CalRecycle Packaging Reform Workshop Background Document

October 10, 2017

California Department of Resources Recycling and Recovery

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Executive Summary

Packaging serves many important purposes, such as ensuring the safe transport of products and extending their lifespan prior to use by a consumer. However, despite laudable efforts by companies to reduce and optimize the packaging they produce, roughly 25 percent of California's disposed waste stream is comprised of packaging materials. In addition, improper or ineffective management of discarded packaging can lead to increased greenhouse gas emissions, waterway and marine debris, and human health impacts. In addition, much of what is collected is exported, where it is not clear how these materials are managed, and these markets are not necessarily reliable.

The landscape of packaging is constantly evolving in response to innovations in materials and consumer demands. Although the use of new packaging and material types provides benefits, one consequence of the rapid changes in the world of packaging is that entities that collect, sort, and process discarded packaging are struggling to keep pace with the new developments. Significant investments in domestic infrastructure, paired with a wider adoption of thoughtful packaging design, will be necessary in order to help manage this changing suite of materials in California.

In order to help meet the state's aggressive 75 percent recycling, composting, and source reduction goal by 2020, and particularly in light of significant recent developments such as the drop in California's recycling rate and potential implications of China's expanding regulations to ban certain scrap imports, it is critical now more than ever to address this portion of the waste stream. This will require a higher level of awareness and involvement by all parties involved in the sale and use of packaging: manufacturers, distributors, retailers, local governments, waste haulers, and consumers. After an extensive stakeholder outreach process dating back to 2012, the Director of the California Department of Resources Recycling and Recovery (CalRecycle) instructed staff at the September 2016 monthly public meeting to develop a comprehensive, mandatory policy model for managing packaging to significantly reduce its presence in the waste stream.

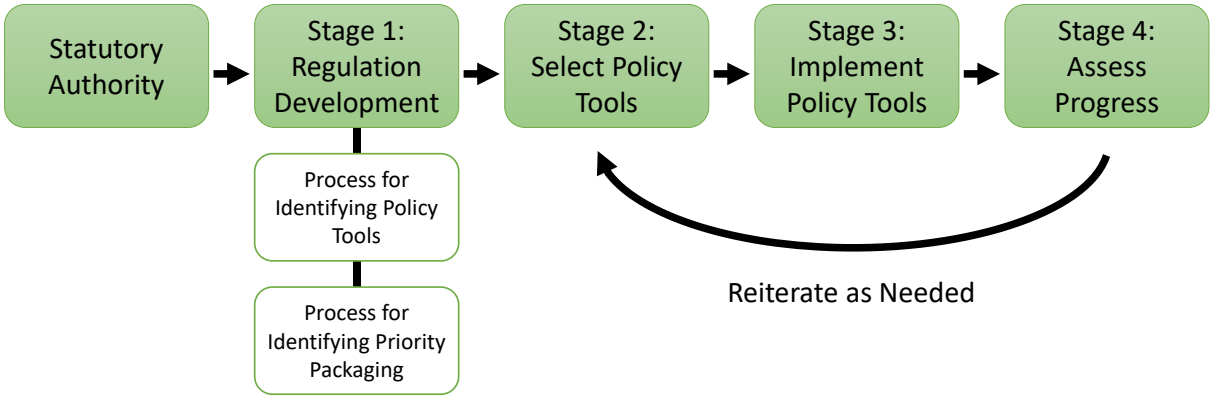
Given the diverse range of packaging materials, and in recognition that a single policy approach may not provide the best solution for managing all packaging, staff are developing a comprehensive, statewide framework for managing all packaging to decrease disposal. This framework recognizes the need for measurable, enforceable, and significant goals; an increased focus on reuse and source reduction; the need for increased domestic recycling capacity; and the need for flexible implementation. If enacted in statute (as needed), this framework would provide authority to CalRecycle to manage all packaging. CalRecycle would then develop regulations to implement a consistent and predictable process for managing packaging that provides flexibility to apply different policy tools (such as minimum content or labeling requirements) to different packaging and to prioritize which packaging is managed first.

Staff recognize that identifying packaging-specific policy tools may seem to conflict with applying broad policy tools for most or all packaging. However, this approach allows the most appropriate packaging-specific policy tool to be applied within the context of a larger packaging framework. By providing CalRecycle with the statutory authority to systematically address packaging, CalRecycle can develop an efficient approach that is complementary to existing requirements and provides both flexibility and consistency.

The alternative to this type of comprehensive framework is a patchwork approach that would make it difficult for packaging and product manufacturers, retailers, local governments, and others to effectively implement and enforce the requirements and would increase risk of unintended negative consequences, such as product substitutions that contaminate existing recycling streams.

Given statutory authority (as needed), the following stages would be critical for implementing a comprehensive packaging framework:

1. Establish, via regulations, a consistent and predictable public process for decision making.
2. Utilize that public process to identify priority packaging and select the appropriate policy tools for that packaging, via public workshops and public decisions by the Director.
3. Implement policy tools.
4. Assess progress and adjust based on market and technical changes.



A framework approach for packaging would establish a consistent process for analyzing the disposal stream to then identify and implement appropriate packaging management tools. It would also allow for increased flexibility for CalRecycle to respond to changes in packaging and its end-of-life management. In order to be successful, a packaging framework would require tangible, specific, and enforceable goals.

To demonstrate how a comprehensive framework approach may be implemented, the background document discusses mandatory policy tools to manage packaging, the process by which priority packaging may be selected, which policy tools may be effectively applied to all packaging, and how policy tools might be applied to specific packaging materials.

Introduction

Over the last five years, the California Department of Resources Recycling and Recovery (CalRecycle) has conducted an extensive stakeholder engagement process to identify and consider approaches to reduce the amount of packaging going to landfills to higher and better uses in support of California's 75 percent statewide source reduction, recycling, and composting goal. This process included multiple public meetings and workshops where CalRecycle solicited extensive stakeholder input and expertise. At its September 2016 public meeting, CalRecycle's Director instructed staff to develop a comprehensive statewide mandatory packaging policy model that would contain the components CalRecycle considers necessary to manage packaging if appropriate statutory authority were provided.

In March 2017, CalRecycle began the policy model development process by hosting a public workshop soliciting stakeholder feedback on mandatory policy tools that CalRecycle could explore; this discussion will continue at the October 2017 public workshop. The purpose of this background document and the October workshop is to solicit stakeholder input on a comprehensive policy framework as a policy model, what the framework should entail, critical steps for how it could work, and how specific policy tools could be implemented within that framework. In addition, staff are seeking feedback on how the framework could be enforced, how CalRecycle could measure progress and success, and how the framework could respond to changes in the marketplace.

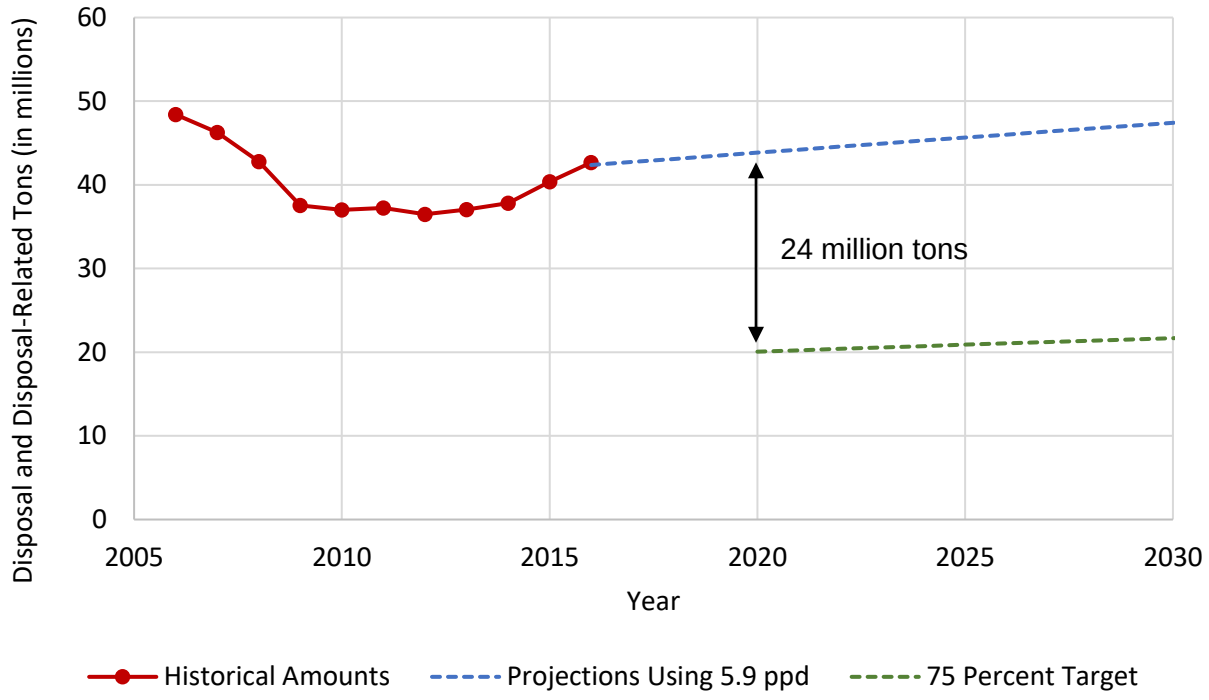
Figure 1: CalRecycle Packaging Reform: Timeline of Major Activities

Role of Packaging in California's 75 Percent Source Reduction, Recycling and Composting by 2020 Goal

For the last thirty years, CalRecycle has been tasked with monitoring disposal, recycling, and composting in the state. The passage of AB 341 (Chesbro, Chapter 476, Statutes of 2011) established a statewide 75 percent recycling goal through source reduction, recycling, and composting by 2020 and directed CalRecycle to develop a statewide strategy to reach this goal.

In 2016, California's overall disposal increased to 42.7 million tons of material disposed in landfills or disposal-related activities, which corresponds to a recycling rate of only 44 percent. Based on current projections for waste disposal, this means that an additional 24 million tons of material would need to be source-reduced, recycled, or composted by 2020 in order to meet this goal (see Figure 2). As packaging comprises approximately one quarter of California's disposed waste stream annually (see Appendix C), it represents a significant opportunity to help achieve California's 75 percent statewide recycling goal.

Figure 2: Dramatic Reduction in Disposal Needed to Reach 75 Percent Recycling Goal



Statewide projected disposal and disposal-related activities through 2030, and statewide target for 75 percent recycling goal. The red line shows actual annual statewide disposal and disposal-related activities, in tons, from 2006 to 2016. The blue dotted line represents a business as usual projection for disposal and disposal-related activities, using 5.9 pounds per person per day and population projections from the California Department of Finance. The green dotted line shows the target tons of disposal and disposal-related activities under AB 341.

As CalRecycle considers how to meet the 75 percent statewide recycling goal, one key factor to consider is that the management of recyclable materials operates within a global commodities market. CalRecycle estimates that 11 million tons of California-derived recyclable materials (totaling $3.2 billion), of which a significant portion is packaging, is exported annually to foreign markets. Exported recyclable materials account for approximately one-third of all non-disposed material generated in California each year. Recent policy changes, including China's National Sword program to address illegal imports and China's proposed import ban on scrap commodities, such as mixed paper and some plastic, may have dramatic impacts on California's management of recyclable materials. As international markets diminish, it may become increasingly important to support in-state and in-country processing and manufacturing for post-consumer recyclable materials. Any new policy approach should also enhance the resiliency of California's recycling infrastructure.

In addition to the high prevalence of packaging in the disposed waste stream, there are other environmental concerns related to improper or ineffective management of discarded packaging. These include greenhouse gas (GHG) emissions, waterway and marine debris impacts, and human health impacts.

The discussion of how to best manage discarded packaging is occurring on a global scale. Several countries have mature programs to manage packaging, including Canada, European Union member countries, Russia, Japan, Brazil, and Australia. Within the United States, California and Connecticut have both been leaders in formulating policies for managing packaging.

Consistent with packaging reform efforts to-date, for the purposes of this discussion, **the term packaging is broadly defined**. It includes all packaging material types, unless otherwise specified, that are placed into the California market (e.g., sold, distributed, imported, etc.). It includes primary packaging (the material used to hold the product, such as an aluminum soda can), as well as secondary packaging (the material used to contain the primary packaging, such as a cardboard box for soda cans) and tertiary packaging (the material used for bulk handling, such as a palletized load).

Intersection with Other California Initiatives

As a state, California is aggressively pursuing a wide range of environmental goals and regulations. While some of these initiatives are administered by CalRecycle, many are overseen by other state agencies. A partial list is provided below.

Packaging-Related Programs Administered by CalRecycle:

- Rigid Plastic Packaging Container (RPPC) Law: Mandates that product manufacturers that make products held in a rigid plastic container and are sold or offered for sale in California meet one of several compliance options, such as minimum postconsumer material content, source reduction, and reusable or refillable RPPCs (Public Resources Code (PRC) §§ 42300 *et seq*).
- Single-use Plastic Carryout Bag Ban: Prohibits certain grocery and retail stores from providing single-use plastic carryout bags to their customers (PRC § 42281), requires recycled paper bags and reusable plastic grocery bags to have, at minimum, a specified

amount of postconsumer recycled materials (PRC §§ 42280 and 42281), and requires stores to place plastic carryout bag recycling bins which are visible and easily accessible to the consumer (PRC §§ 42250 *et seq*).

