance burden, make implementation more workable, and improve buy in from businesses.

Key Barriers Identified

- Regulatory contradictions and complexity: Multiple overlapping statutes (e.g., Senate Bill 54, Assembly Bill 1201, Senate Bill 343) and varying health department interpretations create conflicting requirements without clear preemption, making compliance confusing and costly.
- Exclusion from decision making: N41 feels that voices of affected businesses are not represented in implementation processes.
- Financial and operational strain: Concerns about high fees (with Oregon cited as a warning), labor requirements for reuse systems, union opposition, and

consumer cost pass through raise fears that businesses may not survive under current structures.
- Lack of trust and collaboration: Advisory board dynamics are viewed as politically charged and adversarial, leading businesses to disengage and avoid direct participation, which further hampers constructive problem solving.

Key Data Point Provided in Interview

- None

Additional Notes

- Perception of “bait and switch”: N41 feels that the spirit of the original bill has shifted dramatically in implementation, fueling distrust.
- Litigation risk: If lawsuits against the Oregon program succeed, similar legal challenges are expected in California.
- Producer responsibility organization concerns: The Producer Responsibility Organization is not from California (or the United States) and is seen as lacking understanding of the state’s unique regulatory and business landscape.
- Consumer training gap: N41 believes reuse adoption is hampered by the fact that consumers have not been adequately prepared or educated for system changes.
- COVID impact: The pandemic shifted consumer and regulator attitudes around food safety, further complicating reuse adoption in food sectors.
- Desire for recognition: N41 emphasized that many businesses genuinely want to comply and are already taking steps - they seek acknowledgment rather than criticism.

Reuse, Refill, and Logistics Program Operators and Managers

Interview Guide: Reuse and Refill

Background Context:

Scope of Services

[Add – check company website, news]

- What model(s) do they operate?
- Any operational details shared publicly.

Other Relevant Background

[Add – news search, etc.]

- Partners noted publicly.
- Mentions in the news.
- Other notable items.

Interview Questions:

Minutes 0-5: Introduction & Consent

- Introduce interviewers and purpose of the study.
- Confirm participant's role and title / purview.
- Explain how information will be used (anonymously unless otherwise agreed).
- Confirm consent to take notes.

Minutes 5–20: Understand Your Operations Today

Goal: Understand the elements of your operations today.

Questions:

For closed loop food service ware program operators:

- For your work in closed loop settings, can you confirm what services you are offering? Who are your customers?
- How do you charge for your services? What are your fees? Do you have any other revenue sources?
- Do you use tracking technology for your reusable items? Is it licensed (which one?) or did you build it yourself?

- What is your approach for collection of used reusable items?
- What is your approach for washing and operations? Is it on site or off site? What equipment do you rent, own or rely on through partners?
- What types of products or packaging do you work with (primary items and secondary transport packaging)? What materials are they? Has this changed over time and why?
- What are the typical event sizes (e.g., number of attendees) you are serving? What is the context for these events typically, e.g., gated music festival, non-entry-controlled street fair, indoor event, etc.?
- Is there any deposit or incentive for the end users to use the reusable items?
- What is the range of reusable item volumes you are handling at events?
- What geography do you serve?
- How many full time paid staff do you employ? Volunteers?

For open loop food service ware program operators:

- For your work in open loop settings, can you confirm what services you are offering? Who are your customers?
- How many customers (e.g., restaurants, schools, cafeterias, etc.) do you have?
- What geography do you serve?
- Do you partner with any other companies or organizations to conduct operations? (excluding sales partnerships here)
- How do you charge for your services? What are your fees?
    - Do you have any other revenue sources?
- Do you use tracking technology for your reusable items?
    - Is it licensed (which one?) or did you build it yourself?
- What is your approach for collection of used reusable items? What kind of collection container do you use? What kind of vehicles do you use?
    - Confirm whether tech-enabled or not.
- What is your approach for washing and operations? Is it on site or off site? What equipment do you rent, own or rely on through partners?
- What types of products or packaging do you work with (both primary items and secondary transport packaging)? How many distinct options? What materials are they?
    - Has this changed over time and why?
- Is there any deposit or incentive for the end users to use the reusable items?

- What is the range of reusable item volumes you are handling per month?
- How many full time paid staff do you employ? Volunteers?

Minutes 20–45: Understand Operational Details

Goal: Capture data.

Questions:

- What participation rates do you typically experience?
- What are your typical return rates? What have you noticed drives variation in the return rates?
- How many items per hour are you able to wash? Sort? Inspect and pack?
- If applicable, how long did it take to install washing line?
- How much storage space do you need? For example, per 1,000 plates or bowls or cutlery or cups?
- How much additional inventory do you need to account for seasonal or event size variations?
- How many times can an item typically be used before it fails inspection and has to be replaced (just from wear and tear, not specific damage)?
- Do you track unit cost, for example how much does it cost to deploy one reusable item for one cycle?
- Would you be able to share data on key cost elements that would be used anonymously to inform modelling, such as:
    - Cost to you per reusable item for each type of item.
    - Cost of secondary packaging such as reusable totes.
    - Cost of reverse and forward logistics (on a unit basis if possible).
    - Cost of washing equipment and space (on an annual basis or a per unit basis).
    - Cost of energy and water for washing - ideally on a per unit basis or relative to volume numbers e.g., $X per month when processing 10,000 units.
    - Cost of labor and levels needed for different roles, e.g., staffing for collection vs staffing for washing, also in volume terms if possible.
- Do you track waste reduction, cost savings, or other environmental impacts? What data can you share?

Minutes 45–55: Understand Barriers and Enablers

Goal: Understand barriers and enablers.

Questions:

- What do you see as the biggest barriers to scaling reuse/refill solutions like yours? What have been your biggest challenges?
- What types of support would be most helpful for you to be able to offer solutions at a larger scale?
- Are there existing policies that help or hinder your program?
- What else would it be helpful for us or for CalRecycle to understand?

55–60 minutes: Wrap Up & Final Thoughts

Goal: Capture unsolicited insights and identify next steps.

Questions:

- Is there anything else that you would want us or CalRecycle to understand about reuse/refill or other source reduction approaches from your perspective?
- Are there any misconceptions you'd like to correct?
- Are there others at your company or in your supply chain we should speak with?
- [If they will share data] We will be following up with a data request via email.

End of interview. Thank the participant.

Interview Guide: Logistics

Background Context:

Scope of Services

[Add – check company website, news]

- What model(s) do they operate?
- Any operational details shared publicly.

Other Relevant Background

- [Add – news search, etc.].
- Partners noted publicly.
- Mentions in the news.
- Other notable items.

Interview Questions:

Minutes 0-5: Introduction & Consent

- Introduce interviewers and purpose of the study.
- Confirm participant's role and title / purview.
- Explain how information will be used (anonymously unless otherwise agreed).
- Confirm consent to take notes.

Minutes 5–20: Understand Your Operations Today

Goal: Understand the elements of your operations today.

Questions:

- Can you confirm what services you are offering and who your customers are?
- Are there any other fee or subscription models aside from what is on your website? What is most common subscription level?
- How many customers do you have?
- What geographies do you serve?
- What drives the differences in business to business vs business to consumer fees?
- It looks like you partner with different companies depending on the geographic market, what types of companies/organizations do you partner with to conduct your operations?
- Do you have any other revenue sources?

- Do you use tracking technology for any of your assets?
    - Is it licensed (which one?) or did you build it yourself?
- What is your approach for collection? What kind of collection containers do you use? Transport containers? What kind of vehicles do you use?
    - Confirm whether tech-enabled or not.
- What is your approach for operations? Do you sort or consolidate? Any other operations? Is it on site or off site? What equipment do you rent, own or rely on through partners?
- What types of products or packaging do you work with (both primary items and secondary transport packaging)? How many distinct options? What materials are they?
    - Has this changed over time and why?
- To help us get a quantitative idea of what it takes to operate this service:
    - How much volume and/or weight do you handle monthly?
    - How many full time paid staff do you employ? Any volunteers?

Minutes 20–45: Understand Operational Details

Goal: Capture data.

Questions:

- What participation rates do you typically experience?
- What are the key metrics you think we should consider when thinking about how to translate what you do to?
- Do you track unit cost? By weight? By volume?
- Would you be able to share data on key cost elements that would be used anonymously to inform modelling, such as:
    - Cost to you per item (or by weight/volume)?
    - Cost of secondary packaging such as reusable totes.
    - Cost of reverse and forward logistics (on a unit basis if possible).
    - Cost of equipment and space (on an annual basis or a per unit basis).
    - Cost of energy and water - ideally on a per unit basis or relative to volume numbers e.g., $X per month when processing 10,000 units.
    - Cost of labor and levels needed for different roles, e.g., staffing for collection vs staffing for washing, also in volume terms if possible.

- Do you track waste reduction, cost savings, or other environmental impacts? What data can you share?

Minutes 45–55: Understand Barriers and Enablers

Goal: Understand barriers and enablers.

Questions:

- What do you see as the biggest barriers to scaling solutions like yours? What have been your biggest challenges?
- What types of support would be most helpful for you to be able to offer solutions at a larger scale?
- Are there existing policies that help or hinder your program?
- What else would it be helpful for us or for CalRecycle to understand?

55–60 minutes: Wrap Up & Final Thoughts

Goal: Capture unsolicited insights and identify next steps.

Questions:

- Is there anything else that you would want us or CalRecycle to understand about what you do?
- Are there any misconceptions you'd like to correct?
- Are there others at your company or in your supply chain we should speak with?
- [If they will share data] We will be following up with a data request via email.

End of interview. Thank the participant.

Interview Summary – P4

List of Food Service Ware, Packaging Types, or Systems Discussed: plastic transport totes, reusable Sets (cups, plates, bowls, utensils).

Key Insights / Learnings

- Their model is highly labor driven, intentionally creating jobs rather than automating processes - staff paid for washing, monitoring return stations, and educating attendees. Partnerships with restaurants and commissary kitchens support off hour dishwashing.
- Pricing is per item ($1 for dishes, $0.25 for utensils), with logistics and dishwashing fees added depending on location. Electric vehicle transport is used locally, and expansion plans hinge on finding additional dishwashing hub contracts with local restaurant partners.
- June-September is busy season, with year-round closed loop return rates staying at over 88% with no deposits, some events offer incentives.
- Growth: Have grown to 10 times the size of product stock since 2023 and still work out of a commissary kitchen with 8x8 storage unit.

Key Opportunities Identified

- Work with cities, counties, and tourism boards who will promote in sustainability aspect. Make it the norm for event coordinators to use reusables and certain event spaces.
- Looking for large reoccurring events like stadiums, farmers markets.

Key Barriers Identified

- Was against law to have reusables at open door festivals in parts of California before health department changed this.
- Many government agencies/cities and nonprofits putting on events using single-use plastics struggle to prioritize limited funding for something new like reusables. Instead, bring in consumer social obligations and events that prioritize sustainability so organizations cannot say no to making the switch.

Key Data Point Provided in Interview

- Largest weekly event is farmers market 500-800 people every Saturday with a return rate of 99%. Event uses 1,000-2,500 reusable items with crowd using about 400 reusables minimum.
- Largest single event saw 70.8% of waste diverted at 15,000 person event.
- Pricing is $1 per plate, bowl, cup, and 25 cents per utensil. Free pickup and drop off locally, using an electric vehicle otherwise $60 for transportation. $80/hour for waste reduction management and $60/hour for reusables.

- Five to ten part time staff per week depending on event size, make between $16.50-$20/hour.
- Return rates: 95% at events with no deposits, lowest was 88%.
- Looking to move from 1,000 to 2,000 food service ware sets in 2025.

Interview Summary – P6

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable food service ware (all); returnable reusable beverage containers.

Key Insights / Learnings

- High volume, centralized venues offer the best early opportunities for scaling reuse, especially stadiums, festivals, food halls, universities, and hospitals, where consumption is immediate, and logistics can be centralized. These environments reduce the complexity and cost of distributed reuse systems.
- City led interventions can derisk reuse for service providers by investing in shared inventory and leveraging permitting authority to embed reuse infrastructure at public events and city owned facilities. P6's model includes a blanket contract with reuse for service providers and shared cost structures between vendors and P6.
- Infrastructure and ongoing operations remain major challenges, particularly for washing logistics and labor in food halls or open loop settings. Cities without existing reuse service providers may need to seed initial infrastructure investments.
- Material performance and perception matter: Melamine ware performs well due to its durability and "nondisposable" feel, while polypropylene suffers from higher loss rates. Safety concerns and washing standards also factor into material choices.
- There's concern Senate Bill 54 could incentivize brand centric, siloed reuse systems unless mechanisms, like deposit return schemes and cross brand infrastructure incentives, are embedded to support shared, public serving systems. Cities can play a vital role in guiding system wide coherence and accessibility.

Key Opportunities Identified

- High volume, on site consumption venues, such as stadiums, festivals, universities, and hospitals, offer strong early potential for reuse due to their centralized operations, immediate consumption, and large scale needs. These settings allow for efficient distribution, collection, and reduced reliance on disposable packaging.
- Food halls represent a bridge between closed and open loop systems, combining proximity, scale, and repeated consumer visits. While operational challenges (like lack of dishwashing staff) exist, they offer a promising environment for piloting reusable service ware at scale.
- City owned inventory and infrastructure can catalyze reuse adoption by reducing upfront costs for reuse service providers and enabling consistent deployment across events. P6's provision of shared inventory (10,000-15,000 items per type) derisks participation and fosters vendor buy in.

- Deposit return systems, especially those integrated with payment systems, can increase return rates and standardize reuse across vendors and event types. International examples illustrate effective models for United States adaptation.
- Public institutions and permitting mechanisms offer leverage for cities to embed reuse in daily operations and long term planning. Libraries, parks, and city buildings can serve as touch points for return infrastructure, and event permitting can require or incentivize reuse integration.

Key Barriers Identified

- Operational complexity in open loop settings limits reuse adoption. In food halls and public spaces, lack of dishwashing capacity, staffing, and coordinated infrastructure makes it difficult to implement and sustain reuse systems without ongoing city or third party support.
- Material limitations and performance tradeoffs pose challenges. Polypropylene items have higher loss rates due to their disposable appearance and lower durability, while melamine, though more robust, raises health concerns around formaldehyde and cannot be heated above 180°F - limiting its versatility.
- Fragmented authority and limited enforcement capacity hinder cities' ability to mandate reuse. While cities can influence through permitting or landlord roles, enforcing compliance without consistent funding or onsite presence is challenging.
- Risk of brand driven, siloed systems under Senate Bill 54 may lead to isolated, proprietary reuse models that lack shared infrastructure or public benefit. Without state level guidance and incentives for collaborative systems (e.g., through deposit return schemes or Senate Bill 54 implementation), broader scalability may be lost.

Key Data Point Provided in Interview

- The inventory of reusables owned by the city includes lots of different kinds of items (cups, plates, bowls, utensils, boats, portion cups, etc.), numbering 10,000-15,000 of each item in a range of materials.
- Reuse program time horizon: P6 expects a three to five year learning and playbook development phase to test materials and operational models and identify replicable solutions.
- Data from a festival in [Northern European Country] visited by P6 staff member with reusables used exclusively:
    - approximately 100,000 attendees.
    - 50 food vendors using reuse systems.
    - Featured deposit return scheme style system: €1 deposit, returned via physical coin.

- All vendors had credit card terminals for deposit transactions.

Additional Notes

- There is concern that consumer brands may create siloed reuse systems that prioritize their own products, missing the chance to build shared infrastructure that enables broader, public serving reuse.
- California has opportunity to leverage deposit return schemes in a synergistic loop.
    - Building in a forcing function in terms of infrastructure colocation and incentivizing producers to make investments that leverage synergistic potential.

Interview Summary – P9

List of Food Service Ware, Packaging Types, or Systems Discussed: direct to consumer meal and grocery delivery, on site food service packaging, open loop food service packaging.

Key Insights / Learnings

- Three types of business to business and business to consumer reuse businesses are profitable for P9 and either at cost parity or up to 30% savings for their customers compared to single-use plastic packaging alternatives. These programs could scale immediately with low interest loans to serve the whole state of California.
- There is potential for reuse, in 20-30% ballpark, for back of house packaging. It typically carrying heavy things, so it is very durable (e.g., five gallon buckets holding chopped veggies). Right now, this is only profitable because it is piggybacking on the front of house food service items, but could be its own business with enough volume.
- Open loop reuse systems have potential but there are key things to solve.
    - Cost of goods for the reusable items has to be low because no one wants this on their balance sheet (though perhaps this is a role for government?) - this is a barrier for using any material more expensive than plastic, and
    - The additional logistical cost for small deliveries and many collection points can ruin the profitability yet are needed for restaurant and consumer behavior. Likely need to decouple and have distribution be part of other distribution (e.g., Sysco) and then have collection be done by a waste hauler or recycler.

Key Opportunities Identified

- P9 sees CalRecycle's lower interest loans as a huge enabler. They are offering 3-4% interest whereas market rate is 7-8%. This gets P9 to profitability much faster than a commercial loan and would be a huge help in expanding reuse infrastructure.
- Policy can be an enabler just by bringing attention to the need for reuse /P9's service.

Key Barriers Identified

- Awareness: people don't know that they can save money, still think it is too expensive. Just getting attention from the right people and convincing them it saves them money is the hardest thing right now. Everyone is still thinking about Reuse 1.0 where reuse was more expensive.
- Related to above, but navigating bureaucracy within companies to get to decision makers and get them to buy in has been really hard.

Key Data Point Provided in Interview

- For two business models, P9 provides reuse as a service to their customers either at cost parity or achieving up to 30% savings compared to single-use plastic alternatives. Average savings are 10%.

Interview Summary – P12

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable and single-use pallet wrap, reusable containers, pallet rental systems.

Key Insights / Learnings

- Reusable pallet wraps offer major waste and cost reduction: used by clients like [product manufacturer] and [restaurant] Europe, can be reused over 500 times with minimal damage, breaking even after just 33 uses - ideal for internal logistics and closed loop systems.
- Rental model launch in 2025-2026 to expand access: The company is preparing a rental model to help clients adopt wraps without large capital investment, aiming to reach larger markets and improve scalability with tracking integration.
- Manufacturing control enables quality and customization: Owning 100% of its manufacturing allows P12 to offer custom sizes, competitive pricing, and consistent quality unmatched by competitors.
- Adoption barriers include labor shifts and return logistics: United States companies are more hesitant than European firms due to challenges like training workers, storage, and wrap retrieval - though wraps are easy to roll and deploy in under a minute.
- Tracking and washing managed externally: radio frequency identification integration is in development, with clients preferring their own systems. Wraps are professionally cleaned by third parties; washing isn't typically a concern for clients like [product manufacturer].

Key Opportunities Identified

- Educate companies on benefits of making the switch to reusables.
- Government regulations to limit plastic or pay fees.
- P12 able to customize pallet wrap solutions for clients.
- Planning for the rental model as soon as 2025-2026; already have a set of interested clients.
    - Renting can be an expense while purchasing is a capital investment. Rental/tracking will open up new markets with big companies.

Key Barriers Identified

- Extended producer responsibility
- Management of reusable wraps: requires more storage space, retrieving of product, employees need to know how to use it.

Key Data Point Provided in Interview

- Company manufacturing is over 20 years old, focus on reusable packaging and pallet wraps. Owns 100% of manufacturing.
- One wrap can be used at least 500 times.
- [product manufacturer] is biggest customer, saw damages of only 10% after five years. Big scale of internal shipment (between manufacturing and distribution) saves money and plastic, can reduce waste to move pallets from one warehouse to another.
- Breakeven: if wraps reused 33 times; it takes one minute to put wrap on a pallet.

Additional Notes

- [restaurant] in Europe used their products for over three years.
- Creating pallet wraps for a cruise line and needed waterproof cover since the pallets are uneven.
- Very young industry with few competitors that can match price and quality.
- Three models: polyester netting, linen, and nylon.
    - Clients are not asking about end of life cycle/recyclability yet.
- Washing is all outsourced if needed.
- Currently no major clients in California but [retailer] has contacted them.

Interview Summary – P15

List of Food Service Ware, Packaging Types, or Systems Discussed: totes, return bins, reusable cups, plates, bows, utensils, solar powered return bin.