- Glass Minimum Recycled Content: Requires California manufacturers of new glass containers to use a minimum amount of postconsumer recycled glass (PRC §14549).
- Beverage Container Recycling Law: Mandates that covered beverage containers are subject to a deposit/refund system and requires manufacturers to pay for a portion of the cost to recycle those beverage containers (PRC §§ 14500 *et seq*).
- Resin Identification Code: Requires all rigid plastic bottles and rigid plastic containers sold in California to be labeled with a code indicating which plastic resin was used to produce the product (PRC § 18015).
- Labeling Requirements for "Biodegradable" and "Compostable" Plastics: Prohibits the sale of a plastic product labeled with the term "compostable", "biodegradable," or other similar terms unless specified provisions are met (PRC §§ 42355 *et seq*).
- Plastic Ring Devices: Prohibits the sale of containers connected to any other container by a plastic ring or device that is not degradable when disposed as litter (PRC § 42350).
- Expanded Polystyrene Loose-Fill Packaging Law: Prohibits the sale of expanded polystyrene loose-fill packaging in California unless it contains 100 percent recycled material (PRC § 42390).
- Mandatory Commercial Recycling Program (AB 341, Chesbro, Chapter 476, Statutes of 2011): Mandates recycling by all businesses and public entities that generate four or more cubic yards of solid waste per week and multifamily residential dwellings that have five or more units. Each jurisdiction is required to implement a mandatory commercial recycling program with education, outreach, and monitoring components.
- Integrated Waste Management Act (AB 939, Sher, Chapter 1095, Statutes of 1989): Requires each city or county to divert 50 percent of all solid waste by January 1, 2000, and to submit a plan that describes how material will be diverted.

Packaging-Related Programs Administered by Other Agencies:

- Sustainable Freight Transport Initiative: Directs the California State Transportation Agency, the California Environmental Protection Agency, and the Natural Resources Agency to improve freight efficiency, transition to zero-emission technologies, and increase competitiveness of California's freight system. The 2016 Action Plan identified packaging optimization as an area to explore for potential future action.
- Trash Amendments to Total Maximum Daily Loads (TMDLs) for Water Quality: Requires Regional Water Quality Control Board permits to prohibit trash in storm water and non-storm water discharges.
- Toxics in Packaging: Prohibits the intentional introduction of cadmium, lead, mercury, and hexavalent chromium into product packaging or packaging components and is overseen by the Department of Toxic Substances Control (DTSC).
- Safer Consumer Products: Establishes a regulatory process under DTSC to create safer substitutes for hazardous ingredients in consumer products sold in California.
- Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): Requires the state, under the Office of Environmental Health Hazard Assessment (OEHHA), to maintain and update a list of chemicals known to the state to cause cancer or reproductive toxicity, and make that information available to the public.

- Implementation Strategy to Reduce and Prevent Ocean Litter: Creates an action plan, under the Ocean Protection Council (OPC), to reduce and prevent marine debris. OPC is in the process of updating the 2008 Strategy, which will include suggestions for policies and legislative changes related to packaging.

Local and regional entities have also enacted various ordinances to manage packaging and its local impacts that are more strenuous than state-level requirements. These range from banning the use of non-recyclable or non-compostable food service packaging, banning expanded polystyrene packaging, imposing fees on paper bags, and enacting landfill bans on recyclable materials (including packaging). For example, roughly 150 cities and counties in California had banned single-use plastic bags prior to the approval of the statewide plastic carryout bag ban in 2016. This created a complex network of compliance requirements for manufacturers and businesses to navigate; a statewide policy (PRC §§42281 *et seq*) helps solve this particular challenge. Currently, 110 California cities or counties have passed local ordinances on polystyrene and/or expanded polystyrene to ban the material entirely, prohibit its use for disposable food service items, prohibit its use by certain vendors, or other variants. In place of polystyrene or expanded polystyrene, local governments have required recyclable food packaging, compostable food packaging, or both; however, the requirements differ substantially across the state. This mirrors the compliance challenges seen with the locally-based single-use plastic bag requirements that could be addressed with a statewide policy.

CalRecycle is cognizant that proceeding with the development of a model policy for a comprehensive mandatory statewide approach for packaging must consider how its efforts may impact these existing requirements, provide complementary benefits to those requirements, and avoid unintended negative consequences, as much as is possible. In addition, CalRecycle recognizes that other agencies, such as DTSC and OEHHA, will play a role in identifying the toxicological and other human health risks associated with packaging materials, which may influence how a statewide packaging policy is implemented. CalRecycle continues to work with its partner agencies to address concerns about compatibility with existing requirements in developing a model policy for packaging materials management.

Model Policy for Comprehensive Mandatory Statewide Packaging Framework

Stakeholders emphasized throughout CalRecycle's outreach process that no "silver bullet" or single policy tool that will achieve significant packaging reduction and recovery, particularly by the statutory date of 2020, to meet the 75 percent statewide recycling goal. Given the myriad of packaging and functions, CalRecycle recognizes that there is not a one-size-fits-all policy tool for all packaging. As a result, and per the direction provided by CalRecycle's Director in September 2016, CalRecycle is developing a comprehensive, statewide framework for managing all packaging to decrease disposal.

Under a comprehensive statewide framework approach for managing packaging, which will require legislation, oversight authority would be granted to CalRecycle. CalRecycle would have statutory authority to implement a consistent process to manage packaging that includes flexibility to incorporate appropriate policy tools that reflect and address the unique opportunities and challenges posed by different packaging. The framework would also include flexibility to address priorities for timing (what materials should be addressed first?) and for implementation (what tools should be deployed before others?), in addition to strengthening CalRecycle's existing authority under existing packaging-related programs.

Key Terms

Statewide Framework: A comprehensive process for managing all packaging, established through regulations.

Policy Tools: Specific approaches for regulating packaging, such as minimum content or labeling requirements, that could be applied to all packaging or to specific packaging materials.

Packaging: See page 7.

In other words, CalRecycle would have the authority to regulate all packaging through the regulatory process. As a part of implementing its statutory authority through rulemaking, CalRecycle would establish a process for prioritizing which types of packaging would be regulated and when, and for requiring the use of different tools for different packaging materials; this could include prioritizing certain packaging for initial action under a phased approach. The rulemaking process would solicit significant stakeholder input to help identify and select specific tools under the framework. This framework approach would also allow CalRecycle to avoid unintended consequences of driving packaging manufacturers to use less environmentally preferable materials and will help minimize consumer confusion.

One alternative to this type of comprehensive framework is a patchwork approach that does not necessarily provide for such prioritization and flexibility within a consistent decision-making process. If this was the only tool available, CalRecycle could use its existing authority to address some types of packaging, as discussed earlier. However, the existing programs alone have not been sufficient to reach the 75 percent statewide recycling, composting, and source reduction goal.

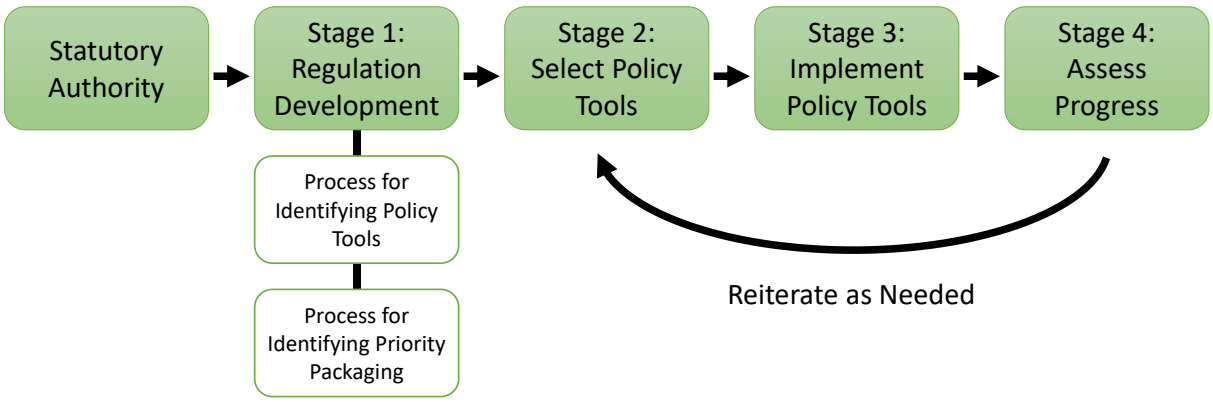
Assuming legislative authorization, staff have identified the following key stages for implementing a comprehensive packaging framework:

1. **Development of Guiding Regulations.**
   a. **Develop process to identify the policy tools.** As part of the rulemaking, CalRecycle would identify the suite of policy tools that could be applied, as well as tools to target specific needs and how additional policy tools could be added to the list. The discussion of Stage 1A below provides a list of possible policy tools that could be included in the regulation.
   b. **Develop process to identify priority packaging.** As part of the rulemaking, CalRecycle would establish a process to evaluate and prioritize different types of packaging. This would include an analysis of the waste stream and other key factors related to packaging. Appendix A: Stage 1B provides staff's analysis of the types of factors that should be incorporated in such a rulemaking. When implemented, this stage could include an opportunity for CalRecycle to selectively exempt companies

that have reached the same goals as those set by the State in reducing packaging waste through voluntary efforts.

2. **Select the policy tools.** Following formal rulemaking, CalRecycle would use the established public process to apply a policy tool or tools to priority packaging via discussions at public workshops followed by public decisions by the Director. This would also include establishing clear metrics and goals for materials covered by the policy tool. The discussion below describes how policy tools could be applied under Stage 2.
3. **Implement policy tools.** Following the formal rulemaking, CalRecycle and involved stakeholders would work to implement the selected policy tool or tools for the identified packaging.
4. **Assess progress.** This would allow for a reevaluation of how the tools are being applied to packaging, and how best to improve and respond to market or technical changes. This would require specific metrics and goals for measuring success that account for current efforts to reduce packaging waste. In addition, the assessment of progress could include opportunities for responsible parties to transition to voluntary systems if program metrics and goals were met.

Figure 3: Stages within a Packaging Framework



By providing CalRecycle with the statutory authority to systematically address packaging, CalRecycle can develop an efficient approach that is complementary to existing requirements and provides both flexibility and consistency.

This document focuses on Stages 1 and 2 of the packaging framework. Based on the feedback received at the October 2017 workshop, staff will develop recommendations for implementing Stages 3 and 4. This will be released with the formal recommendation on how to manage packaging in California in early 2018.

Stage 1A: Policy Tools Under Consideration to Manage Packaging

Over the course of the last four years, CalRecycle staff and external stakeholders have identified a range of policy tools that could be considered to improve the management of packaging at end of life. The background paper[1] for the November 13, 2014 workshop included three policy tools as examples to help guide the discussion: extended producer responsibility, landfill ban on recyclable packaging, and minimum recycled content requirements. During the workshop, participants identified several other tools, including: deposit/refund programs, mandatory recycling, increased landfill tipping fee, sales ban, pay-as-you-throw, advanced recycling fees based on the impact of a specific packaging, and collection of a materials management fee on every product sold. Staff have further identified labeling requirements, source reduction, and recyclable design as possible policy tools to manage packaging.

The implementation of any tool will depend on its authorizing language and will require clear metrics, definitions, goals, and enforcement and oversight provisions, among others. For the purposes of discussion, staff have identified several general features for the policy tools listed above. These tools may be applied to a variety of different responsible entities, including manufacturers, distributors, retailers, local governments, waste haulers, and consumers.

For completeness, staff have listed all of the policy tools identified during the multi-year stakeholder engagement process. However, not all of these tools would be considered for application within the statewide framework for managing packaging. Table 1 (below) provides a more in-depth discussion of the strengths and limitations of each policy tool that will considered in selecting tools for specific packaging types.

Defining All Policy Tools Identified During the Stakeholder Engagement Process

1. Source Reduction of Packaging

Source reduction of packaging would require manufacturers and brand owners to reduce packaging weight, volume, or quantity relative to a baseline. Source reduction requirements are currently in place for the rigid plastic packaging container program. In addition, commercial entities using packaging, such as restaurants and stores, could be required to use reusable packaging for their transport and shipping, and incentivize consumers to use reusable packaging such as to-go containers.

2. Labeling Requirements

Labeling requirements would specify that certain information must appear on the labels of all packaging sold in California. This labeling would provide information to consumers on the recyclability or proper end-of-life handling for a given material. Depending on the packaging, this could for example include “not recyclable in California,” or “generally accepted for recycling in California.” This could also rely on existing labeling systems, such as the voluntary How2Recycle label, or could improve the existing resin identification codes for plastics.

[1] CalRecycle Packaging Workshop Background Paper, “Increasing collection and recovery of packaging in California,” <http://www.calrecycle.ca.gov/Actions/Document.ashx?id=4453>.

3. Recyclable or Compostable Design

A recyclable or compostable design would require packaging sold or distributed in California to meet certain standards to ensure recyclability or compostability in the state. One resource for recyclable design is the Association of Plastic Recyclers' design guide for plastics recyclability. For composting, packaging products could be required to be certified by the Biodegradable Products Institute. It is important to note, however, that current composting practices screen out all plastic packaging, even if it is labeled as compostable.

4. Statewide Standard List of Recyclable and Compostable Packaging

Establishing a standard list of recyclable and compostable packaging across California would require all residential collection programs to accept and process the same types of recyclable materials. Individual jurisdictions could elect to accept other materials beyond the standard list if they have sufficient infrastructure to process the materials for recycling or composting. This could also include bans on certain packaging materials at the point of collection.

5. Minimum Postconsumer Recycled Content Requirement

A minimum postconsumer recycled content requirement would require that a specified package or packaging category offered for sale and sold in the state contain a minimum amount of postconsumer recycled material. California currently has several minimum-content programs, which include requirements for glass containers, rigid plastic packaging containers (minimum postconsumer material content is one compliance option under this program), plastic bags, and newsprint.

6. Producer Responsibility

Producer responsibility can include many forms of involvement by product manufacturers. Obligations can range from full financial and physical responsibility for managing post-consumer material, including program design, financing, and implementation activities, to more limited involvement, such as partial financial responsibility for the costs of collecting and recycling material.

Extended producer responsibility (EPR) is a strategy to place a shared responsibility for the end-of-life product management on producers and all entities involved in the product chain, instead of the general public. It can also be designed to encourage product design changes that minimize a negative impact on human health and the environment at every stage of the product's lifestyle. Two common characteristics of EPR are that it is industry-run and non-prescriptive. The government sets parameters (e.g., including clear, measurable, and enforceable goals) and provides oversight and enforcement of the law, but allows flexibility for industry to determine the most cost-effective solutions within those parameters.

7. Landfill Ban on Recyclable or Compostable Packaging

A landfill ban would prohibit specified recyclable and compostable packaging from being accepted at and landfilled in California, and would require varying levels of enforcement at the state and local level. In practice, landfill bans are implemented as bans at the point of collection, which allows for simpler enforcement.

8. Deposit System

A deposit program requires consumers to pay an up-front deposit at the time of purchase; the deposit is later redeemed when consumers bring the material back to an approved point of collection. California's largest deposit program, the beverage container recycling program, places a 5 or 10 cent deposit on over 23 billion containers annually. Unredeemed deposits may be used to finance collection and processing infrastructure for the deposit-eligible material.

9. Increasing Landfill Tipping Fee

An increased landfill tipping fee would increase the costs for each ton of all material (not just packaging) disposed at landfills. This mechanism is intended to provide a general economic incentive to recycle rather than dispose in landfills. In addition, revenue initially generated from the higher tipping fees could be used to expand or enhance the collection and processing infrastructure.

10. Packaging Product Sales Ban

A packaging product sales ban would prohibit the sale and distribution of certain packaging that is not compatible with California's infrastructure or is otherwise deemed to be problematic. For example, this might include packaging materials that are expensive to collect, recycle, or otherwise handle, or are common contaminants for other recyclable materials.

11. Pay-As-You-Throw

Pay-as-you-throw (PAYT) introduces variable rates for waste generators based on the amount disposed per household or business. The more material that a waste generator disposes (e.g., the larger the size of the garbage bin), the higher the rate. PAYT is one mechanism to support source reduction by consumers and other waste generators.

12. Advanced Recycling Fees

Advanced recycling fees are assessed on materials based on their relative environmental impact and cost to dispose. Hard-to-manage items are assessed a higher fee than easily handled items. Proceeds from the fee could support infrastructure, statewide education, and other statewide initiatives for managing those products.

13. Materials Management Fees

A material management fee would impose a single, flat fee on every product with packaging sold in California; the proceeds from the fee could support infrastructure, statewide education, research and development, grants, beach clean-ups, and other statewide initiatives for managing packaging from those products at end of life.

Evaluation of Feasibility of Policy Tools

Staff recognize that the 13 policy tools described above are far from complete. Many of the tools could be used in combination, or to supplement other tools, such as tax incentives, public education campaigns, support of in-store reusable containers, procurement requirements, or freezes on state purchasing of certain items. Staff have chosen to focus on the thirteen tools

identified through the stakeholder engagement process and defined above to assess their suitability in managing the priority packaging materials.

However, each tool presents tradeoffs in the feasibility of its implementation in California and its ability to significantly reduce packaging waste. To help frame the workshop discussion (as well as inform the rulemaking process if authorized), staff evaluated each tool for its general advantages and disadvantages in order to help focus the analysis of which tools were most likely to succeed in reducing the amount of discarded packaging going to landfills.

In conducting this general qualitative evaluation, staff considered several factors, including shared responsibility, impact to local governments, interaction with current collection systems and infrastructure, financing for improved management, development of markets, education and outreach, program implementation, program enforcement, applicability to multiple product types, and ability to supplement other approaches.

The results of this evaluation are summarized in Table 1.

Table 1. General Analysis of Policy Tools Identified During Stakeholder Engagement Process

Tool	Pros	Cons
1. Source Reduction of Packaging	• Addresses packaging design and development • Consistent with the state's waste management hierarchy • Shared responsibility, including consumers	• Requires careful baselining so as to not penalize early adopters • Challenging to measure • Technical limitations (i.e., lightweighting only to a certain extent)
2. Labeling Requirements	• Provides clear consumer information • Low-cost method to provide better education and to help improve quality of collected material • Reduces contamination in recycling and compost streams/cost of removal	• Requires some consistency across collection infrastructures to be most effective • Labels such as "not recyclable" or "check locally" might negatively affect marketability
3. Recyclable or Compostable Design	• Creates consistency in materials management • Encourages development of markets • Reduces processing costs for recyclers and composters	• Requires sufficient flexibility to adapt to innovation • Difficult to identify industry-wide processing criteria for different composting and recycling systems
4. Statewide Standard List of Recyclable and Compostable Packaging	• Creates consistency in materials management • Encourages development of markets	• May require changes to current infrastructure • No responsibility for manufacturers • Many composting facilities screen out all plastic packaging, even if compostable
5. Minimum Postconsumer Recycled Content Requirement	• Creates demand for recycled feedstock • Decreases reliance on virgin material • Direct link to supporting markets • Requires action from multiple entities in supply chain	• Requires adequate supply and quality of recycled feedstock • Poses challenges for meeting aesthetic criteria • Technical challenges • May require changes to current infrastructure

Tool	Pros	Cons
6a. Producer Responsibility	• Critical but focused role for state government if a results-based program • Larger role for producers with incentives for industry to keep costs low • Provide consistency across the state for accepted materials • Can include requirements for market development and public education	• Could create an incentive for the stewardship organization to keep recycling rates low • Low cost collection does not always result in highest and best use of collected materials • May require changes in collection infrastructure • Impacts a significant number of stakeholders • Fewer known factors as to how a program would be designed and operated
6b. Extended Producer Responsibility	• Critical but focused role for state government if a results-based program • Larger role for producers with incentives for industry to keep costs low • Moves costs away from local governments • Provides consistency across the state for accepted materials • Internalized financing mechanism • Can include requirements for market development and public education • Producers incentivized to address design changes	• Low cost collection does not always result in highest and best use of collected materials • May require changes in collection infrastructure • Impacts a significant number of stakeholders • Fewer known factors as to how a program would be designed and operated
7. Landfill Ban on Recyclable or Compostable Packaging	• Consistent with ultimate goal • Increases consumer awareness of materials accepted for recycling and composting	• Does not address upstream packaging issues • No responsibility for manufacturers • No link to recycling markets • Problematic to enforce • Places primary responsibility on local jurisdictions • Significant risk of increasing illegal dumping and littering
8. Deposit System	• Effective tool for producing clean streams of material • Incentivizes consumer to recycle • Proven to increase recycling rates and reduce litter/marine debris • Provides financial support to build infrastructure and markets	• Places primary responsibility on consumer • Significant risk of fraud • Challenging to implement across all material types
9. Increasing Landfill Tipping Fee	• Policy driver for decreasing disposal overall by making recycling more comparable in cost • Pairs well with other approaches	• Not specific to packaging • Does not address upstream packaging issues • No responsibility for manufacturers • No link to recycling markets
10. Packaging Product Sales Ban	• Directly targets problematic materials • Strong enforcement mechanism • Strong market signal against certain packaging materials	• Can only be applied to a narrow range of packaging materials • Would require specific criteria to determine ban, based on toxicity, lack of recyclability, or failure to meet other goals • Could drive manufacturers to other materials with undefined benefits

Tool	Pros	Cons
11. Pay-As-You-Throw	• Policy driver for decreasing disposal overall • Pairs well with other approaches • Provides financing mechanism to handle disposal • Largely compatible with existing infrastructure • Requires consumer engagement	• Not specific to packaging • Does not address front-end packaging issues • Unintended consequences of increasing contamination in recycling • Statewide requirement for local jurisdictions • No responsibility for manufacturers • No link to recycling markets
12. Advanced Recycling Fees	• Provides a direct funding mechanism to handle and incentivize management of material • Provides a visible fee that relates to recyclability	• Places primary responsibility on consumer
13. Materials Management Fees	• Provides a direct funding mechanism to handle and incentivize management of material	• Places primary responsibility on consumer • Does not incentivize use of more recyclable products

Several of the policy tools described above have significant limitations. For example, landfill bans are very difficult to enforce, and without corresponding requirements or programs to collect and recycle materials, bans can lead to unintended consequences such as increased illegal dumping. Others, such as packaging product sales bans, may be best applied as a secondary tool for ensuring compliance, rather than as a first approach for managing materials. The interaction between the different policy tools is discussed in greater detail in the next section.

Stage 2: Assessment of Policy Tools within a Packaging Framework

A comprehensive statewide framework would avoid a patchwork of regulatory requirements that may be difficult for packaging and product manufacturers, retailers, local governments, and others to effectively implement and enforce. Even so, as staff review the range of policy tools that may be applied in a framework, staff are aware that while some tools have very broad applicability, others may provide stronger or additional benefits when applied to specific packaging. In addition, the tools discussed in Stage 1A have different levels of complexity.

Staff fully recognize the dilemma inherent in this discussion – i.e., that suggesting certain policy tools may have broad applicability to most or all packaging would seem to counter the idea that flexibility is needed and that different policy tools may be more appropriate for different types of packaging. However, this is exactly why a comprehensive framework is needed. By providing CalRecycle with statutory authority to implement a framework approach, CalRecycle would have the ability to work systematically within California to ensure that the result is complementary to existing requirements. Depending on the subsequent rulemaking, this could result in some tools being applied broadly and others being applied only to specific packaging.

The following two subsections reflect this by first describing tools that could be applied to all packaging and then describing tools that would be differentially applicable to six types of packaging. These six materials were identified based on the analysis presented in Appendix A (Stage 1B); they exemplify packaging materials with specific needs that could be addressed within a broader framework and that also could be prioritized for initial action under a phased approach.

Tools for All Packaging

Staff have identified several policy tools that lend themselves to broad application within a policy framework. These include source reduction, producer responsibility, pay-as-you-throw requirements, increasing the landfill tipping fee, advanced recycling fees, establishing a standard list of recyclable and compostable packaging, and requiring packaging to be recyclable or compostable. Many of these tools have been successfully implemented locally or in other states or nations to manage packaging.

Source Reduction

Source reduction, which requires changes in the design or use of packaging in order to reduce the generation of solid waste before it enters the waste stream, is the preferred waste management strategy for all materials. In addition, source reduction places responsibility on all entities, including both manufacturers and consumers.

Producer Responsibility

As discussed earlier, producer responsibility places requirements on manufacturers to manage some or all aspects of their products at end of life. Because the current materials management infrastructure is focused on the collection and processing of a broad set of packaging and non-packaging material types, the costs associated with separately collecting and managing a specific type of packaging through producer responsibility may not benefit from the current economies of scale. As a result, this policy tool may be most successful when applied to a

broader set of packaging products, rather than to individual packaging materials. This approach also assists with source reduction and overall reductions in packaging waste as manufacturers can be required or incentivized to make their product reusable or refillable.

Within a packaging framework, producer responsibility could be implemented comprehensively, where manufacturers would be responsible for designing, financing, and implementing a program to manage all packaging with enforceable goals and government oversight. Alternatively, certain elements of producer responsibility, such as financing and education, could be utilized as stand-alone pieces.

Pay-As-You-Throw

Introducing a statewide pay-as-you-throw (PAYT) requirement for disposal would provide a direct incentive for generators to reduce the amount of disposed packaging. Although this method does not provide shared responsibility in terms of *who* would be affected (i.e., manufacturers would see minimal impacts) and does not address packaging specifically, it would accommodate all current and future packaging material types. In addition, this type of comprehensive approach would synergize with CalRecycle's larger efforts to reduce disposal statewide by incentivizing source reduction by consumers and other waste generators.

Increasing Landfill Tipping Fee

Increasing the statewide landfill tipping fee for all materials disposed would provide several similar advantages as PAYT. This tool would accommodate all current and future packaging material types, and would complement CalRecycle's larger efforts to reduce disposal statewide. However, increasing the statewide landfill tipping fee provides an indirect method for incentivizing consumers to reduce the amount of disposed packaging and does not directly involve other entities involved in the development or sale of packaging.

Advanced Recycling Fee

An advanced recycling fee, whether applied to individual packaging materials or to all packaging used in California, provides a unique method for managing postconsumer packaging waste: funding. One advantage of a broad funding base is that it would allow CalRecycle the greatest amount of latitude in supporting and expanding processing and remanufacturing infrastructure to manage packaging waste.