Key Insights / Learnings

- Global track and trace reuse platform active in the three countries, offering serialized reusables for events, campuses, and open/closed loop settings (Learned a lot from Petaluma Project) Supports local washing, logistics, training, and return infrastructure with flexible pricing models (subscription, deposit, or per unit fee).
- Flexibility translates to return bin options: Adapts to existing infrastructure or designs custom solutions (e.g., solar bins in [southeast Asian country]). Emphasizes smarter infrastructure with scanners/tablets and signage. Custom stations funded by clients like [real estate company].
- Handles high volumes across markets: Recent peak at 220,000 units/month. Return rates range from 86-98% depending on setting - higher in closed loop, lower in open loop or loosely managed events. Offers a buffer policy for unreturned items.
- Washing is decentralized, using third party services or rented kitchen spaces. Processes 7,000 or more units/hour with small teams. Cost per unit: approximately $0.50 for polypropylene, $0.75-$1 for stainless steel, inclusive of sanitation, quality assurance, transportation, and reporting.
- Vision to become a universal “Stripe of reuse”: that can support any branded reusable (e.g., [cafe]) through one traceable platform. Still cracking the code on open loop reuse, but sees major opportunity in food service and delivery waste systems.

Key Opportunities Identified

- Partner more with waste management, hitting same routes so help each other. They feel like if reuse comes in it will take away jobs when in reality it will fill gap or replace lost jobs.
- How to get federal/grant funding for washing and sorting/logistics hub. Need smaller distribution centers to expand.
- Hoping P15 can be the track and trace reuse platform to put any reusable in P15 system (stripe of reuse) but cater to organization appearance/marketing.
- In open loop get better return rates when work into existing infrastructure**,** can add tablets to make “smarter” to scan products.

Key Barriers Identified

- Who should pay for reuse: city vs business vs consumer, etc.?
    - What hindered Petaluma from continuing, after Next Gen stopped paying.
- Lack of collaboration: businesses working together because one organization doesn’t need to run whole system alone.
- Regulations can be helpful, but have not seen that yet as there is too much back and forth. Who is enforcing? Not enough public/corporate buy in to drive massive changes.

Key Data Point Provided in Interview

- Petaluma Project had city buy in, washing around 7,000 cups per hour. Subcontracted out washing to [reuse service provider] with 20 people needing to wash.
- Plastics dry in two to three hours or five to six hours depending on environment.
- 20 total product stock keeping units in system, stainless steel use is 30-60 cycles not because of safety because of cosmetic damage. Plastic minimum five uses, max 20.
- 86-98% return in open loop. If not returned in 30 days, charged $15-$30 for container.
- Closed loop: farmers market doesn't have people managing bins, 90%-97% return rate. More closed off events have higher return rates. No return is at loss of event coordinator but have buffer where P15 covers first 30, then they cover remainder.
- Open city systems in [North American Country] use 500-800 products per month, events are 5,000-8,000. June 2025 did 220,000 units.
    - Open city has different tiers of service, $30/month minimum gets services, training, signage.
- Transport product in black plastic totes with yellow/blue lid, can fit 200 plates or 200 bowls, 500 four oz cups, 400 ten oz cups, 300 twelve to sixteen oz cups, 250 eighteen oz cups, 200 twenty oz cups.

Additional Notes

- Worked a large scale concert series - events are chaotic/ hard to coordinate and they were not always prepared. Easy to work with overall as staff helped with collection and logistics.
- Next Gen tried to launch open city systems in San Francisco but around COVID so shut down.
- No standard set charge for closed loop, can either charge deposit for customers. Split model can charge customers for reusables and do not get deposit back. Or per cup/unit basis is 25-50 cents per item.
    - The organization gets to decide what cost model they want to input.
    - Trying to limit P15 getting turned away because of limited funding for reuse or too inconvenient to add new infrastructure.

Interview Summary – P18

List of Food Service Ware, Packaging Types, or Systems Discussed: stainless steel and glass cups, silicon lids.

Key Insights / Learnings

- P18 operates a low startup cost, tech-enabled reusable food service ware system with restaurants/cafes across multiple cities.
- All staff are part time and regionally based.
- Customers can return food service ware to any participating restaurant/cafe so P18 relocates product around once a month, but network is fairly stable because 90% of cups go back to restaurant/cafe of origin.
- Restaurants/cafes save between 50-200 cups per month, with restaurant/cafe retention high even in areas with limited funding/grants.
- Have an option for restaurants/cafes to be shipped product and received remote support from P18, way to expand reach.

Key Opportunities Identified

- Push dine in reusable option over single-use.
- Goal should be to get to 50% dine in and to go being reusables which helps save money after a small investment.
- Policy support, tracking legislation, gathering voices.
- Get the price of waste we currently generate properly reflected.
- More research like waste characterization studies with better data so people know where to focus reduction efforts.

Key Barriers Identified

- User adoption remains low when reuse is a choice, under 5% is not unusual.
- Adding a mandate, pricing signals, levers over time, or rewards programs don't always make a huge amount of difference.
- Consider training costs/time for the various reuse models.

Key Data Point Provided in Interview

- User base is customers who have downloaded the app, paid a onetime fee, and used QR codes at each cafe at site where cups are borrowed.
- Can borrow one to two cups at a time, no IDs, give approximately two weeks to return, do not charge unless over a month or did not hear from customer. Then charge $15 cup fee.
    - Return rates analysis: 97% within a month after extensions, varies between four to seven days.
- Promotions: Half of the locations have 25 cent discount; half of the locations have a 25 cent surcharge for a paper product. One cafe offers $1 discount.
- Product usage: Glass replaced yearly, approximately 20 times per cup. Stainless steel is only replaced if broken, approximately 500 times per cup. Silicon lids approximately 300 times per lid.

Additional Notes

- Reuse presents a great workforce opportunity, career builder in community education and outreach.

Interview Summary – P24

List of Food Service Ware, Packaging Types, or Systems Discussed: plastic, glass, and aluminum bottles.

Key Insights / Learnings

- Glass first approach: P24 focuses on glass containers due to food safety, consumer familiarity, and recyclability benefits. Glass avoids contamination, flavor transfer, and toxicity issues seen with plastics and aluminum (often plastic lined). Acidic products (e.g. kombucha, tomato sauce) perform better in glass. Returnable bottles currently average seven to ten uses, with coatings needing reapplication after that.
- Washing infrastructure needs: Bottle washing lines start at $800,000 for 10,000 per hour throughput, and scale upwards to $2 million dollars or more for higher capacity. All commercial systems are imported from European countries; there are no major United States manufacturers who meet standards for bottles. Washing requires internal/external systems, plus inspection units ($200,000-$500,000). Labor is most intense at unloading and repackaging stages, though automation reduces staffing at scale.
- Return logistics model: P24 leverages reverse logistics by backhauling returnables in trucks that would otherwise return empty. They currently pay approximately $0.10 per bottle to use distributor trucks. Pickup costs range from $2-$12 per stop depending on volume and location, with rural areas costing up to $0.18/unit. They are testing this model with five to six partners, aiming to aggregate 10-15 cases before pickup.
- Scale up timeline: P24 estimates it would take three to five years to fully launch a functioning reuse ecosystem in California, accounting for slow grant cycles, one to two years of facility setup, and current equipment delivery delays. Long term viability hinges on collaboration across producers, distributors, and policymakers.

Key Opportunities Identified

- Existing distribution models: many delivery trucks are 70% empty on way back, why not add pickup of other returnables.
- Make sure return sites are convenient and have inner operability, where consumers are already going/know how to use. Use return sites for cans/bottles for reusables?
    - Curb side pick up an option but causes high rates of breakage with glass.
- Flexibility in grants.
    - Bottle washer needs to purchase or lease a whole system, cannot do anything by itself.

Key Barriers Identified

- Looking at about five to seven years to scale up in California, slow grant processes, limited additional funding. Hesitant engagement.
- Consumer education: need statewide education.
- No one will get system right first try.
- Standardization, identifiable markings and return sites even outside California if possible. Aligned with global standards like PR3 (Global Alliance to Advance Reuse) is important to consumer engagement. Someone new in California should know what to do with same packaging.

Key Data Point Provided in Interview

- Haven't gotten to 50x uses because return rates need to be higher. After seven to ten uses, wax like coatings start to get washed off and need to be reapplied.
- Purchase Costs: 10 cents on low end for small bottles, 25 oz size about 30-60 cents production out the door depending on weight/visuals/quality.
- Washing equipment: 10 pieces per hour start around $800,000, including extra drying time capacity. $2,000,000 a piece for 20,000-50,000 bottle per units.
- Inspection equipment: If not done manually, $200,000-$500,000 per equipment unit. Should be infrared and optical to look for organic compounds and visual issues.
- Time: Could get a system going in three to five years in California efficiently. Equipment on a one year delay. One to two years to get facility setup. Logistics still leave it at five years.
- Labor: Two to three people for 5,000 unit/hour equipment and six to seven people for 50,000-60,000 per hour equipment. More repackaging requires more staff; can increase automation to decrease labor.

Additional Notes

- Bottle bloom: A haze can develop on bottles stored too long in a warehouse. Mineral haze makes it unusable and must be recycled. Reclaiming existing glass is a market. Hundreds of thousands bottles lost before used.
- Most companies will crush bottles to drain liquids, now hazardous waste.

Interview Summary – P25

Key Insights / Learnings

- Service model and reach: P25 serves 150,000 or more households, primarily single family homes, via biweekly residential pickups ($14-23/month) and a growing nationwide mail in program. Operates 10 warehouses with approximately 200 staff, using cargo vans (some electric vehicles) and vetted partners for processing.
- Materials and Impact: Collects hard to recycle items; achieves approximately 97% diversion with 99% customer retention and 20-30% participation rates.
- Economics: Breaking even at approximately 8,000 customers per facility; cost drivers include contamination, route density, and high labor/operations costs.
- Barriers: Franchise contracts, market resistance, contamination, drop off accessibility.
- Opportunities**:** Mail in expansion, partnerships (e.g., refill delivery), supportive policy frameworks, and capital for reuse/refill infrastructure.

Key Opportunities Identified

- Mail in service expansion: Scaling P25 to broaden access nationwide, enabling service in lower density areas and overcoming geographic limitations of door to door collection.
- Partnership integration: Leveraging last mile routes for dual purpose trips to add customer value and reduce environmental impact (e.g., delivering refill products while collecting materials).
- Reuse/refill infrastructure: Exploring capital investment in washing, inventory, and logistics systems to enable broader participation in reusable packaging models.
- Policy leverage: Advocating for inclusive recycling/reuse policies and tapping into supportive legislation to expand service areas.
- Market diversification: Partnering with consumer packaged goods brands and refilleries to pilot alternative collection and product delivery channel.

Key Barriers Identified

- Route Density Requirements: Door to door collection only viable with high density customer bases; low volume routes (less than 80 stops) are not cost effective.
- Contamination and Costs: Material contamination increases processing costs, especially for plastics, and reduces operational efficiency.
- Market Access Limitations: Resistance from some municipalities and restrictive franchising structures with long term contracts hinder expansion.

- Operational Challenges: Drop off models face accessibility barriers for residents; managing reuse/refill inventory and washing logistics remains unresolved.
- Capital Constraints: Scaling reuse/refill systems requires significant upfront investment in equipment, facilities, and process development.

Key Data Point Provided in Interview

- Liquid products are easier to reuse/refill because of more standardized washing/filling equipment.
- Serves greater than 150,000 households across the United States (120,000 door to door customers).
- Monthly fee: $14-23 (most common is $18 for biweekly pickups).
- Collection frequency: Biweekly; routes average 130-180 stops/day on 10-hour shifts.
- Participation rates: 20-30% in top performing areas; 99% retention rate; 78% net promoter score.
- Breakeven point: approximately 8,000 customers per facility.
- Facilities and staffing: 10 warehouses, approximately 200 staff, all W-2; unionized in four markets.
- Fleet: Full size cargo vans, some electric vehicles.
- Material volumes: three to four lbs per pick up; by volume, mostly plastic film/multilayer plastics; by weight, mostly textiles.
- Diversion rate: 97% diversion, 3% landfill.

Additional Notes

- Works with approximately 220 vetted partners for processing and redistribution (e.g., Trex, food banks, shelters).
- Noted TerraCycle's brand specific approach as a barrier to accessibility.
- Consolidates and screens all material at warehouses (no "processing" or "sorting" as at material recovery facilities; primary processing is baling).
- Sees opportunity to integrate refill delivery into existing collection routes.
- Recommend emphasizing to CalRecycle and other stakeholders the importance of leveraging last mile delivery and alternative collection expertise to build the infrastructure and support needed under Senate Bill 54. This applies not only to the collection of hard to recycle covered materials but also to expanding refill and reuse programs.

- See their participation in implementing Senate Bill 54 as critical: Any stakeholder support for ensuring alternative collection providers have a meaningful role in the Producer Responsibility Organization plan will be key.

Interview Summary – P27

List of Food Service Ware, Packaging Types, or Systems Discussed:
polypropylene hot and cold cups, lids, containers (clamshells, food boats, plates, utensils).

Key Insights / Learnings

- Washing is done off site using leased machines; largest site can clean 130K items/day. Automation and artificial intelligence quality assurance are in development; wash costs decrease with volume. Full system installation takes one to four months depending on equipment.
- Program economics rely on per item service fees, plus custom pricing for labor intensive large events. Currently manages 2.6 million or more reusable items across sites. Bring dumpsters to events that are palletized and foldable, so put in truck when full.
- [Company] Airline trial showed 99% return rate, highlighting potential for transport sector reuse systems. Looking to do another trial.
- Their app works like an enterprise resource planning system; all internal data moves through. Not consumer facing but some customer facing elements like ability to order through. No user incentives, relying on educational and social obligation.
- Staffing: Each local hub has a director, manager, and three to four technicians, and driver, account manager. Only seven to eight people per hub. Total organization has 50-60 people, but looking to bring labor down over time to save money.

Key Opportunities Identified

- Getting venues to mandate reuse: since 2023 San Fran trying to pass venue policy for over 2,000 capacity to use reusable cups. Politics have pushed it off, so venues say they will worry about when/if ever passes. Oakland passed mandatory policy.
- Extended producer responsibility conversation could play out positively.
- States funding grants/incentives/rebates for reuse.

Key Barriers Identified

- In order to streamline costs, funding and infrastructure are needed. State grants have helped, $600,000 awarded in [state].
- Need to fill infrastructure through volume, gain more clients to help push adoption.
- Fear of change, something different and questions venues need to work out. Need to encourage to try it out.

- Multinational corps need to push beyond pilots. CEOs make more in a year than reuse companies ever make.
- If make reuse optional damages whole process. Most events make reuse mandatory.
- Big fests may not budge on cup sizes so forced to introduce a new product, defeats purpose.

Key Data Point Provided in Interview

- Transportation: included in service cost unless 70-80 miles away or more.
- Averaging 90% return rate, festivals always have lower return rate.
- Improved through communication among departments, training, education, and bilingual messaging to connect stakeholders.

Additional Notes

- Reuse industry just needs funding as much as manufacturing.
- Core business model solved for closed loop, not for consumer packaged goods and open loop.

Interview Template – P38

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable cups and containers (stainless steel, plastic, etc.).

Key Insights / Learnings

- Closed loop success, open loop challenges: P38 operates mainly in closed loop systems (95%) like corporate canteens and events, achieving return rates of 96-99%. Open loop systems see lower return rates despite wide adoption, due to behavior and lack of strong incentives.
- Software driven model with external partners: P38 focuses on software, tracking, and user experience. It outsources washing, logistics, and manufacturing to partners - leveraging radio frequency identification tech and integrated tracking across 30 million or more checkouts and 400 or more container types. Partners can fully integrate P38 software if needed.
- Expansion and customization across regions: Active globally, with local adaptations (e.g., [Name] University pilot). Events and venues have high volume success; United States breakage and perception issues hinder adoption without education and better container care.
- Scaling hinges on cost and business buy in: Reuse remains a business decision. High upfront costs, labor concerns, and operational logistics in the United States make scaling harder. Viability improves when reuse is cheaper or provides marketing/engagement value.

Key Opportunities Identified

- Discounts on food and drinks increase user rates until incentives are removed
    - To get customers on board, cost benefits are needed.
- Regulation and market forces needed to scale up.
- Funding: Get startup funding from government, grants, etc. to test products/systems.
- Deposit or penalty system: Europe is 100% reuse in stadiums and concerts because it is cheaper, with X Euro deposit creates a good profit margin. Waste reduction savings.
- Replace single-use with a nicer, high quality product to improve user engagement.
    - Keep it simple: No app, operate a penalty system, improve user experience.

Key Barriers Identified

- Regulation to make reusable packaging mandatory did not work.

- Out of home marketing failed.
- Lack of incentives.
- Education: In United States need to educate that reuse is safe and not a health issue.
- Pure open system is difficult. In [Western European Country] 50 cent tax on single-use plastic items changes behavior.
- User activation.
- Operation issues for events based on type/customer base.
- Transition to prepackaged beverages and grab and go hurts reuse.
- Cost in United States large, closed loop settings is almost double what it is in Europe. Reuse is a business decision in 95% of market. Scaling needs cost and cost needs scaling.
    - Can't test user adoption without businesses coming on board.

Key Data Point Provided in Interview

- Focused 95% on closed loop systems in canteens where 99% products returned on site.
- In open system have avoided 30 million disposable containers.
- Washing: Main partner in Europe has a 20,000 unit/hour machine. Still needs a lot of air drying time, machine needs to be optimized for drying plastic. It takes 11 minutes to run one item through. In United States estimated to invest $600,000 in machines alone.
- Products: 400 different container types: includes branded containers, sushi, stainless steel items. Open to creating containers for clients. Track in open system around 800,000 containers with 30 million checkouts. Containers used 20x on average, most used was 364x.
- Usage rates: Number of partners rose from 1,700 to 5,000 but number of uses only went from three times to five times.
- Storage: Main warehouse has 7,000 crates/24 gives number of pallets.

Additional Notes

- Return rates: P38 gets return rates of 99% in canteens, 96% in other open loop systems. Breakage of containers a problem in United States because consumers think it will be recycled (so dispose of spitting tobacco, chewing gum into it) makes 2-3% of containers broken, in Europe treat with care.
    - Return rates in a pure open system in United States would be bad because customers would keep cups.

- Life cycle: needs a minimum of 10 uses per item to justify.

Restaurants

Interview Guide

Background Context:

[Add]

Public Goals:

[Add – check Sustainability Report, company website, EMF Global Commitment signatories]

Collaborative engagement:

[Add – check company website, news, and press releases]

Reuse / Refill / Source Reduction Projects (most recent to oldest)

[Add – check company website, news, and press releases]

Interview Questions:

Minutes 0-5: Introduction & Consent

- Introduce interviewers and purpose of the study.
- Confirm participant's role and title / purview.
- Explain how information will be used (anonymously unless otherwise agreed.
- Confirm consent to take notes.
- We are most interested in insights that are relevant to the United States, which can include insights from projects elsewhere as long as they could be applicable in a United States context.
- We will spend part of our time on Reuse and Refill solutions, and then also cover other Source Reduction strategies as well.

Minutes 5–30: Reuse / Refill Engagement and Experience

Goal: Understand what reuse/refill formats have been tested or implemented and what has been learned, what data may be able to be shared.

Questions:

- For context, would you mind providing an average or range for average customers per day and on premise vs off premise dining? Takeout vs delivery?
- Has [company] tested or implemented any consumer facing or business to business reusable or refillable packaging formats or systems?

- Overall, what have you been learning about what works and does not work in reuse and refill contexts? Specifically, what have you learned from any tests, programs, or research when it comes to…
    - Consumer behavior or readiness for specific reuse or refill models?
        - Do you assess ease of use for reuse or refill solutions? How?
        - Have you tested any incentives or rewards as part of reuse or refill programs?
    - Packaging and product insights for reuse and refill solutions?
        - Packaging characteristics that are particularly good or bad for reuse or refill formats.
        - Product characteristics that are particularly good or bad for reuse or refill formats.
    - Operational insights.
        - Implications for transaction and product work flow.
        - Washing on site.
        - Implications for return of reusable items.
        - Implications for delivery models.
    - Other?
        - Hygiene, safety or quality challenges for the reuse/refill formats?
        - Up front or ongoing costs vs single-use?
        - How is the cost to the consumer impacted by reuse/refill solutions?
        - Impacts on jobs for different reuse or refill models?
        - Any other insights or concerns that emerged?
- What is the role of bring your own cup in your experience? How significant can this be as a solution?
- What would you call out as the biggest barriers or challenges in shifting to reuse and refill? Can you share examples?
- Where do you see the greatest opportunity for additional transitions to reuse and refill and why? Please be as specific as you can.
- What has limited your ability to scale promising pilots?
- Would your retail locations be able to serve as drop off points for reusable / returnable packaging - your own and/or others? Why/why not?