Statewide Standard List of Recyclable and Compostable Packaging

Establishing a standard list of recyclable and compostable packaging across California would require all curbside collection programs to accept and process certain types of recyclable materials. Individual jurisdictions could elect to accept other materials beyond the standard list, if they have sufficient infrastructure to process the materials for recycling or composting. This approach could help alleviate consumer confusion over what types of materials are recyclable or compostable. In addition, a standard list of recyclable and compostable packaging could spur investments in infrastructure to handle the materials on the standard list.

Recyclable or Compostable Design

Specifying that all packaging offered for sale, distributed or sold in California must be recyclable or compostable would require manufacturers to switch to packaging that is compatible with the recycling or composting services available in the communities they serve. Manufacturers would

be incentivized to work with local governments and recyclers to increase processing and market capacity for recyclable and compostable packaging alternatives, as well as work with consumers to ensure that their packaging is recycled or composted. This policy approach would provide a signal to the market place that packaging must be designed with the end of life in mind. Finally, this policy would avoid the unintended consequence of motivating manufacturers to switch to less recyclable or compostable materials.

Labeling Requirements

This tool would require that all packaging offered for sale, distributed or sold in California be labeled with information about its recyclability. However, a labeling requirement must be paired with other tools in order to divert significant amounts of packaging material from the landfill. Labels could use the How2Recycle label, expand the use of existing resin identification codes, or could provide California-specific information, such as “Recyclable in California” or “Not Recyclable in California.” This would provide general consumer education regarding end-of-life management for packaging.

Applying the Framework to Specific Packaging

Under the framework approach described earlier, policy tools may be applied to all packaging, or to specific types of packaging. In order to make this determination, a key step of the framework is to identify specific needs for managing different types of packaging. One example of this is the analysis presented in Appendix A, which identified six priority packaging materials – uncoated corrugated cardboard, waxed cardboard, aseptic containers and cartons, film plastic, expanded polystyrene, and pouches.

The process described in Appendix A relies on six screening criteria to determine the priority packaging. Staff solicited stakeholder feedback on the list of screening criteria in July and August 2017 and incorporated the feedback into the selection process. A full discussion of the comments received is presented in Appendix B.

It is important to note that the prioritized packaging discussed below were not selected to the *exclusion* of other packaging materials. Rather, these six materials were chosen as examples of packaging materials with specific needs that could be addressed within a broader framework. In addition, these six materials could be prioritized for initial action under a mandatory policy framework that implements a phased approach for including all packaging.

In the descriptions below, the specific policy tools are identified in bold and are based on the list of tools in Stage 1A and Table 1.

Uncoated Corrugated Cardboard

Uncoated corrugated cardboard is the largest single packaging category in the disposed waste stream (approximately 1 million tons annually). This is in spite of an extensive collection and

processing infrastructure and national collection rates of around 90 percent.[2] In addition, the traditional pattern for where cardboard waste is generated is shifting from traditional box stores to residential locations due to increased e-commerce. This can cause increases in contamination during collection, especially considering the widespread use of single stream collection for residential recycling.

Given the extensive in-state infrastructure already committed to collecting and managing cardboard, staff propose that the greatest opportunities for further diverting cardboard from the landfill are tools that complement existing programs, decrease overall generation of cardboard, and can be rapidly implemented.

As a tool, **Source Reduction** offers several benefits for managing cardboard. First, any decreases in the amount of cardboard generated would translate to fewer tons disposed. Second, the use of source reduction as a policy tool could spur further optimization of packaging size relative to the product shipped, eliminating unnecessary packaging. This could include a reevaluation of the drop strength of cardboard, possibly decreasing the amount of material needed for effective packaging.

New funding mechanism tools, such as **Advanced Recycling Fees**, **PAYT**, or **Increased Tipping Fees**, could improve collection and processing infrastructure or incentivize in-state processing. Although such changes could be augmented through private investments (such as the Closed Loop Fund), extensive changes throughout the state would require public investments.

Finally, codifying **Minimum Postconsumer Recycled Content Requirements** could establish minimum standards for collection and reuse of cardboard.

Waxed Cardboard

Waxed cardboard differs from uncoated corrugated cardboard in that a waxed coating protects the cardboard fibers. This wax coating makes it challenging to recycle this material; as a result, it is often collected for commercial composting rather than for recycling. In addition, this packaging is typically used in industrial settings for food or other materials that may soil uncoated cardboard, which further push this material toward commercial composting. However, if commercial composting is not available, this material may instead be sent to landfills. Finally, consumers are not aware of the differences between waxed cardboard and uncoated corrugated cardboard and their relative recyclability, which leads to mis-sorting of material into residential recycling bins.

Staff identified several opportunities for addressing the disposal of waxed cardboard and the specific management challenges identified above.

Requiring **Recyclable or Compostable Design** would drive changes in the design of waxed cardboard to make it compatible with current recycling streams, in the event that composting is

[2] United States Environmental Protection Agency, "Advancing Sustainable Materials Management: 2014 Fact Sheet," <https://www.epa.gov/sites/production/files/2016-11/documents/2014_smmfactsheet_508.pdf>.

not available. Alternately, **Minimum Postconsumer Recycled Content Requirements** could drive system-wide changes to ensure cleaner collection streams, and reuse of the material.

Tools to promote consumer education, such as **Labeling Requirements**, would provide information to consumers that the material is not recyclable and create a clearer difference between waxed cardboard and uncoated corrugated cardboard.

Finally, applying **Source Reduction** to the commercial use of this material could result in substitutions to more durable, reusable containers for transport and storage of materials.

Aseptic Containers and Cartons

Aseptic containers and cartons are a rapidly growing category of fiber packaging. In spite of strong industry pressure to create recycling opportunities for this material type, infrastructure and markets have been slow to develop. In addition, aseptic containers and cartons are often contaminants in other fiber streams, which decreases the value of those materials.

Given the strong leadership from industry on trying to expand recycling options for this material, staff identified significant opportunities for partnerships with the industry to ensure that this material is recyclable and to enhance current collection opportunities to fund collection and management, while also minimizing the extent to which this material contaminates other recycling streams.

Policy tools that provide funds, such as **Advanced Recycling Fees**, **PAYT**, **Deposit Systems**, or **Increased Tipping Fees**, coupled with private investments, could improve the collection and processing infrastructure for this material.

In addition, **Labeling Requirements**, such as the How2Recycle label, would provide better consumer education as to the availability of recycling for aseptic containers and cartons. In the event that these efforts are unable to develop collection and recycling markets, the product could instead be labeled as “Not Recyclable in California.” This would create further incentives for the industry to further invest and develop other opportunities for managing aseptic containers and cartons.

Film Plastic

Although film plastics offer tremendous benefits for the storage and transport of many products, they pose several challenges for postconsumer management. First, film plastics are high volume, low weight materials that require significant volumes to make the material economically viable to collect and transport. Second, film plastics are often used to package food, which can lead to contamination challenges during the recycling process. Third, curbside collection of film plastics also leads to high contamination rates, which further decreases the material’s value. In addition, curbside collection of films can cause significant damage to machinery at material recovery facilities during processing and sorting. Finally, the wide variety of material types and physical characteristics of film plastics means that there is no single recycling solution for all materials within this category. For example, film plastics can be made from a variety of single plastic resins, or combine several resins into one product, which creates challenges for separating and recovering the materials for recycling.

Staff identified two key opportunities to ensure cleaner material and establish consequences for dealing with a problematic material if those goals cannot be met.

First, tools to establish stable funding sources, such as **Advanced Recycling Fees**, **PAYT**, **Increased Tipping Fees**, or **Extended Producer Responsibility**, could ensure the economic viability of collecting and recycling film plastics by enhancing return-to-retail or other consumer-driven collection options. Coupled with **Source Reduction** or source separation of film plastics, these tools could lead to cleaner streams of material.

Alternatively, if these policy tools are ineffective, film plastics could face **Labeling Requirements** listing the material as "Not Recyclable in California" if certain targets for disposal reduction are not seen.

Expanded Polystyrene

Expanded polystyrene (EPS) poses several challenges for postconsumer management. Despite efforts to increase recovery of EPS products, only a small percentage of all EPS is currently recycled in California.[3] The common use of EPS in food service leads to high levels of contaminated packaging, which makes it difficult for recyclers to accept and process the EPS materials. There is little incentive to utilize materials that are costly to clean at the end of their life. EPS is also economically challenging to recycle due to its light weight and associated high costs of transport. In addition, EPS is bulky, fracturable, and becomes easily airborne. Due to its physical properties, EPS products significantly contribute to marine debris and litter in the environment, similar to plastic single-use carryout bags.

Staff focused on approaches to improve economic viability of recycling and establish consequences for dealing with this problematic material.

Tools to provide financing, such as **Advanced Disposal Fees**, **PAYT**, or **Extended Producer Responsibility**, coupled with private financing, could enhance the collection and processing infrastructure for this material. Some of these tools, such as EPR, could also be used to drive innovative design to replace the current material with more recyclable items.

Alternatively, EPS could be managed with **Labeling Requirements** stating that the material is "Not Recyclable in California," or be listed on a **Standard List of Recyclable Packaging** as not recyclable to encourage packaging substitution and avoid the toxicity risks of EPS.

Finally, mandates to achieve certain recycling rates could be coupled with a phased **Packaging Product Sales Ban** if those targets are not met.

Pouches

Pouches are particularly challenging to manage under the current recycling infrastructure due to their shape, which leads to frequent contamination in fiber streams during sorting at MRFs. In

[3] Clean Water Action, "Recycling Food Service Foam Containers," <http://www.cleanwateraction.org/files/publications/CWA%20EPS%20Foam%20Recycling%20Fact%20Sheet_0.pdf>.

addition, pouches are typically multi-laminates, which must be separated in order to recycle the material. Pouches are also formed from a range of different polymer types, which makes sorting and recycling challenging.

Staff has identified that significant funding sources would be needed to help subsidize the costs of collecting and recycling this material.

As this type of packaging is rapidly growing in its market share, there is tremendous potential to create an infrastructure to better manage this material. Funding mechanisms, such as **Advanced Recycling Fees**, **PAYT**, or **Increasing Landfill Tipping Fees**, would allow for investments and improvements to the current MRF infrastructure and may drive changes in consumer behavior. In addition, approaches to ensure separate collection systems, such as in-store or direct-to-manufacturer collection, could provide cleaner streams of material prior to processing.

Staff identified **Minimum Postconsumer Recycled Content Requirements** as a beneficial tool for pouches, as there may be fewer challenges for matching coloring and other design requirements when compared to other packaging.

Finally, if the above approaches are not sufficient to ensure the proper management of pouches, pouches could face **Labeling Requirements**, such as “Not Recyclable in California” and listed on a **Standard List of Recyclable Packaging** as not recyclable.

Next Steps

This document will be used to guide the conversation at the October 10 workshop and to solicit feedback. Specifically, CalRecycle is seeking feedback on:

- How could a broad policy framework work?
- How could specific policy tools be implemented within that framework?
- How should the framework overall be implemented?
- How should progress and success be measured?
- What enforcement measures should be used under the framework?
- How could the policy framework respond to changes in the marketplace?

Staff anticipate releasing a set of draft recommendations in early 2018 that identify the best strategies for handling packaging in California. The draft recommendations will include a complete discussion of Stage 3 (Implement Policy Tools) and Stage 4 (Assess Progress) of a framework approach for managing packaging and will provide suggestions for metrics and goals.

This set of draft recommendations will be the subject of a public workshop. Staff anticipates following this with formal recommendations for the Director’s consideration.

Appendix A: Stage 1B: Application of Screening Criteria to Determine Priority Packaging

One key step within a comprehensive framework to manage packaging is identifying priority packaging. Staff developed six screening criteria to make this determination. In order to guide the discussion and provide an early opportunity for stakeholder feedback, staff distributed a draft set of screening criteria in July 2017. Based on the feedback received (see Appendix B), staff made several changes to the final criteria. The process for applying those screening criteria and identifying priority packaging is described below.

Determination of Packaging Materials

Based on the 2014 California waste characterization study, roughly one quarter of the currently disposed waste stream is packaging-related (see Appendix C). Of that material, fiber and plastic comprise over 90 percent of the total packaging materials disposed by weight. Given this prevalence, and in light of CalRecycle's 75 percent recycling goal, staff chose to limit their determination of priority packaging to these two categories of materials. Staff further divided paper and plastic packaging into smaller subgroups to better consider the unique circumstances surrounding the management of different packaging. For example, PET containers have different collection and processing challenges than do PET pouches. Table A1 describes the list of packaging materials.