- Have Americans with Disabilities Act requirements been a consideration in your exploration of reuse and refill models to date? What have you learned?
- In your view, what are the most important enablers for reuse/refill solutions at this time?
- Looking industry wide, what trends do you observe when it comes to reuse and refill solutions? What is notable about what others are doing?
- What else is it important for us to understand about barriers and opportunities for reuse and refill solutions?
- Can you share any data about what you have learned to help us model generic solutions, where data will not be attributed to [company].

Minutes 30–55: Source Reduction Efforts

Goal: Capture specific examples and results of packaging reduction work.

Questions:

- What consumer facing or business to business source reduction actions have you explored and which ones have proven to be most successful? (Elimination, Concentration, Right sizing, Lightweighting, Format Change, Replacement, others).
- For successful examples, we would love to hear more about:
    - Did this require new equipment or processes?
    - What were the implications for unit cost? Did any changes in cost impact the price to the consumer?
    - What feedback did you get from consumers about the changes? Any behavior insights?
    - What were the ripple effects of the new packaging on operations or costs through the supply chain?
- Which source reduction strategies do you think may have greater potential industry wide?
- What are some lessons you have learned about what does not work when it comes to source reduction approaches for certain packaging types or product types?
- Do you track packaging intensity per unit of product?
- Looking industry wide, what do you observe about the approaches others are taking? Who is doing something notable?
- What else is it important for us to understand about barriers and opportunities for source reduction?

55–60 minutes: Wrap Up & Final Thoughts

Goal: Capture unsolicited insights and identify next steps.

Questions:

- Is there anything else that you would want CalRecycle to understand about reuse/refill or other source reduction approaches from a food service perspective?
- Are there misconceptions you'd like to correct?
- Are there others at your company or in your supply chain we should speak with?

End of interview. Thank the participant.

Interview Summary – S5

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable, compostable, and disposable bowls, lids, cups, and cutlery.

Key Insights / Learnings

Summarize high level takeaways from the interview (3-5 bullet points):

- Major reuse barriers: Prior pilots (like employee meal programs and Petaluma) revealed major concerns around food safety, durability, liability, and contamination of which S5 has very strict standards - especially for bring your own items.
- Packaging challenges: Most items would require custom reusable designs to maintain brand standards and portion control. Reusable packaging is bulkier, doesn't stack as efficiently as single-use plastic, and is costlier with no clear return on investment due to likely high loss rates.
- Regulatory friction: conflicting regulations (e.g., Senate Bill 54 fees vs. compostable mandates) create confusion and cost burdens. Variation between city and state laws makes compliance complex. S5 suggests state standards should override local ones.
- Material limitations and source reduction: Limited plastic remains in front of house, and alternatives may fail in durability, heat resistance, and consumer satisfaction. Some items (like portion cups) have no viable nonplastic solution yet.
- Consumer and considerations: Compliance focused changes (e.g., paper straws) are unpopular with guests and requires plastic straw availability. Reuse models could also conflict with nutrition labeling and cup size consistency, which are critical for calorie disclosure.

Key Opportunities Identified

- Not a franchise: S5 owns all of its stores so wouldn't need to get franchisees on board when making changes in products, labor, or operations.
- Source reduction: Space to move toward more large-format packaging back of house, but some push back because of Occupational Safety and Health Administration requirements with product weight that needs to be lifted.

Key Barriers Identified

- Durability: had interest in running a pilot like Petaluma but concerned about durability of items.
- Food safety of reuse/refill: S5 wouldn't have control over how people return containers regarding food safety, contamination, and allergens entering the restaurant.

    - Concerns about bring your own cup program and sanitation of consumer items, especially since their fountain machines are front of house.
- Storage: single-use items have the ability to stack and limit space needed, not the same with reusables (issue in most quick service restaurants. Additionally, reusables are larger so it would not be a one to one swap of items.
- Conflicting regulations: S5 believes California regulations conflict with each other, for example Senate Bill 54 levies a higher fee on compostable products, but some counties/cities require compostable products.
- Customized needs: Unable to use off the shelf reusable because of brand identity and accommodation of serving sizes, otherwise would need to change serving sizes, spoons/scoops, and calorie assessments of meals. Since every item needs to be custom, the costs will come out much higher than the single-use alternative.
- Reuse for smaller products: Much more difficult to develop reuse infrastructure for items like lids, straws, and utensils that are used in high quantities.

Key Data Point Provided in Interview

- Ordering through an app makes up approximately 30% of orders so all of these are assumed to be takeout.
- All stores have a three sink system for washing.
- S5 is currently opening approximately 300 restaurants per year so packaging always increases annually.
- Plastic portion cups for salsas and select condiments are required because they can be used for all three types of products with different heat requirements.

Additional Notes

- Ran a pilot several years back for employee meals: biggest challenge was dishwashing and sanitizing since don't have extensive washing in back of house or room for that equipment.
- Concerned about high loss rate of reusables because of young adult demographic wanting to keep the items.
- Most focused on reducing food waste and finding replacements to single-use plastic.
- Believes that state policies should trump city standards if comes down to it.
- Don't see how reuse/refill could work for anything but dine in.
- An artificial intelligence summary was not taken.

Interview Summary – S29

List of Food Service Ware, Packaging Types, or Systems Discussed: disposable food service ware.

Key Insights / Learnings

- Limited Reuse Infrastructure and Staff Capacity: Sustainability is not a core focus; the only sustainability staff member is focused mostly on supply chain. S29 lacks infrastructure for dishwashing or back of house reuse and is even aiming to downsize kitchens, not expand them to accommodate reuse. Legislation is the main driver of operational and packaging changes.
- Reuse Pilots Faced Operational Pushback: A pilot with [reuse service provider] failed due to perceived declines in food quality and staff pushback. The incident left a lasting negative impression on internal teams, reinforcing a culture of food quality first, sustainability second.
- Consumer and Investor Pressure Limited but Growing: Most guests are occasional visitors, not routine customers, so bring your own/reuse behaviors are rare. Consumers haven't demanded sustainability, but investor interest and legislation are slowly pushing the company to reevaluate waste practices.

Key Opportunities Identified

- Source Reduction: practice many forms because it saves the company money. Reuses pallets, recycle oil and reuse containers. Removed cardboard core from paper towel roles in store, larger cases of burgers so need for delivery is less. Concentrated cleaning supplies, soaps, lemonade mixes.
- Policy: Encourages the companies to make changes, regardless of their opinion on sustainability.
- Consumer demand: current consumer more concerned with sustainability and their purchasing power tends to reflect this. However, S29 has not observed this trend with its customers.
- Investor interest: If investors want to fund the transition into the sustainable space, it is more likely to happen.

Key Barriers Identified

- Washing: No capabilities to wash reusable food ware back of house as trying to further downsize kitchens.
- Sustainable transition: If not for the legislation requiring it, S29 would not be transitioning to more sustainable packaging. In previous pilots, packaging changes sacrificed food quality or order ticket time.
- Infrastructure: even if convert to compostable packaging, need the process in place to ensure it gets to the composting facilities.

Additional Notes

- Considering tradeoffs: Since they will be taxed for using plastic packaging with new law, maybe it is worth purchasing the more expensive packaging. Don't know until fee schedule comes out.
- Currently transitioning to new leadership and are opening a warehouse type restaurant location to test new products.
- Participate and trained staff to follow Skip the Stuff Law, but analysis showed it didn't reduce much single-use packaging.
- S29 staff member thinks Senate Bill 54 timeline is fair, but management is concerned about making the changes and thinks it should be 2050.

Interview Summary – S31

List of Food Service Ware, Packaging Types, or Systems Discussed: cups, cutlery, business to business.

Key Insights / Learnings

- Returnable cups are essential but difficult to scale: S31 sees returnables as the most viable path to reaching reuse targets beyond 2-5%, but success is limited to semi-contained locations (e.g., offices, stadiums). In typical store environments, return rates and customer follow through are low.
- Incentives have minimal effect: Financial incentives like discounts or loyalty rewards have not meaningfully shifted customer behavior. S31 is shifting focus toward frictionless “drop and go” models to reduce operational burden and better meet customer expectations.
- Cost and infrastructure remain major barriers: Reusable cups (30-45 cents) and washing (25-50 cents per use) are significantly more expensive than single-use cups (seven to eight cents). Breaking even requires 90% return rates - currently unachievable without centralized infrastructure or external funding.
- Source reduction opportunities are limited: S31 has already lightweighted cold cups as much as possible and explored alternatives like metal cutlery, but further reductions are constrained by material limitations, particularly the lack of food safe recycled polypropylene (post consumer recycled polypropylene).
- Wider reuse adoption needs system level support: Cross brand container compatibility, shared infrastructure, inclusive design, and supply chain alignment are critical enablers. Isolated retail efforts will not meet reuse or reduction targets without broader industry and policy coordination.

Key Opportunities Identified

- Returnable cups in controlled environments present the clearest opportunity for scale. Programs in office buildings, stadiums, and semi-contained campuses (e.g. Petaluma downtown) have achieved high reuse and return rates, showing strong potential when return infrastructure is centralized and customer flow is predictable.
- Back of house reuse in logistics offers untapped potential. S31 already owns key parts of its distribution system and is piloting reusable crates and totes in select centers. Expanding these efforts could reduce packaging waste without requiring consumer engagement.
- Reusable food ware for dine in customers could reach 8% of transactions if half of those who currently stay are successfully engaged. Elevating the in store experience and better barista prompts are seen as pathways to growth.

- Incremental packaging redesigns, such as lightweighting cold cups and switching to durable alternatives (e.g., metal cutlery), offer near term gains - especially when aligned with operational feasibility and consumer acceptance.
- Collaborative infrastructure models (e.g., return bins accepted across brands) could unlock broader reuse adoption. S31 recognizes that single brand systems are insufficient, and shared solutions, with flexible branding and design, will be essential to future progress.