Table A1. List of packaging and definitions

Packaging Name	Packaging Definition
Uncoated corrugated cardboard	Paper laminate usually composed of three layers. The center wavy layer is sandwiched between the two outer layers. It does not have any wax coating on the inside or outside. Examples include entire cardboard containers, such as shipping and moving boxes, computer packaging cartons, and sheets and pieces of boxes and cartons. This type does not include chipboard boxes such as cereal and tissue boxes.
Waxed cardboard	Corrugated cardboard, as described above, with a wax coating on the inside or outside.
Aseptic containers and cartons	Multi-layer packaging that contains shelf-stable food products (such as apple juice, soup, soy milk) and gable top cartons. These are usually paper-based, may be any shape, and may include a plastic pour spout as part of the carton.
Wood (pallets and crates)	Unpainted wood pallets, crates, and packaging made of lumber/engineered wood.
Other miscellaneous paper	Packaging items of mostly paper that do not fit into any of the other paper types.
PET containers	Clear or colored PET (polyethylene terephthalate) containers. When marked for identification, it bears the number 1 in the center of the triangle symbol and may also bear the letters PETE or PET.
HDPE containers	Natural or colored HDPE (high-density polyethylene) containers. When marked for identification, it bears the number 2 in the center of the triangle symbol and may also bear the letters HDPE.
Plastic 3-7 containers	Plastic containers made of types of plastic other than PET or HDPE. Items may be made of PVC (polyvinyl chloride, 3), LDPE (low-density

Packaging Name	Packaging Definition
	polyethylene, 4), PP (polypropylene, 5), PS (polystyrene, 6), or mixed resins (7). When marked for identification, these items may bear the indicated number in the triangle symbol.
Expanded polystyrene	White foam made from polystyrene. Typically used to protect a product during packing and transit.
Plastic thermoform	Thin-gauge, rigid plastic packaging, which may include clamshells, blisters, and trays. May include packaging made from a range of polymer types (including PET, PVC, PS, and PLA).
Degradable plastics	Includes plastic packaging consisting of natural or a combination of natural and synthetic polymers that is largely based on renewable resources and can be processed and broken down more rapidly than traditional plastics. These include packaging made of polylactic acid (PLA), polyhydroxyalcanoates (PHA), and others.
Film plastic	A package or container made of flexible or easily yielding materials that, when filled or closed, can be readily changed in shape. Examples include shrink-wrap, furniture wrap, sandwich bags, food wrappers, and plastic food wrap.
Pouches	Plastic pouches made of thicker, multi-layer flexible material. May have a flat bottom so that the package could stand up on its own, but not always. Material is thicker than potato chip bags and frozen vegetable bags. Includes plastic coffee bags, juice pouches, baby food pouches, soup pouches, salad dressing pouches, wine pouches, backpacking meals in pouches, soap refill pouches, and other similar items. Excludes thinner, single-layer packaging, including potato chip bags, candy wrappers, tortilla bags, shrink plastic wrappers, zipper storage bags intended for home use, small (2 inch) pouches for condiments, mailing pouches, and other similar items.

In choosing the packaging materials listed in Table A1, staff were constrained by several factors. First, is the packaging material sufficiently defined to be distinct from other packaging? Second, is data available for the screening criteria described in the next section to provide a quantitative or semi-quantitative analysis of that packaging material? Third, is the packaging considered an emergent material that may require specific consideration in the future? To avoid bias in the list of packaging, staff attempted to capture as many materials as possible, while also maintaining reasonably sized categories of material.

Final Screening Criteria

Six criteria were identified to evaluate priority packaging material types. Consistent with CalRecycle's purview over solid waste/materials management and its direct participation in associated activities, staff chose to focus on waste-related criteria (prevalence in waste stream, usage trends, current collection infrastructure, and current processing infrastructure) and other directly-related environmental criteria (greenhouse gas impacts, and waterway and marine debris). A draft version of these criteria was distributed to stakeholders in July 2017, and staff incorporated the feedback in finalizing the types and number of criteria used (see Appendix B for a discussion of the feedback received by stakeholders). The criteria descriptions were

phrased such that a positive response would be considered a higher priority than a negative response. Table A2 describes the screening selected.

Table A2. Screening Criteria and Descriptions

Criteria Name	Criteria Description
Waste-Related Criteria	
1. Prevalence in Disposed Waste Stream	Does the packaging product/product category contribute significantly to the overall waste stream?
2. Usage Trends	Is the product usage increasing?
3. Current Collection Infrastructure	Is the packaging product/product category not collected by California curbside programs?
4. Current Processing Infrastructure	Are material recovery facilities unable to accept or rigorously sort the packaging product/product category collected by California curbside programs?
Other Environmental Criteria	
5. Greenhouse Gas Impacts of Recycling	Does reducing, reusing, or recycling the package product/product category represent a potential net greenhouse gas savings compared to landfilling?
6. Waterway and Marine Debris	Does the packaging product/product category contribute to trash-related water concerns or negatively impact the waterway and marine environment?

Staff first used filter criteria for identifying priority packaging materials in the waste stream as a part of the 2014 public workshop. At the time, prevalence in the waste stream was prioritized because it represented end-of-use impacts that fall directly under CalRecycle's authority. Usage trends were also included because they provide an indication of the likelihood for a given packaging material to continue to contribute to the overall waste stream. As CalRecycle continues its efforts to achieve the 75 percent recycling goal, it was important to consider other factors that directly affected the waste stream for packaging. As a result, two new criteria were added. Current collection and processing infrastructure both address whether a given material is managed for recycling under California's existing infrastructure and if the current infrastructure is able to provide clean, high value material to recycling markets.

The broader environmental criteria of greenhouse gas impacts and waterway and marine debris were also introduced in 2014. These criteria were added in order to recognize cross-media impacts that CalRecycle works in collaboration with other agencies to address. Given the increased focus on these impacts in the last three years, staff felt that they were still important screening criteria for determining priority packaging.

General Methodology for Determining Priority Packaging

In order to determine the priority packaging products using the screening criteria, three steps were taken.

First, staff compiled raw data for each packaging material within each screening criteria. In cases where the primary data source did not provide sufficient information, staff used values from a comparable data source or packaging material, as described below.

Second, staff grouped the materials within each screening criteria as "high priority," "medium priority," or "low priority." In general, high priority packaging materials were those in the top third, by rank, within a screening criterion, and low priority packaging materials were those in the bottom third. If no data was available for a given material, it was assigned as medium priority. In some cases, the data necessitated deviations from this method, which are described below.

Finally, staff used a ranked ordering system to determine priority packaging. Within each criterion, materials were given a score of 1 for high priority, 0 for medium priority, and -1 for low priority. The values were then summed across each material type. Materials with the highest sums have more high priority attributes per the screening criteria.

Data Sources and Application of High, Medium, and Low Priority Labels

1. Prevalence in Disposed Waste Stream

Data Sources:

A. 2014 Disposal-Facility-Based Characterization of Solid Waste in California
B. City of San Diego Waste Characterization Study 2012-2013
C. 2009/2010 Oregon Solid Waste Characterization and Composition Study

In cases where the material category matched categories used in the 2014 California Waste Characterization Study, staff used percent of total waste stream, by weight. However, there were several classes of packaging materials that were included in larger groups in the statewide study. As a result, staff supplemented with data from the City of San Diego Waste Characterization study, which was the most recent California-based survey that tabulated packaging materials not included in the statewide study. Staff also used the 2009-2010 Oregon study to provide a packaging-specific value for other miscellaneous paper. Staff were unable to find any waste characterization studies that quantified the prevalence of thermoforms in the waste stream. The data sources and categories for each material are shown in Table A3.

Table A3. Data Sources for Prevalence in Disposed Waste Stream

Material	Category in Waste Study	Data Source
Uncoated corrugated cardboard	Uncoated Corrugated Cardboard	A
Waxed cardboard	Waxed Cardboard	B
Aseptic containers and cartons	Remainder/Composite Paper - Rigid Food and Beverage Cartons	A
Wood (pallets and crates)	Clean Pallets and Crates	A
Other miscellaneous paper	Used sum of values from field results for "Non-compostable, Non-recyclable Paper" and "Low Grade Not Okay with ONP"	C
PET containers	CRV and non-CRV PETE Containers	A
HDPE containers	CRV and non-CRV HDPE Containers	A

Material	Category in Waste Study	Data Source
Plastic 3-7 containers	CRV and non-CRV Miscellaneous Plastic Containers	A
Expanded polystyrene	Expanded Polystyrene	B
Thermoforms (e.g., PET, PVC, PS, and PLA)	No data available	--
Degradable plastics (e.g., PLA and PHA)	Compostable Biodegradable Plastic Containers	B
Film plastic	Plastic Grocery and Other Merchandise Bags, Non-Bag Commercial and Industrial Packaging Film, and Other Film - Other	A
Pouches	Other Film - Flexible Plastic Pouches	A

The four materials with the highest prevalence (>2 percent by weight) were assigned as high priority. The five materials with the lowest prevalence (<0.5 percent by weight) were assigned as low priority. The remaining four materials were assigned medium priority.

2. Usage Trends

Data Source:

A. US EPA Advancing Sustainable Materials Management: Facts and Figures Fact Sheet

Based the data above, staff determined if usage of a material type has been increasing or decreasing since 1990. Materials with increasing usage were assigned as high priority. Materials with decreasing usage were assigned as low priority. Materials without available data were assigned as medium priority.

3. Current Collection Infrastructure

Data Sources:

A. 2015-2016 Centralized Study on Availability of Recycling
B. 2014 AFPA Community Survey Executive Summary
C. 2014 Disposal-Facility-Based Characterization of Solid Waste in California

Staff relied on several different data sources for this criterion. Staff first used the Centralized Study on Availability of Recycling to determine what portion of curbside programs nationally accepted a given material type. (As a note, national data was used in lieu of California-specific data for this criterion.) Staff then used the 2014 AFPA Community Survey to characterize categories not included in the first data source. As this criterion is focused on curbside collection, staff converted the 2014 extrapolated percent of the population with access to paper/paperboard collection to those with curbside access by applying a scaling factor of 78/96, which is the ratio of population with access to curbside recycling programs versus all recycling programs. Finally, staff used the recoverability group from the 2014 California Waste Characterization Study to classify any remaining materials. The specific data source used for each material is shown in Table A4.

Table A4. Data Sources for Current Collection Infrastructure

Material	Data Source
Uncoated corrugated cardboard	B
Waxed cardboard	B
Aseptic containers and cartons	A
Wood (pallets and crates)	C
Other miscellaneous paper	B
PET containers	A
HDPE containers	A
Plastic 3-7 containers	A
Expanded polystyrene	A
Thermoforms (e.g., PET, PVC, PS, and PLA)	A
Degradable plastics (e.g., PLA and PHA)	C
Film plastic	C
Pouches	C

High priority materials were those accepted by fewer than 20 percent of curbside programs, or that were classified as "Disposed" in the Waste Characterization Study. Low priority materials were those accepted by more than 60 percent of curbside programs, or that were classified as "Curbside Recyclable" in the Waste Characterization Study. Medium priority items were those accepted by 20-60 percent of curbside programs, or that were classified as "Other Recyclable" or "Recoverable – Compost/Mulch" in the Waste Characterization Study. If a material spanned several categories, it was assigned to the highest priority applicable.

4. Current Processing Infrastructure

Data Source for MRF Acceptance:

A. 2016-2017 Materials Recycling and Processing in the United States, Data available for purchase from Governmental Advisory Associates

Staff calculated the percentage of California MRFs listed in the GAA directory that reported accepting a given material. High priority was given to materials accepted by fewer than 60 percent of MRFs. Low priority was given to materials accepted by more than 80 percent of MRFs. Medium priority was assigned to all remaining materials. If a material spanned several categories, it was assigned to the highest priority applicable.

Data Source for MRF Sorting:

A. Composition of Commingled Recyclables Before and After Processing, Oregon Department of Environmental Quality

Staff used the reported amount of rigorously sorted material to determine how often a given material is a contaminant in other material streams. The categories from the Oregon study were used as shown in Table A5.

Table A5. Data Categories Used for Determining Level of Rigorous Sorting

Material	Oregon Category Used
Uncoated corrugated cardboard	Corrugated cardboard/brown paper

Material	Oregon Category Used
Waxed cardboard	Non-Recyclable paper
Aseptic containers and cartons	Aseptic Drink Cartons and Gable Top Beverage Carton
Wood (pallets and crates)	No data available
Other miscellaneous paper	Paper not ONP-compatible (bleached and unbleached)
PET containers	Plastic bottles and tubs curbside OK
HDPE containers	Plastic bottles and tubs curbside OK
Plastic 3-7 containers	Plastic bottles and tubs curbside OK
Expanded polystyrene	Other plastic not acceptable at curb
Thermoforms (e.g., PET, PVC, PS, and PLA)	Other plastic not acceptable at curb
Degradable plastics (e.g., PLA and PHA)	Other plastic not acceptable at curb
Film plastic	Film plastic
Pouches	Film plastic

The five materials with the lowest levels of rigorous sorting (<35 percent by weight) were assigned as high priority. The four materials with the highest levels of rigorous sorting (>80 percent by weight) were assigned as low priority. The remaining four materials were assigned medium priority. If a material type had a range for level of rigorous sorting, it was assigned to the highest priority category for the range.

To determine the final priority for current processing infrastructure, staff combined the two data sources. Low priority overall was assigned to materials that were low priority for both data sources, or were low priority for one data source and medium priority for the other. Medium priority overall was assigned to materials that were medium priority for both data sources, or were low priority for one data source and high priority for the other. High priority overall was assigned to materials that were high priority for both data sources, or were high priority for one data source and medium priority for the other.

5. Greenhouse Gas Impacts of Recycling

Data Sources:

A. California ARB Waste Diversion GHG Emission Reductions
B. US EPA WARM Model

Staff used recycling emission reduction factors, in $MTCO_2e$/ton, for each material type, as available, from the data sources listed above (see Table A6).

Table A6. Data Sources for Greenhouse Gas Impacts

Material	Emission Reduction Factor Category	Data Source
Uncoated corrugated cardboard	Corrugated Cardboard	A
Waxed cardboard	Mixed Paper General	B
Aseptic containers and cartons	Mixed Paper General	B
Wood (pallets and crates)	Dimensional Lumber	A
Other miscellaneous paper	Mixed Paper General	B
PET containers	Polyethylene terephthalate (PET)	A

Material	Emission Reduction Factor Category	Data Source
HDPE containers	High Density Polyethylene	A
Plastic 3-7 containers	Mixed Plastics	B
Expanded polystyrene	Mixed Plastics	B
Thermoforms (e.g., PET, PVC, PS, and PLA)	Mixed Plastics	B
Degradable plastics (e.g., PLA and PHA)	Mixed Plastics	B
Film plastic	No data available	
Pouches	No data available	

The four materials with the highest emission reduction factors (>3 $MTCO_2e$/ton) were assigned as high priority. The six materials with the lowest emission reduction factors (<1.1 $MTCO_2e$/ton) were assigned as low priority. The remaining materials were assigned as medium priority.

6. Waterway and Marine Debris

Data Source:

A. California Coastal Cleanup Day Results

Staff used counts from the 2015 coastal cleanup to determine prevalence, based on the categories described in Table A7. Small items that could not be well categorized by material type or as packaging, including small foam pieces, small plastic pieces, and bottle caps, were excluded from this analysis.

Table A7. Data Categories Used for Waterway and Marine Debris

Material	Oregon Category Used
Uncoated corrugated cardboard	No data available
Waxed cardboard	No data available
Aseptic containers and cartons	No data available
Wood (pallets and crates)	Pallets
Other miscellaneous paper	Bags – Paper
PET containers	Beverage Bottles (Plastic) 2 liters or less*
HDPE containers	Beverage Bottles (Plastic) 2 liters or less*
Plastic 3-7 containers	Bleach/Cleaner Bottles/Other Plastic Bottles
Expanded polystyrene	Other Plastic/Foam Packaging and Take Out/Away Containers (Foam)
Thermoforms (e.g., PET, PVC, PS, and PLA)	Take Out/Away Containers (Plastic)
Degradable plastics (e.g., PLA and PHA)	No data available
Film plastic	Bags (Plastic, Plastic Grocery, and Plastic Other)
Pouches	Food Wrappers/Containers

* Scaled the material count for PET and HDPE containers based on 2016 calendar year sales of plastic containers reported through the beverage container recycling program. PET containers accounted for 97 percent of plastic beverage containers sold, and HDPE containers accounted for 2 percent of beverage containers sold.

High priority was assigned to the three materials with the highest prevalence (>25,000 items collected). Low priority was assigned to the five materials with the lowest prevalence (<10,000

items collected). The remaining materials, for which no data were available, were assigned to medium priority.

Summarized Application of Screening Criteria to Packaging

The data tables A8-A11, below, show the raw data for each material type and the application of the prioritization schemes described above.

Table A8. Raw Data for Screening Criteria by Material Type

Material		1. Prevalence in Disposed Waste Stream	2. Usage Trends	3. Current Collection Infrastructure	4. Current Processing Infrastructure		5. Greenhouse Gas Impacts of Recycling	6. Waterway and Marine Debris
					MRF Acceptance	Level of Rigorous Sorting		
Fiber	Uncoated corrugated cardboard	3.1%	Increasing	77%	100%	92%	5.10	ND
	Waxed cardboard	0.3%	ND	59%	ND	25%	3.66	ND
	Aseptic containers and cartons	0.3%	ND	20-60%	59%	26-29%	3.66	ND
	Wood (pallets and crates)	2.1%	ND	Recoverable - Compost/Mulch	46%	ND	0.20	0
	Other miscellaneous paper	4.4%	Decreasing	42%	93%	57-99%	3.66	7,132
Plastic	PET containers	0.6%	Increasing	>60%	95-98%	84%	1.50	14,652
	HDPE containers	0.5%	Increasing	>60%	98%	84%	0.80	302
	Plastic 3-7 containers	0.6%	Increasing	>60%	41-79%	84%	1.04	2,374
	Expanded polystyrene	0.5%	Increasing	<20%	7%	31%	1.04	29,625
	Thermoforms (e.g., PET, PVC, PS, and PLA)	ND	Increasing	Varies from <20% to >60%, depending on material	ND	31%	1.04	7,598
	Degradable plastics (e.g., PLA and PHA)	0.0%	Increasing	Disposed	ND	31%	1.04	ND
	Film plastic	2.4%	Increasing	Other Recyclable AND Disposed	29%	76%	ND	46,882
	Pouches	0.1%	Increasing	Disposed	ND	76%	ND	65,147

Table A9. Prioritization of Material Types for Each Data Source

Material		1. Prevalence in Disposed Waste Stream	2. Usage Trends	3. Current Collection Infrastructure	4. Current Processing Infrastructure		5. Greenhouse Gas Impacts of Recycling	6. Waterway and Marine Debris
					MRF Acceptance	Level of Rigorous Sorting		
Fiber	Uncoated corrugated cardboard	High	High	Low	Low	Low	High	Medium
	Waxed cardboard	Low	Medium	Medium	Medium	High	High	Medium
	Aseptic containers and cartons	Low	Medium	Medium	High	High	High	Medium
	Wood (pallets and crates)	High	Medium	Medium	High	Medium	Low	Low
	Other miscellaneous paper	High	Low	Medium	Low	Medium	High	Low
Plastic	PET containers	Medium	High	Low	Low	Low	Medium	Medium
	HDPE containers	Low	High	Low	Low	Low	Low	Low
	Plastic 3-7 containers	Medium	High	Low	High	Low	Low	Low
	Expanded polystyrene	Medium	High	High	High	High	Low	High
	Thermoforms (e.g., PET, PVC, PS, and PLA)	Medium	High	High	Medium	High	Low	Low
	Degradable plastics (e.g., PLA and PHA)	Low	High	High	Medium	High	Low	Medium
	Film plastic	High	High	High	High	Medium	Medium	High
	Pouches	Low	High	High	Medium	Medium	Medium	High

Table A10. Prioritization of Material Types for Six Screening Criteria

Material		1. Prevalence in Disposed Waste Stream	2. Usage Trends	3. Current Collection Infrastructure	4. Current Processing Infrastructure	5. Greenhouse Gas Impacts of Recycling	6. Waterway and Marine Debris
Fiber	Uncoated corrugated cardboard	High	High	Low	Low	High	Medium
	Waxed cardboard	Low	Medium	Medium	High	High	Medium
	Aseptic containers and cartons	Low	Medium	Medium	High	High	Medium
	Wood (pallets and crates)	High	Medium	Medium	High	Low	Low
	Other miscellaneous paper	High	Low	Medium	Low	High	Low
Plastic	PET containers	Medium	High	Low	Low	Medium	Medium
	HDPE containers	Low	High	Low	Low	Low	Low
	Plastic 3-7 containers	Medium	High	Low	Medium	Low	Low
	Expanded polystyrene	Medium	High	High	High	Low	High
	Thermoforms (e.g., PET, PVC, PS, and PLA)	Medium	High	High	High	Low	Low
	Degradable plastics (e.g., PLA and PHA)	Low	High	High	High	Low	Medium
	Film plastic	High	High	High	High	Medium	High
	Pouches	Low	High	High	Medium	Medium	High

Table A11. Final Ranking of Prioritized Products

Material		1. Prevalence in Disposed Waste Stream	2. Usage Trends	3. Current Collection Infrastructure	4. Current Processing Infrastructure	5. Greenhouse Gas Impacts of Recycling	6. Waterway and Marine Debris	Final Prioritization
Fiber	Uncoated corrugated cardboard	1	1	-1	-1	1	0	1
	Waxed cardboard	-1	0	0	1	1	0	1
	Aseptic containers and cartons	-1	0	0	1	1	0	1
	Wood (pallets and crates)	1	0	0	1	-1	-1	0
	Other miscellaneous paper	1	-1	0	-1	1	-1	-1
Plastic	PET containers	0	1	-1	-1	0	0	-1
	HDPE containers	-1	1	-1	-1	-1	-1	-4
	Plastic 3-7 containers	0	1	-1	0	-1	-1	-2
	Expanded polystyrene	0	1	1	1	-1	1	3
	Thermoforms (e.g., PET, PVC, PS, and PLA)	0	1	1	1	-1	-1	1
	Degradable plastics (e.g., PLA and PHA)	-1	1	1	1	-1	0	1
	Film plastic	1	1	1	1	0	1	5
	Pouches	-1	1	1	0	0	1	2

Final Priority Products

Given the different challenges and opportunities associated with managing fiber versus plastic packaging, staff prioritized each material class (fiber and plastic) separately. Based on this analysis, staff determined the following relative priorities for fiber and plastic packaging, shown in Table A12.

Table A12. Final listing of prioritized packaging.

Fiber		**Plastic**	
Rank	Material	Rank	Material
1	Uncoated corrugated cardboard	1	Film plastic
1	Waxed cardboard	2	Expanded polystyrene
1	Aseptic containers and cartons	3	Pouches
4	Wood (pallets and crates)	4	Thermoforms (e.g., PET, PVC, PL, and PLA)
5	Other miscellaneous paper	4	Degradable plastics (e.g., PLA and PHA)
		6	PET containers
		7	Plastic 3-7 containers
		8	HDPE containers

Appendix B: Summary of Public Feedback on Draft Screening Criteria and Data Sources

On July 20, 2017, CalRecycle released a draft set of screening criteria for determining priority packaging for stakeholder input in advance of the October workshop. This was a first opportunity for stakeholders to comment on the screening criteria and to provide feedback to CalRecycle on various aspects of the criteria, including:

i. Are there other criteria CalRecycle should consider? If so, why?
ii. Are there criteria listed that CalRecycle should *not* consider? If not, why?
iii. Are there criteria that CalRecycle should prioritize in the screening process?
iv. What limitations to the proposed criteria should CalRecycle be aware of?
v. Are there other data sources CalRecycle should consult when evaluating the criteria?

The initial draft included the following screening criteria:

1. Prevalence in waste stream: Does the packaging product/product category contribute significantly to the overall waste stream?
2. Increasing or steady usage trend: Is the product usage holding steady or increasing?
3. Current collection infrastructure: Is the packaging product/product category not collected by California curbside programs?
4. Current processing infrastructure: Are material recovery facilities unable to feasibly process the packaging product/product category collected by California curbside programs?
5. Contamination of material: Is the packaging product/product category highly contaminated in the collection process? Is it a significant contaminant for other material streams?
6. Reusability and recyclability: Is the packaging product/product category designed to be reused and/or recycled?
7. Greenhouse gas impacts: Does reducing, reusing, or recycling the package product/product category represent a potential net greenhouse gas savings compared to landfilling?
8. Waterway and marine debris: Does the packaging product/product category contribute to trash-related water concerns and/or negatively impact the waterway and marine environment?
9. Point of generation of discarded packaging: Should CalRecycle differentiate between discarded packaging generated at residential, commercial, or industrial sources?

Staff received 24 letters from the following groups by Monday, August 7, 2017, commenting on the draft criteria for determining priority products:

- 7th Generation Advisors
- American Chemistry Council (ACC)
- American Cleaning Institute

- American Forest and Paper Association (AF&PA)
- Ameripen
- Automotive Specialty Products Alliance
- California Automotive Wholesalers' Association
- California Chamber of Commerce
- California Life Sciences Association
- California Manufacturers and Technology Association (CMTA)
- Can Manufacturers Institute (CMI)
- Carton Council
- Clean Water Action/Clean Water Fund
- Consumer Specialty Products Association
- Duracell
- Foodservice Packaging Institute (FPI)
- Glass Packaging Institute (GPI)
- Global Recycling Council
- Grocery Manufacturers Association (GMA)
- Legislative Task Force of the California Chapters of the Solid Waste Association of North America (SWANA)
- Los Angeles County Solid Waste Management Committee/Integrated Waste Management Task Force
- Manatt LPP
- Ocean Protection Council (OPC)
- Plastics Industry Association
- Potential Industries
- Rural Counties' Environmental Services Joint Powers Authority (ESJPA)
- Sonoco
- StopWaste
- Surfrider Foundation
- Titus MRF Services
- Upstream
- Waste Connections Inc. (WCI)
- Waste Management (WM)
- Western Placer Waste Management Authority (WPWMA)

In addition to providing feedback on the draft screening criteria, the public comment letters also offered feedback on the broader approach taken by CalRecycle in developing a mandatory, comprehensive framework for managing packaging. Staff have summarized the comments below, along with a response to the comments on the screening criteria. Determining priority products is one step in a larger effort to develop a comprehensive framework for managing this waste stream, and many of the suggestions made in the public comment letters will be addressed outside of the screening criteria.

1. Prevalence in the Waste Stream

The comments received on this criterion indicated general support for using some metric of prevalence in prioritizing packaging products or product types. A recommendation was made to combine prevalence with greenhouse gas emissions reductions, rather than to consider them separately; however, due to the data limitations on determining specific emission reduction factors for a variety of packaging materials, staff have chosen to keep these separate. In response to a recommendation from StopWaste, staff have also clarified that this criteria is focused on the disposed waste stream, rather than the overall waste stream.

ACC, AF&PA, CMTA, and several other groups expressed concern at using the 2014 California Waste Characterization Study for determining prevalence because some categories used in the study grouped packaging with non-packaging items, thereby inflating the estimate for packaging in the waste stream, and because the study does not align with industry calculations for prevalence. Specifically, AF&PA stated, "data from the study suggests that 44.1 million tons of paper and paperboard would have entered the MSW stream in 2014" which is "more than 60 percent of the paper and paperboard produced in the U.S. […], which seems highly improbable."