Key Barriers Identified

- Customer friction and behavior change barriers: reuse requires extra effort from customers, such as returning cups or engaging in unfamiliar ordering interactions. Even well tested incentives (e.g., $1 discounts) failed to drive adoption above 2%, making behavior change a major limiting factor.
- Operational complexity at the store level: baristas must prompt customers, track reusable cup use, and manage returns, all while maintaining speed and service quality. Many stores lack space to store dirty reusables or manage reverse logistics efficiently.
- Data tracking and systems limitations: many reuse transactions, especially partner (employee) beverages, are not captured in point of sale systems, making it difficult to measure impact, report progress, or refine strategies.
- Lack of food safe recycled materials: the absence of clear, food grade post consumer recycled polypropylene limits S31's ability to shift toward recycled content, especially for cold beverages where clarity is essential.
- Fragmented responsibility and cost burdens: scaling reuse or source reduction requires coordinated investment, but it's unclear who funds infrastructure, R&D, or system changes. Licensing partners, suppliers, and recyclers all play roles, yet incentives and authority are misaligned.

Key Data Point Provided in Interview

- Bring your own "personal cup": currently represents 0.7% of customer beverages; took a big hit in COVID; even with $1 discount and other incentives, can't get to 2% adoption.
- Barista shift beverages: rolled out in fiscal year 2024, currently 14% of shift beverages in reusable cups (up from 0%).
- Dine in ("for here") food service ware goal: Reach approximately 8% by capturing half of in store consumption (approximately 1/4 to 1/3 of customers stay).
- Disposable cup and lid: $0.07-$0.08.
- Reusable cup: $0.30-$0.45.
- Washing cost: $0.25-$0.50 per use.
- Target wash cost: $0.10 per use.

Additional Notes

- Need high return rate to break even in terms of the economics (Life cycle assessment return rate is lower than the economic break even rate).
    - Breakeven point might only be 50% return rate to make sense environmentally, but 90% in terms of the costs.
    - Need: 10 cent wash costs, 30 cents cost of cup to make the economics work (assuming 90% or higher return rate).
- In terms of California's Senate Bill 54 requirements, getting to 2% by 2030 is doable but the 10% milestone farther out is a concern - will have to have returnable cup programs enabled and scaled by 2032.
    - Thinks maximum 5% can come from bring your own and dine in food service ware, so will need to get the rest from the returnable cup.

Interview Summary – S40

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable and disposable cups/containers.

Key Insights / Learnings

- Regulatory Compliance Now Driving Action: S40 is shifting focus from pilot learning to regulatory compliance as extended producer responsibility laws emerge in the United States. However, the lack of harmonized legislation and differing state fee structures make it difficult to implement consistent, scalable solutions.
- [Restaurant] France Pilot Highlights Operational Strain: The reuse pilot in France revealed significant operational challenges - restaurants had to manage dual inventories for dine in (reusables) and to go (disposables), which strained space, labor, and logistics. Franchisees faced “fatigue” after investing in disposable solutions just before new reuse regulations, and unclear bin signage led to persistently low return rates despite custom designed waste systems.
- Supplier Leverage and Industry Collaboration: S40’s purchasing volume enables partnerships with suppliers to explore material changes and lightweighting - opportunities not as widely available to smaller chains. The company is also exploring potential behind the scenes solutions through industry forums and open to more back of house solutions.
- Food Safety requirements: In consumer packaged goods, stores can place items so that some can contain recycled content if not touching certain food items. In fast food, all materials could contact all food, making the level of recycled content for post consumer recycled harder to meet.

Key Opportunities Identified

- Having standard laws: For example, France had same law for reusables everywhere so helped customers understand what their behavior should be.
- Being able to articulate a clear benefit to the franchise, consumer and environment would help adoption: not set up for that yet.
- Lightweighting: S40 has done this for a while. Altruistic and benefit to company economically. Baseline is 2023.
- Move to circular economy: for that to work for S40, there must be abundant food grade recycled content largely available which is not the case. Hoping to begin to have sources that are food safe recycled products that are usable as these laws play out.

Key Barriers Identified

- Labor costs and employee training: reuse/refill and washing adds another step to training and labor hours.

- Getting franchisees on board with major changes, possible economic affects to franchisees during change.
- Most customers taking products away from stores or use third party delivery. Makes process to recovering reusables more difficult.
- Bring your own: Food safety concerns, issues with cross contamination and allergens. When looking at washing, what type of services can be set up so there is an assurance of safety.
- Back of house: reusables take up more space.

Key Data Point Provided in Interview

- S40 created a pyramid of hardest reuse/refill cases: top is hot, aqueous, and foods with fat because they are the key elements that can leach things out of containers.

Additional Notes

- Study done on back of house packaging last year. First dive into this since mostly focused on front of house. Baseline is now understood. Work done on back of house on product in packaging (e.g., increasing concentrate of soaps).
- Regarding Senate Bill 54: S40 has an idea of net weight of packaging, don't have a great idea of weights of every component. How to do this so accurately reporting and applying.
- Back of house shipping packaging: have to be careful with changing it since it could risk shortening shelf life and creating food waste.
- Whatever can do from a harmonized perspective across states and source of truth on preferred packages that are more sustainable, the better off big brands will be. Consumer packaged goods companies were brought in earlier on extended producer responsibility program conversations, baseline report is due in two to three months but no guidance around it is concerning. The sooner they can get guidance the better. In Colorado this was a major challenge and will be harder in California.
- Various materials: If using plastic, want it to be recoverable. Not just focused on getting out of plastics, reduce virgin plastic. With paper, not contributing to deforestation and no per- and polyfluoroalkyl substances (PFAs).

Product Manufacturers

Interview Guide

Background Context:

[Add]

Public Goals:

[Add – check Sustainability Report, company website, Ellen MacArthur Foundation Global Commitment signatories]

Collaborative Engagement:

[Add - check company website, news, and press releases]

Reuse/Refill/Source Reduction Projects:

[Add]

Packaging Portfolio:

[Add - check 2024 and past year Ellen MacArthur Foundation Global Commitment reports]

Product Portfolio (from website):

[Add]

Interview Questions

Minutes 0-5: Introduction & Consent

- Introduce interviewers and purpose of the study.
- Confirm participant's role and title/purview.
- Explain how information will be used (anonymously unless otherwise agreed).
- Confirm consent to take notes.
- For this conversation, we are most interested in your [relevant product categories for Senate Bill 54] though applicable learnings from other categories are great to hear as well.
- We are most interested in insights that are relevant to the United States, which can include insights from projects elsewhere as long as they could be applicable in a United States / California context.
- We will spend part of our time on Reuse and Refill solutions, and then also cover other Source Reduction strategies as well.

Minutes 5–30: Reuse / Refill Engagement and Experience

Goal: Understand what reuse/refill formats have been tested or implemented and what has been learned; what data may be able to be shared

Questions:

- From [reporting to Ellen MacArthur Foundation and/or other info shared publicly], we know [company] has explored different reuse and refill opportunities. Overall, what have you been learning about what works and does not work for your products in reuse and refill formats?
    - What would you call out as the biggest barriers or challenges in shifting to reuse and refill formats? Can you share any examples?
    - Where do you see the greatest opportunity for additional transitions to reuse and refill formats and why? Please be as specific as you can.
- [Adapt based on responses above] What have you learned from your tests and programs when it comes to:
    - Consumer behavior or readiness for specific reuse or refill models?
        - Do you assess ease of use for reuse or refill solutions? How?
        - Have you tested any incentives or rewards as part of reuse or refill programs?
    - Operational insights for manufacturing and filling?
        - Packaging characteristics that are particularly good or bad for reuse or refill formats.
        - Product characteristics that are particularly good or bad for reuse or refill formats.
    - Hygiene, safety or quality challenges for the reuse/refill formats?
        - Do cold chain requirements have implications for reuse/refill system viability
    - Up front or ongoing costs vs single-use?
        - Do the products you are selling in reuse/refill models cost the same as the equivalent in single-use or is the pricing ever different?
        - Are there any reuse/refill models that are lower cost per unit than single-use?
    - Impacts on jobs for different reuse or refill models?
    - Any other insights or concerns that emerged.
- What has limited your ability to scale promising pilots?

- [If not covered in above] Has [company] explored regional fractional manufacturing/use of copacking or cofilling as a strategy for enabling reuse or refill solutions? What would make this viable / not viable as part of a reuse/refill strategy?
- In your view, what are the most important enablers for reuse/refill solutions at this time? [Let them answer first, then as appropriate, given the conversation so far, consider offering these prompts for reactions]
    - Innovation: packaging, technology, business model, other?
    - Shared infrastructure: what specifically would you want?
    - Standards/standardized packaging?
    - Partnerships - with whom?
    - Funding/access to capital for company initiatives?
    - Other support or resources - what specifically?
    - Other?
- Looking industry wide, what trends do you observe when it comes to reuse and refill solutions? What is notable about what others are doing?
- Have Americans with Disabilities Act requirements been a consideration in your exploration of reuse and refill models to date? What have you learned?
- What else is it important for us to understand about barriers and opportunities for reuse and refill solutions?
- [If we haven't asked already] We are looking for data such as costs and operating metrics to inform modelling. Are you able to share data if we can anonymize it (i.e., not shared with attribution with CalRecycle)? If yes, we will follow up with a data request with more details on what would be most helpful.

Minutes 30–55: Source Reduction Efforts

Goal: Capture specific examples and results of packaging reduction work.

Questions:

- What source reduction actions have you explored and which ones have proven to be most successful? [List for reference]
    - Elimination.
    - Concentration.
    - Right sizing.
    - Lightweighting.
    - Format change.

    - Replacement.
- For successful examples, follow up to get more details: Did this require new equipment or processes?
- What were the implications for unit cost? Did any changes in cost impact the price to the consumer?
    - What feedback did you get from consumers about the changes? Any behavior insights?
    - What were the ripple effects of the new packaging on operations or costs through the supply chain?
- Looking industry wide, what do you observe about the approaches others are taking? Who is doing something notable?
- Which source reduction strategies do you think may have greater potential industry wide?
- What are some lessons you have learned about what does not work when it comes to source reduction approaches for certain packaging types or product types?
- Do you track packaging intensity per unit of product?
- What else is it important for us to understand about barriers and opportunities for reuse and refill solutions?
- [If we haven't asked already] We are looking for data such as costs and operating metrics to inform modelling. Are you able to share data if we can anonymize it (not shared with CalRecycle)? If yes, we will follow up with a data request with more details on what would be most helpful.

55–60 minutes: Wrap Up & Final Thoughts

Goal: Capture unsolicited insights and identify next steps.

- Is there anything else that you would want us or CalRecycle to understand about reuse/refill or other source reduction approaches from your perspective?
- Are there any misconceptions you'd like to correct?
- Are there others at your company or in your supply chain we should speak with?
- [If they will share data] We will be following up with a data request via email.

End of interview. Thank the participant.

Interview Summary – T3

List of Food Service Ware, Packaging Types, or Systems Discussed: metal tins, glass bottles, bottle pumps, triton bottles, paper packaged refills, tablet refills.

Key Insights / Learnings

- Refillable products must compete on performance, price and convenience: T3's success hinges on ensuring their refillable, plastic free products perform as well as conventional ones, are aligned in price with market standards, and require minimal behavior change from consumers.
- Waterless formulations drive efficiency and impact: By eliminating water from their products, T3 has significantly reduced shipping and production costs while lowering environmental impact, enabling them to offer competitive pricing and achieve strong margins.
- Designed supply chain from scratch: Traditional manufacturing equipment was incompatible with paper packaging, so T3 invested approximately $100,000 to customize equipment and streamline production - showing supply chain innovation can be affordable and high impact.
- Packaging choices balance sustainability with consumer preferences: While aiming for recyclability and compostability, T3 has had to make tradeoffs (e.g., avoiding glass for bottles due to customer aversion to heavy packaging). They prioritize compostability for any single-use refill packaging.
- Retail partnerships and consumer education are key enablers**:** Awareness of microplastics and visible shelf placement in big box stores have helped normalize refillables and push larger brands to respond.

Key Opportunities Identified

- Illuminated inefficiencies in production related to water.
- Products have had good growth in increasing awareness for customers concerned about microplastics, now they understand the problem and T3 can spend less time explaining it.
- Increasing regulations.
- Focus on retail partnerships: in store shoppers' control what products hit shelves.
    - For first few years it was business to consumer focused brand, retail shelves are much harder and more scalable. Makes big companies pay attention when they have retailers on board, controls real estate for customers.
- Infrastructure: good for recycling end of life scenarios.

Key Barriers Identified

- Customers loyal to product brands for some products more than others - cleaning product loyalty was lower.
- Will to push through issues: manufactures will encounter many barriers in reuse/refill but have to keep going to reach the desired goal.
- Greenwashing issues: Require standards and truth in advertising: most laundry/dishwashing pods wrapped in plastic have 70% of the film ending back in environment.

Key Data Point Provided in Interview

- Cost barriers for upfront investment are not as high as expected. Less than $100,000 to start for all equipment, production, etc. Not much for a big company. T3 can fit same amount of chemicals on one pallet that Windex can fit in three truckloads.
- 85-90% of customers didn't want a glass spray bottle, hard to make marketable because it becomes heavy when over 12 oz.

Additional Notes

- While the companies' original mission was to reduce plastic waste, the products were attractive because while other products were majority water, tablets could get around bulky plastic packaging.
    - By reducing water found many cost saving opportunities, why T3 can be cheaper than big name brands with an attractive margin structure. Focus on high frequency/use categories to increase consumer perception of issue. Important from an impact and customer awareness perspective.
- Where are the switching costs lower for customer (reduced barriers)? Categories with low brand loyalty.
- Water being used to fill bottles is going through entire manufacturing site, T3 avoids all of this. Reality of rethinking things means massive supply chain efficiencies can be achieved.

Interview Summary – T7

List of Food Service Ware, Packaging Types, or Systems Discussed: gravity dispensers with bag in box system, yogurt dispensers, concentrates, lightweighting, glass milk bottles.

Key Insights / Learnings

- T7 has limited investment in small scale reuse/refill pilots due to cost, infrastructure challenges, and the need for factory scale wash and refill systems. Initiatives like Loop were seen as too small to be worth doing.
- Food safety and quality teams are cautious about reuse since current standards are designed for single-use. A "reuse academy" is suggested to help professionals adapt to reuse models, especially in the context of reusable glass jars and cups. Recommended prefill of products (rather than in store refill) to maintain control over sanitation and keep cold.
- Current T7 refill options in the United States include refrigerated gravity dispensers for coffee creamer, plant-based milk, and ice coffee using a bag and box system with disposable bag inside dispenser. Used at gas stations, cafeterias, etc. (business to business with consumer facing technology) but film is not recyclable. Frozen yogurt places also use yogurt dispensers.
- Source reduction focus has been on lightweighting, now exploring aluminum and paper alternatives, and concentrate options but concerned about high costs and freshness perception.

Key Opportunities Identified

- Opportunity for concentrates for milk (dairy and plant-based) for certain use cases (keep in pantry, take camping, etc.).
- Potential for ‘Freestyle’ type machine for flavored creamers, which would allow for 16 flavors where today they can only offer two to four in the same amount of space.
- Prefill is the most viable reuse/refill model. The way reuse will work best for T7 is with a ‘plug and play’ reuse system with standardized sized (example: Small, medium, large) bottles and cups that all the wash/infrastructure is designed for multiple products. Washable paper labels to remove and differentiate. All T7 has to do is provide the product, and everything else is handled by the system. Possible partnerships with a delivery service to increase return rates.
- For T7, see huge opportunity in home delivery model (milkman model) where packages are picked up from consumer. Best return rate with this model, best aligned with consumer behavior (but have not worked out details on economics yet).
- Reusable yogurt has used standard jars, but (reusable plastic) cups are exciting because can nest so it is more efficient for reverse logistics.

Key Barriers Identified

- Getting food quality and safety teams on board. Very risk averse. May need new/updated reusable packaging filling protocols.
- Lack of interest in small scale pilots because of effort, cost/return, etc. as T7 has a push for fewer, larger projects.
- Lack of modern, redesigned reusable containers - we need major innovation to have real options for reusable packaging. This work has not been done.
- Aversion to plastic for reuse because of concern about abrasions (hygiene risk), microplastics, etc., but have not seen any actual research on this. There is an opportunity to do this research on reusable cup programs operating with plastic cups today.
- Need financial incentives for producers to increase attractiveness of reuse/refill through extended producer responsibility or similar legislation.

Key Data Point Provided in Interview

- Liquid products are easier to reuse/refill because of more standardized washing/filling equipment.
- T7 owns majority of infrastructure and equipment (70%) and other is external (approximately 30%).
- Yogurt dispensers in Spain don’t rely on bag and box system, so need to be cleaned every 48 hours but don't use single-use plastic. But even these are being transitioned to bag in box systems due to perceived risk from poor cleaning.
- Bulk dispensers, coffee creamer bottles/portion cups are roughly comparable on economics.

Additional Notes

- Senate Bill 54 Considerations: What “counts” in terms of reducing number of plastic components? T7 wants to make some changes in the name of decarbonization and optimizing design for recyclability but packaging will go from aluminum to plastic, adding slightly to plastic weight and piece count. T7 has source reduction ideas but can’t get traction to drive change because of uncertainty around the financial incentive justifications.
- Lightweighting: T7 single serve product cups are best in class in terms of lightweighting. There is still potential to lightweight bottles, extra plastic remains for shelf presence and to fit with category norms to remain comparable to competitors.
    - Concerns: Something like an ultra lightweighted water bottle would require big capital expense for necessary equipment changes while raising product damage rates and food waste. It would also change the consumer experience and would be more difficult for recyclers.

Interview Summary – T21

List of Food Service Ware, Packaging Types, or Systems Discussed: beverage containers, snack packaging, rigid and flexible.

Key Insights / Learnings

- T21 is working to make packaging recyclable, reusable, and compostable compliant but does not yet have a dedicated reuse target under Senate Bill 54. Reuse/refill is seen as constrained by fragmented policy, inconsistent mandates, and behavioral barriers.
- United States pilots (e.g., Petaluma) show very low return rates despite convenience and marketing efforts, reinforcing consumer adoption challenges.
- Scaling reuse would require cross value chain collaboration, reverse logistics, and shared cleaning/filling infrastructure - not viable for any single company alone.
- Refill at home models (e.g., SodaStream) are a more successful strategy, with higher adoption in Europe.
- Source reduction through lightweighting, format change, and post consumer recycled use in recycled polyethylene terephthalate beverages has delivered measurable results.

Key Opportunities Identified

- Growth of refill at home solutions and alternative product formats like powders and concentrates.
- Standardization of reusable packaging formats and vessels to enable systemwide infrastructure investment.
- Partnerships across the value chain to share reverse logistics and cleaning operations.
- Potential policy alignment/extended producer responsibility incentives that support infrastructure for food grade recycling and reuse.

Key Barriers Identified

- Lack of consistent enabling policy and fragmented mandates across United States.
- High upfront capital costs for infrastructure (reverse logistics, cleaning, storage, filling lines).
- Consumer concerns about hygiene, recyclability (e.g., recycled polyethylene terephthalate color tinge), and willingness to pay in a tight financial climate.
- Brand challenges (loss of marketing on standardized vessels, limited flexibility in sizes).

- Fear of misaligned incentives in extended producer responsibility schemes that may not return sufficient food grade recycled material.

Key Data Point Provided in Interview

- Lightweighting and proprietary compaction technology have reduced material use across beverages and snacks.
- Significant post consumer recycled integration in recycled polyethylene terephthalate bottles.
- Successful format shift examples include transition from sacks to cube packaging and development of Gatorade powder.
- T21 uses reusable pallets in business to business transport.

Additional Notes

- T21 emphasized that while reuse is not 'hopeless,' infrastructure and policy gaps remain severe.
- Consumers are reluctant to pay more for reuse models, especially under current financial pressures.
- Company leaders see value in comprehensive 'soup to nuts' planning of infrastructure and system design.
- Hygiene perceptions and suspicion toward recycled content remain significant consumer barriers.

Interview Summary – T28

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable, compostable, and disposable food ware.