While there are limitations of the waste characterization study in providing sufficient specificity on packaging waste, CalRecycle still concludes that the prevalence of packaging in the waste stream is significant and approximately 25 percent (see Appendix C). To address the issue of more specificity, staff supplemented the California study with the 2009-2010 Oregon Waste Characterization Study, which had comparable results overall to the California study and categorized packaging and non-packaging separately. In addition, staff welcome industrial groups to provide CalRecycle with their estimates on the prevalence of different packaging types in California.

Concerns were also raised about whether this criterion would use weight, volume, or units of packaging. While the Rural Counties' ESJPA highlighted that jurisdictions must reduce disposal of solid waste by weight, Upstream and others highlighted that prevalence based on volume or units may better reflect the impact of packaging. For the purposes of the screening criteria, staff will be using a weight-based measurement, which reflects the data available in the waste characterization study.

Finally, concerns were raised by the Rural Counties' ESJPA that this criterion does not sufficiently distinguish between different parts of the state that may have different waste streams. Staff recognize that this is a challenge for all of the screening criteria. Staff considered addressing this issue separately under criterion 9 "Point of Generation of Discarded Packaging," but found insufficient data to reflect this in the screening criteria. CalRecycle has long recognized the differences and particular concerns of rural counties, and will consider these needs in the final mandatory policy framework recommendation.

2. Increasing or Steady Usage Trend

The comment letters received expressed support at incorporating usage trends into the screening criteria. WM suggested that the usage should be evaluated as a part of broader life cycle impacts, as some expanding product types may provide other benefits. Staff recognize that life cycle assessments provide a broad perspective on a material's environmental impacts. However, CalRecycle is focused on reducing disposal at landfills and continues to promote

targeted efforts toward this goal. As was described earlier, CalRecycle also collaborates with its sister agencies to address other environmental impacts of improper management of packaging, including greenhouse gas emissions, waterway debris, public health impacts, and others. As a result, staff will focus on usage trends for the purposes of determining priority products.

3. Current Collection Infrastructure

The comments received on this criterion emphasized the role of the current collection infrastructure and the importance of preserving that infrastructure. Several comment letters asked for clarification on the differentiation between access to recycling generally (including curbside programs and dropoff programs) and access to curbside recycling. For the purposes of this analysis, staff focused on the acceptance of different packaging materials at curbside programs, as curbside collection manages the largest amount of residential packaging material. Although a recommendation by ESJPA was made to consider the differences between rural and urban collection systems, staff chose to focus on statewide access at this stage. Staff considered materials that were not routinely accepted by curbside programs to be of higher priority for management by a mandatory policy.

Staff also received feedback on the proposed data sources. FPI expressed concern at the use of the Sustainable Packaging Coalition (SPC) data because it was a national survey. Staff recognize this as a limitation, but chose to apply the data to California in lieu of more specific data. AF&PA and Sonoco also expressed concern that the SPC data only studied materials that were of interest to the study's sponsors. Staff agree that this is a limitation and will use two other data sources to supplement the SPC data: the suggested 2014 AF&PA Community Access Survey, and the 2014 Waste Characterization Study recoverability groups.

4. Current Processing Infrastructure

Staff received several comments on this criteria that mirrored concerns raised in criterion 3, including the need to preserve investments in infrastructure and the challenge of reflecting the significant variation in processing infrastructure across the state. In addition, most stakeholders identified the important link between processing infrastructure and the availability of end markets to accept the sorted material.

Staff agree that the link between processing and end markets is critical; however, as will be discussed further under "New Criteria – Current Markets for Materials," staff felt that the high variability in end markets made it challenging to incorporate into this analysis. Instead, staff chose to focus on whether the current material recovery facility (MRF) infrastructure accepts different types of materials, and whether that material is rigorously sorted into final commodities.

5. Contamination of Material

The comments received reflected the importance of low contamination in order for material to be recycled. WM highlighted the importance of public education in minimizing contamination, which staff agree is important. Comments from Sonoco emphasized that levels of contamination are a function of the marketplace and should be allowed to respond to market demand. CalRecycle has previously emphasized the importance of investments in California infrastructure to create clean, recyclable streams of material to facilitate recycling and remanufacturing. In order to emphasize this connection, staff have chosen to combine this criterion with Current Processing Infrastructure.

6. Reusability and Recyclability

Staff received extensive supportive feedback on this criterion, primarily related to the strong link between recyclability and end markets. This is a critical link, but one that is challenging to distill into a single screening criterion. Comments from the Carton Council recommended that CalRecycle use the definition of "recyclable" used by the Federal Trade commission; however, this may be too limiting for purposes of achieving California's waste management goals.

Based on the comments received, there was no clear data source that could be used to quantify reusability or recyclability. WM expressed support for the Association of Plastic Recyclers (APR)'s Design Guide for Plastics Recyclability; however, this data is focused only on plastic products and is too detailed to apply to broader types of packaging. In addition, Sonoco expressed concern that the guide should be considered a guideline rather than a specification for determining recyclability. ACC suggested using the Sustainable Packaging Coalition's How2Recycle label; however, the data used to generate that label has been incorporated into criterion 3 "Current Collection Infrastructure."

As a result, staff decided to exclude this criterion for the purposes of developing screening criteria. However, the recyclability of a product and the availability of end markets will be key areas of consideration in the discussion of policy tools.

7. Greenhouse Gas Impacts

Comments received from stakeholders indicated general support for considering greenhouse gas reductions from recycling as a part of the screening criteria. However, there was a range of opinions on how this should be reflected. WM, CMTA, and others suggested using life cycle assessments, rather than just emission factors. As described earlier, CalRecycle is focused on reducing disposal at landfills, and continues to promote targeted efforts toward this goal and work in partnership with its sister agencies to address other environmental impacts of improper management of packaging.

ACC suggested that staff consider source reduction, reuse, and recycling separately, since each activity has a different emission reduction factor. Although staff recognize the different impacts of these factors, staff chose to focus only on recycling for the purposes of the initial screening. Upstream and others suggested that CalRecycle further explore this area by commissioning a study to look at refillables, reusables, and their greenhouse gas reduction potential.

ESJPA highlighted the differences greenhouse gas reduction potential between rural and urban areas and recommended that those differences be reflected in the screening criteria. As discussed under criterion 1 "Prevalence in the Waste Stream", staff intent for the final mandatory policy recommendation to reflect the needs of different regions of the state.

Finally, AF&PA expressed concern over the California Air Resources Board (ARB) recycling emissions reduction factor, which "makes assumptions on forest carbon storage and emissions." Staff chose to continue to the ARB data in conjunction with the US EPA WARM model as the best, currently available data.

8. Waterway and Marine Debris

StopWaste, WM, OPC, Upsteam, and others all identified this as an important criterion to consider. According to OPC, “With an estimated eight million metric tons of trash annually entering the world’s oceans, our marine ecosystems are essentially acting as an unregulated landfill for solid waste. Given that eight of the top ten types of items found on California Coastal Cleanup Day fall under the category of packaging, packaging reform can make a significant contribution towards preventing and reducing marine debris in the future.”

In contrast, ACC, AF&PA, CMTA, GMA, and others objected to the use of this criterion. As stated in the GMA letter, “Marine debris should not be considered. Debris in water is a litter challenge, not a material selection issue. While decreasing waterway and marine debris is important, it is not directly related to California’s statewide waste reduction policy goals. Reducing litter and marine debris does not equate to increased recovery and may distract from the specific task at hand.”

Staff decided to retain this criterion for determining priority packaging. Decreasing the amount of waterway and marine debris is consistent with CalRecycle’s mission to protect public health and the environment. In addition, this criterion addresses cross-agency interests of reducing pollution, as a majority of the trash in waterways is packaging and is a result of improper management of the material. Finally, the material properties of individual packaging directly relate to their long-term environmental impacts.

Comments by Upstream, Clean Water Action/Clean Water Fund, and others expressed concern at using data from beach cleanup days to determine the amount of packaging present in the environment. These groups also highlighted the challenge of using total maximum daily load data from the Water Boards for identifying specific packaging in stormwater discharge. Staff agree with these limitations and welcome improvements in the data; however, in lieu of more specific or complete data, staff used data from the California Coastal Cleanup Days.

9. Point of Generation of Discarded Packaging

Comments received specifically on this draft criterion indicated that this was not necessary for determining priority packaging. Although this criterion could be used to reflect rural versus urban considerations in managing discarded packaging, staff were unable to find sufficient data to use this as a screening criteria. Staff have not included this criterion in the final analysis, but will address the unique needs of rural counties in the final recommendation for a mandatory policy on packaging.

10. New Criteria

In response to the draft screening criteria, staff received numerous suggestions for additional criteria to include when determining priority products. Staff agree that the suggested criteria, described in detail below, are important to consider in the development of a mandatory, comprehensive framework for managing packaging. However, not all of the suggested criteria have sufficient data or allow for simple characterization to be used in screening across different packaging. Unless otherwise noted, staff intend to use the suggested criteria as lenses for analyzing policy tools for managing packaging, rather than for determining priority packaging.

Access to Recycling

Several groups suggested adding access to recycling, including curbside and drop-off programs, to the criteria, and to focus on methods to increase the amount of material collected in public spaces. As discussed under criterion 3 “Current Collection Infrastructure,” staff have focused the initial prioritization on access to curbside recycling, but will consider other opportunities for recycling access in the application of a packaging framework.

Current Markets for Materials

Most of the comments received by staff highlighted the importance of the costs of recycling and the availability of end markets for determining the recyclability of an individual material. Comments received highlighted some of the current challenges for managing material in the absence of sufficient end markets (including in-state, domestic, and international markets). For example, ACC stated, “A lack of end markets and domestic reprocessing capacity continues to be a challenge. How might CalRecycle support end markets for the recycled materials and assist reclaimers?”

Staff agree that this is a critical consideration for any mandatory approach. However, the presence or absence of sustainable markets is dependent on numerous global forces. Additional restrictions on the California export markets (including China’s National Sword policy and recent changes to which recyclable materials would be accepted by China) will likely have significant ramifications on recycling and waste management in California. As a result, staff felt that this issue was best addressed in the discussion of policy tools and the role that CalRecycle and all of its stakeholders can play in supporting end markets for postconsumer recycled materials.

Life Cycle Analysis

Several comments mentioned the importance of life cycle analysis for determining the full environmental impacts of an individual packaging material. Staff recognize that life cycle assessments provide a broad perspective on a material’s environmental impacts. However, CalRecycle is focused on reducing disposal at landfills and continues to promote targeted efforts toward this goal. As was described earlier, CalRecycle also collaborates with its sister agencies to address other environmental impacts of improper management of packaging, including greenhouse gas emissions, waterway debris, public health impacts, and others.

Limits of Recovery

Duracell suggested that staff should consider what level of recovery currently occurs and what additional capacity is available for additional recovery. Staff agree that this is important to consider in determining which policy tools might be best suited for which types of packaging and how much additional investment will be necessary to make significant improvements. However, as CalRecycle is focused on diverting material from landfills, staff chose to focus on prevalence of material in the disposed waste stream.

National Recovery Rate

The American Forest and Paper Association suggested that CalRecycle should use the national recovery rate as a criterion and as evidence for strong market demands. Staff agree that this is important to consider in determining which policy tools might be best suited for which types of

packaging; however, staff chose to focus on the prevalence of material in the disposed waste stream in order to best reflect CalRecycle's landfill diversion goals. In addition, staff felt that it was important to focus on state-level data, where available, to ensure that a comprehensive, mandatory framework was best suited for California.

Public Health Impacts

Several groups highlighted the importance of considering the public health impacts associated with chemical exposures from packaging. CalRecycle is committed to its mission of protecting public health, and staff are mindful of the consequences of shifting between different packaging materials. Given the breadth of this criterion, staff felt that it was most appropriate to consider public health impacts in the discussion of policy tools. In addition, CalRecycle has been meeting regularly with its sister agencies during the development of this mandatory packaging policy, and will continue to coordinate on how to best address the public health impacts of packaging.

Reduction and Prevention

Several groups, including WM, Upstream, and others, highlighted the need to consider source reduction and prevention as a way to manage packaging waste before it is generated. Staff agree, but consider source reduction to be one of several policy tools for managing packaging. This is reflected in the text of the background paper.

Role of Packaging

Several industry groups highlighted that packaging serves many important functions, including extending the shelf life of products as they are transported and sold. These groups indicated that the role of packaging to prevent waste should be considered as a screening criterion. Staff agree that packaging can play a role in preventing other types of waste. However, it was unclear to staff how this role could be quantified and compared between packaging materials. As a part of developing a mandatory, comprehensive policy framework to manage packaging, CalRecycle is interested in how to decrease the prevalence of packaging in the waste stream while retaining the benefits that packaging provides.

Voluntary Efforts

Several industry groups suggested that staff should consider voluntary efforts that are currently underway in California to recover more packaging. CalRecycle appreciates that voluntary efforts have been made on a national level; however, CalRecycle has already concluded that the voluntary approaches described at the Manufacturers' Challenge in January 2016 were not sufficient for addressing the overall packaging issue in California. At the September 2016 public meeting, staff were directed to consider a comprehensive, mandatory framework for managing packaging.