Key Insights / Learnings

- Fiber based bowls: T28 has been looking at reducing their packaging impact since before extended producer responsibility and heavily invested in converting to a compostable per- and polyfluoroalkyl substances (PFAs) free fiber bowl for most retail markets (except [Northeast Asian country], which requires plastic) that can also be made recyclable.
    - Had to create a custom product model and all new equipment after years of testing to ensure food safety standards would be met.
- Packaging innovation faces infrastructure gaps: Despite major investment in compostables and fiber packaging, challenges persist due to inconsistent composting infrastructure, lack of unified standards across states, and difficulty processing food contaminated materials.
- Strategic lightweighting and custom solutions: T28 implemented lightweighting (approximately 20% reduction) and custom equipment for packaging changes, balancing shelf life, food safety, and sustainability. However, there's uncertainty about whether these past improvements will earn credit under new laws.
- Rising costs and data burden of compliance: Compliance costs (e.g., approximately 50% increase in inner pack, $20,000 per life cycle assessment) and data collection burdens are significant. Companies must weigh paying fees versus converting materials - especially in large markets like California.
- Consumer expectations shift and retail pressure: Post-COVID, consumers expect brands to "do the right thing" on sustainability but aren't willing to pay more. Meanwhile, retailers often choose cheaper, less sustainable options unless incentivized, making it harder for sustainable brands to compete.

Key Opportunities Identified

- Lightweighting: all flexible films withing the company have been lightweighted as far as possible before consumers complaints and performance issues occurred.
- Food service back of house reuse: most promising place for reuse to occur, but T28 does not have the capacity to take on as of now; tried to start it with third party help but it was too expensive.

Key Barriers Identified

- Policy Variations: There is no uniformity in the extended producer responsibility programs and packaging legislation across states, making it very hard for national companies to comply.

- Consumer expectations: T28 has seen a behavior shift in consumers from purchasing the more ecofriendly product around COVID time to purchasing what they would like and expecting the brands to do the right thing and make sustainable changes. Less strength in brands with sustainable claims.
- Pushing fee calculations onto brands: by making the brands calculate what they will owe the state, it isolates the consumer from understanding the changes and why the price of a product has increased.

Key Data Point Provided in Interview

- Lightweighted each of their applicable products by about 20%, including reducing packaging width and height. T28 is curious if they will receive credit for doing this early on.
- Estimate that life cycle assessments are approximately $20,000 ask for companies to conduct.
- The tubs of product sold to restaurants and cafes are three gallon high density polyethylene. The company tried to lightweight and ended up having to increase the weight of the tubs again due to performance issues.
- Had 100% recycled polyethylene terephthalate in drink bottles for a while, had to cut it down to 20% when new rules rolled out.

Additional Notes

- Paid fees in [United States State] when they passed new legislation (under $10,000 total) but California is a massive market and waiting to see fee schedule to determine what is the better route.
- T28 wonders where 2023 baseline reporting came from and emphasizes the need to account for company growth.

Interview Summary – T36

List of Food Service Ware, Packaging Types, or Systems Discussed: reusable and single-use containers.

Key Insights / Learnings

- Source Reduction Is the Primary Focus: T36 is prioritizing source reduction strategies, such as lightweighting, using post consumer recycled materials, and switching to fiber based packaging, to meet both internal goals and California's extended producer responsibility requirements. Reuse/refill is expected to play a smaller role, especially by 2032.
    - T36 is a leader in post consumer recycled usage, but there has been a premium cost to sourcing food grade post consumer recycled in the United States. that began in last few years.
- Reuse/Refill Has Not Scaled Effectively: Despite more than 50 global pilots, reuse/refill models remain economically and operationally challenging. Return from home has shown the most promise (e.g., in the United Kingdom and Ottawa), while in store refill has largely failed in developed markets due to consumer friction and cost.
- Material Innovation and Format Shifts Are Underway: T36 is exploring fiber based materials, concentration formats, and flexible packaging to reduce plastic use. However, uptake varies by category, with food and personal care presenting unique challenges around consumer acceptance and quality control.
- Business to business and Pilot Learnings May Unlock Future Potential: Growing interest in business to business (e.g., restaurant condiments in refillable tubs) and cross industry pilots like the Ottawa reuse project could provide scalable models for reuse. Lessons from these pilots may influence future expansion in United States markets.

Key Opportunities Identified

- Return at home: could reduce friction and most ideal model. Hoping to see uptake in Ottawa. Saw uptake in UK pilot but only within one brand.
- Most reuse/refill interest from consumers: beauty and personal care.
- Most reuse/refill interest from retailers: homecare.
- Source reduction
    - A leader in building domestically sourced post consumer recycled market in United States. Now challenge is you can only go so far without impacting quality and durability of material. Also, a limited supply within quality standards on post consumer recycled supply.
    - Have achieved a lot in lightweighting over last five years so approaching max without changing format, this is across entire portfolio.

    - Changing materials by identifying fiber based options to fully remove plastic containers.
- Back of house: Working on refilling vats (totes or tubs) back of house (for condiments, seasonings) but unsure if in action which would lead to plastic reduction of that item.
    - Hygiene: needs high standards in place for washing and filling, need to test beforehand.

Key Barriers Identified

- Cost: Creating proper facilities to meet quality standards.
- Brand differentiation: how do they maintain differentiation of desire if all bottles are same? Going to use Ottawa reuse pilot to help understand.
- Consumer acceptance: difficult to accept apart from beauty and wellness division. Refill formats of makeup in Ulta, etc. because product is already at a premium level. How to move this idea to a $5 bottle of body wash is more difficult.

Key Data Point Provided in Interview

- Reuse/refill will make up the smallest percentage of Senate Bill 54 targets after post consumer recycled, lightweighting, and material change.
- Post consumer recycled issues: Designed large jars made of 100% recycled plastic, but they tinged grey, so consumers thought the product inside was bad. Had to modify levels of recycled plastic since consumer need driven. Still grey at 75% recycled material so moving back further. Can use an additive or chemical change in recycled plastic. Some body wash bottles reached 100%, others only 65% but most packaging is at least 25% recycled.

Additional Notes

- T36 has been working on more sustainable packaging for years and wants to get the credit they deserve.
- Reuse/refill found that the return to store or from home model works better than refill in store.
    - Cost profile for fractional manufacturing: reuse is not to scale currently, so willingness to disrupt internal manufacturing sites with smaller pilots does not have a good cost-benefit ratio; would have to purchase new infrastructure to scale up.
    - Cost to consumer: Refill model more likely means higher cost to consumer. If it can be scaled, it could start to equal out. Need to use all levers to drive consumer experience and pay a premium. If retailers flag per oz not per use, they are getting less accurate information on product positioning.

- T36 business to business is significantly smaller than consumer business but strongly growing.

Interview Summary – T42

List of Food Service Ware, Packaging Types, or Systems Discussed: skincare, fragrance, and other beauty product packaging.

Key Insights / Learnings

- T42 has achieved 90% of source reduction actions but some concern about reaching 10% by 2027.
- Fully circular pilots: in the United States today offer refill at home, mainly in their skincare and fragrance categories but don't offer it for their biggest volume products.
- Source reduction: mostly post consumer recycled and lightweighting. For lightweighting, they have their own intensity reduction goal - intensity focused on how much less material per product within all materials, not just plastic.
    - No concentrates because they haven't performed well in the market and not in T42's innovation pipeline.
    - Won't move to glass instead of aluminum because that would carbonize their footprint or rather, increase it - a key focus right now is decarbonization.
- Another one-use an aluminum bottle for reuse at scale. Don't think anyone currently has data (e.g. how many times package can be washed and filled) around the longevity of this, even in a closed loop type cycle.
- T42 discussed the potential for a pooled container approach for its reusable packaging, either within its brands or with competitors. Optimistic about this if retailers get on board and make an investment.

Key Opportunities Identified

- T42 mentioned its involvement in the Consumer Goods Forum pilot in Canada, which is expected to provide valuable learnings on cleaning and supply chain issues.

Key Barriers Identified

- T42 highlighted the challenges with refill at home for its products, particularly for large-format packaging sold at retailers like Costco and Walmart - who are unsure what the right refill size is.
- T42 mentioned lack of support from retailers, who think extended producer responsibility isn't their problem, as a potential barrier for transitioning; for instance, 25% of their products transitioning to refill (significantly changing the way they sell and their shelves for that).
- Unsuccessful pilots mentioned:

    - A source reduction pilot in Brazil and consumer pushback received when removing certain components, such as gloves from hair dye products, due to safety concerns. T42 highlighted their number one priority is always consumer safety and health.
    - Terracycle Loop pilot was considered a failure due to low return rates possibly influenced by the COVID-19 pandemic.
- T42 explained operational considerations for reuse and refill, including the challenges of cleaning certain formulas and the need for effective cleaning protocols - given microbial risk, and problem of allergens.
- T42 discussed the challenges and uncertainties in meeting the Senate Bill 54 targets, including the need for clarity on qualifying actions and potential barriers to compliance.

Key Data Point Provided in Interview

- T42 has achieved 90% of source reduction actions and set a 10% reuse and refill goal.
- Primary source reduction strategy is post consumer recycled and they've been doing post consumer recycled for 10 years.
- Lightweighting: brand examples that have reduced plastic weight - Redken shampoo and conditioners, their largest selling hair color format, liquid hair dye, hair color format, Cerave 16 oz and 12 oz all the size bottles all were reduced by at least 20%, if not more in plastic weight. Biolage just relaunched with a significant reduction (approximately 23%).

Additional Notes

- T42 reuse and refill initiatives.
- United States: No fully circular pilots yet. Current focus is on refill at home in skincare and fragrance; starting to expand into cleansers. Large-format consumer products (e.g., for Costco/Walmart) present challenges for refill sizes.
- Europe: Broader adoption in Consumer Product Division.
- Pilots and Partnerships.
- Consumer Goods Forum Pilot (United States): Testing cleaning and supply chain challenges.
- Citeo Refill Project: Skincare brands (e.g., Chanel, Clarins) using pharmacy drop off collection.
- United States Pilot (Confidential): True circularity with refill cleaning.
- United States Plastics Pact: Upcoming launch; potential Circular Action Alliance investment involvement.
- Differences Across Product Lines (Reuse and Refill Challenges).

- Micro/safety risk: Concerns about effective sanitization and microbial safety.
- Allergens: Uncertainty about cross contamination across brands/formulas.
- Volume drivers: Top products (e.g., hair color, certain haircare in large formats) are high priority but tricky to adapt.
- T42 suggested the possibility of expanding the California pilot to include other states like Colorado and Oregon, which also have incentives for refill initiatives.
- For a global Fortune 500 with multiple brands, reuse/refill is complex - brand leaders weigh profitability, accountability, and strategic fit differently.
- Reuse/refill ties into the broader source reduction goal, but accountability at the brand level is unclear.
- Debate on how reuse/refill contributions will be calculated, with concern some brands may be assigned higher targets than others.