<u>Prioritization</u>

Several letters suggested different prioritization schemes for the original or newly proposed criteria. These include:

StopWaste: Assign high priority to prevalence in the waste stream (1), current collection infrastructure (3), current processing infrastructure (4), reusability and recyclability (6),

greenhouse gas impacts (7), and waterway and marine debris (8). Assign medium priority to increasing or steady usage trend (2) and contamination of material (5).

LA Task Force: Ranked in order of importance, consider prevalence in the waste stream (1), reusability and recyclability (6), and greenhouse gas impacts (7).

FPI: Assign highest priority for prevalence in the waste stream (1).

SWANA: Prioritize prevalence in the waste stream (1), contamination of material (5), and reusability and recyclability (6).

AF&PA: Ranked in order of importance, consider national recovery rate (new), current collection infrastructure (3), and current processing infrastructure (4).

Sonoco: Ranked in order of importance, consider recovery rate (new), current collection infrastructure (3), current processing infrastructure (4), and greenhouse gas emissions reduction for recycling (7).

Upstream and others: First prioritize source reduction, using prevalence in the waste stream (1), source reduction, greenhouse gas impacts and waterway and marine debris (7 and 8), public health impacts, and increasing or steady usage trend (2). Then, criteria for prioritizing packaging for recycling should include prevalence in the waste stream (1), reusability and recyclability (6), greenhouse gas impacts (7), increasing or steady usage trend (2), and contamination of material (5).

Given the breadth of responses from stakeholders, staff chose to not prioritize the screening criteria at this time.

Data Limitations

In addition to concerns about specific criteria described above, several organizations raised broader concerns about data limitations.

FPI highlighted that recycling is a local issue, driven by local concerns. Staff agree, and will consider the role of local governments and the variation in local infrastructure in the application of a policy framework for managing packaging.

StopWaste commented that greenhouse gas impacts might conflict with recyclability in some cases, such as in the increased use of pouches. Staff agree that this is an important consideration, and will consider how to balance recyclability with decreasing disposal in its analysis of policy tools.

Finally, GPI indicated the support of clear recycling program metrics and best practices in data collection for recyclable materials. Staff agree, and look forward to collaborating with stakeholders to improve data collection in this area.

Policy Tools to Manage Packaging

Although staff did not directly solicit feedback on mandatory approaches, several of the comments did provide suggestions on policy tools that should, or should not, be considered in

California. These include source reduction, public education, extended producer responsibility, deposit systems, minimum content, and product bans. Staff agree that these are all important considerations, as is reflected in the text of the background document.

General Comments

Staff also received several general comments, including:

- Staff should focus on the following categories of packaging: personal care products, cartons and aseptics, and packages under 5 inches in size. (Titus MRF Services)
- Staff should prioritize reduction over recycling. (WM, Upstream, and others)
- Staff should focus on organics waste reduction goals, not on packaging waste. (Manatt, CMTA, GMA, and others)
- Staff should be mindful to not diminish or adversely affect local control over the collection and processing of solid waste and recyclable materials. (SWANA, ESJPA, Manatt)
- Staff should prioritize polypropylene, expanded polystyrene and polystyrene, and cartons and aseptics, and reserve PET labeling for bottles only. (Titus MRF Services)
- Staff should recommend including cartons in the beverage container recycling program. (CMI)

Appendix C: Packaging as a Portion of the Disposed Waste Stream

In 2015, CalRecycle released an updated waste characterization study entitled "2014 Disposal-Facility-Based Characterization of Solid Waste in California." This study sorts and weighs disposed material at facilities throughout the state and categorizes them according to 82 material types.

To estimate the amount of packaging in the disposed waste stream in California, staff combined packaging-specific data with data from more general material types that primarily reflect packaging products. Although metal and glass packaging subcategories are comprised of well-defined packaging products, such as clear glass bottles and containers, the paper and plastic subcategories are not as discrete in distinguishing between packaging and non-packaging materials. In lieu of more granular data, staff included these subcategories in the totals because the definitions indicated a significant portion was packaging. As a result, the total amount of packaging shown in Table C1 reflects an upper bound for the amount of packaging in the disposed waste stream.

Based on this data, approximately one quarter of the disposed waste stream is packaging-related.

As CalRecycle prepares for the 2018 Waste Characterization Study, it would be helpful to receive feedback on how categories could be otherwise defined or subdivided to more accurately quantify the amount of packaging in the waste stream.

Table C1. Packaging Materials in California's Disposed Waste Stream

Material Type	Description - CalRecycle 2014 Waste Characterization Study	Est. Percentage	Est. Tons Disposed in 2016
Fiber (Paper)			
Uncoated Corrugated Cardboard	A paper laminate usually composed of three layers. The center wavy layer is sandwiched between the two outer layers. It does not have any wax coating on the inside or outside. Examples include entire cardboard containers, such as shipping and moving boxes, computer packaging cartons, and sheets and pieces of boxes and cartons. This type does not include chipboard boxes such as cereal and tissue boxes. This type does include very clean (no food residue and only lightly stained) pizza boxes.	3.1%	1,100,000
Paper Bags	Bags and sheets made from kraft paper. The paper may be brown (unbleached) or white (bleached). Examples include paper grocery bags, clean fast food bags, department store bags, and heavyweight sheets of kraft packing paper.	0.2%	81,000
Other Miscellaneous Paper - Compostable	Items made mostly of paper that could be composted, that do not fit into any of the other paper types. Paper may be combined with minor amounts of other materials such as wax or glues. Examples include pulp paper egg cartons, unused pulp paper plant pots, molded paper packing materials, some berry trays, some take-out food containers, and dirty molded paper plates.	0.2%	79,000
Other Miscellaneous Paper - Other	Items made mostly of paper that do not fit into any of the other paper types, but that are generally recyclable or not generally composted. Paper may be combined with minor amounts of other materials such as wax or glues. This type includes items made of chipboard, ground wood paper, and deep-toned or fluorescent dyed paper. Examples include cereal and cracker boxes, paperboard boxes for software, unused paper plates and cups, goldenrod colored paper, school construction paper, butcher paper, ice cream cartons and other frozen food boxes, self-adhesive notes, and hard cover and paperback books.	3.7%	1,308,000

Material Type	Description - CalRecycle 2014 Waste Characterization Study	Est. Percentage	Est. Tons Disposed in 2016
Remainder / Composite Paper - Rigid Food & Beverage Cartons	Aseptic containers (multi-layered packaging that contains shelf-stable food products such as apple juice, soup, soy/rice milk, etc.) and "gable top" cartons (nonrefridgerated items such as granola and crackers; refrigerated items such as milk, juice, egg substitutes, etc.). Rigid food and beverage cartons are usually paper-based, may be any shape, and may include a plastic pour spout as part of the carton.	0.3%	119,000
Remainder / Composite Paper - Compostable	Items made mostly of paper, that don't fit into any other material types, that are combined or contaminated with large amounts of other materials such as wax, food, and moisture, that are compostable. Examples include waxed corrugated cardboard, waxed paper, napkins, tissue, paper towels, fast food wrappers, food-soiled paper and moisture-soiled paper, all pizza boxes (unless at least 95 percent clean), and shredded paper.	6.6%	2,309,000
Remainder / Composite Paper - Other	Items made mostly of paper but combined with large amounts of other materials. These are items that do not fit into any other categories, and are not generally compostable or recyclable, and are not food and beverage cartons. Examples include blueprints, sepia, onion skin, carbon paper, photographs, paper frozen juice cans, sheets of paper stick-on labels, and paper mailing envelopes lined with bubble wrap or plastic.	0.6%	224,000
	Maximum Total Fiber (Paper) Packaging	**14.8%**	**5,219,000**
Glass			
Clear Glass Bottles and Containers	Clear glass containers with or without a California Redemption Value (CRV) label. Examples include whole or broken clear soda bottles, fruit juice bottles, wine cooler bottles, clear wine bottles, mayonnaise jars, and jam jars.	0.9%	300,000
Green Glass Bottles and Containers	Green-colored glass containers with or without a CRV label. Examples include whole or broken green soda and beer bottles, and whole or broken green wine bottles.	0.2%	81,000
Brown Glass Bottles and Containers	Brown-colored glass containers with or without a CRV label. Examples include whole or broken brown soda and beer bottles, and whole or broken brown wine bottles.	0.4%	127,000
Other Glass Colored Bottles and Containers	Colored glass containers and bottles other than green or brown with or without a CRV label. Examples include whole or broken blue soda and water bottles, or blue or other colored liquor bottles and other containers.	0.0%	14,000
	Maximum Total Glass Packaging	**1.5%**	**523,000**
Metal			
Tin/Steel Cans	Rigid containers made mainly of steel. These items will stick to a magnet and may be tin-coated. This type is used to store food, beverages, paint, and a variety of other household and consumer products. Examples include canned food and beverage containers, empty metal paint cans, empty spray paint and other aerosol containers, and bimetal containers with steel sides and aluminum ends.	0.7%	233,000
Aluminum Cans	Any food or beverage container made mainly of aluminum. Examples include aluminum soda or beer cans, and some pet food and meat cans. This type does not include bimetal containers with steel sides and aluminum ends.	0.2%	54,000
	Maximum Total Glass Packaging	**0.8%**	**287,000**
Plastic			
PETE Plastic Containers	PETE Containers means clear or colored PETE (polyethylene terephthalate) containers with or without a CRV label. When marked for identification, it bears the number 1 in the center of the triangular recycling symbol and may also bear the letters PETE or PET. The color is usually transparent green or clear. A PETE container usually has a small dot left from the manufacturing process, not a seam. It does not turn white when bent. Examples include soft drink and water bottles, some juice and liquor bottles, cooking oil containers, food jars, pastry jars, frozen food or other trays, clamshell packaging, and aspirin bottles.	0.6%	225,000
HDPE Plastic Containers	HDPE Containers means natural and colored HDPE (high-density polyethylene) containers with or without a CRV label. This plastic is usually either cloudy white, allowing light to pass through it (natural) or a solid color, preventing light from passing through it (colored). When marked for identification, it bears the number 2 in the triangular recycling symbol and may also bear the letters HDPE. Examples include milk jugs, water jugs, detergent bottles, some hair-care bottles, some small juice bottles, some margarine and yogurt tubs, clamshell packaging, empty motor oil, empty antifreeze, and other empty vehicle and equipment fluid containers.	0.5%	159,000

Material Type	Description - CalRecycle 2014 Waste Characterization Study	Est. Percentage	Est. Tons Disposed in 2016
Miscellaneous Plastic Containers	Plastic containers made of types of plastic other than HDPE or PETE with or without a CRV label. Items may be made of PVC (polyvinyl chloride), PP (polypropylene), PS (polystyrene), or mixed resins. When marked for identification, these items may bear the number 3, 4, 5, 6, or 7 in the triangular recycling symbol. This type also includes plastic containers that do not have the triangular recycling symbol. Examples include hardware and fastener packaging, food containers such as bottles for salad dressings and vegetable oils, flexible and brittle yogurt cups, syrup bottles, margarine tubs, microwave food trays, and clamshell-shaped fast food containers. This type also includes some shampoo containers, vitamin bottles, foam egg cartons, and clamshell-like muffin containers.	0.6%	198,000
Plastic Grocery and Other Merchandise Bags	Plastic shopping bags used to contain merchandise to transport from the place of purchase, given out by the store with the purchase. This type includes dry cleaning bags intended for one-time use. Does not include produce bags.	0.5%	179,000
Non-Bag Commercial and Industrial Packaging Film	Film plastic used for large-scale packaging or transport packaging. Examples include shrink-wrap, mattress bags, furniture wrap, and film bubble wrap.	0.3%	95,000
Other Film - Flexible Plastic Pouches	Plastic pouches made of thicker, multi-layer flexible material. May have a flat bottom so that package would stand up on its own, but not always. Material is thicker than potato chip bags and frozen vegetable bags. Includes plastic coffee bags like Starbucks and Peet's; Capri Sun pouches; baby food pouches - may have plastic screw top; soup pouches; salad dressing pouches; wine pouches; backpacking meals in pouches; soap refill pouches; laundry detergent pouches; and other similar items.	0.1%	49,000
Other Film - Other	All other plastic film that does not fit into any other type, excluding flexible plastic pouches. Examples include other types of plastic bags (sandwich bags, zipper-recloseable bags, newspaper bags, produce bags, frozen vegetable bags, bread bags), food wrappers such as candy-bar wrappers, potato chip bags, mailing pouches, bank bags, X-ray film, metallized film (such as balloons), and plastic food wrap.	1.6%	571,000
Remainder / Composite Plastic	Plastic that cannot be put in any other type. These items are usually recognized by their optical opacity. This type includes items made mostly of plastic but combined with other materials. Examples include auto parts made of plastic attached to metal, plastic drinking straws, foam drinking cups, plastic cups, produce trays, foam meat and pastry trays, foam packing blocks, packing peanuts, cookie trays found in cookie packages, plastic strapping, plastic lids, some kitchen ware, some toys, foam plates/bowls, window blinds, plastic lumber, insulating foam, imitation ceramics, handles and knobs, plastic string (such as used for hay bales), plastic rigid bubble/foil packaging (as for medications), small (less than 1 gallon) plant containers such as nursery pots and plant six-packs, and new Formica, new vinyl, or new linoleum.	2.5%	892,000
	Maximum Total Plastic Packaging	**6.7%**	**2,368,000**
Fiber (Wood)			
Clean Pallets & Crates	Clean Pallets and Crates means unpainted wood pallets, crates, and packaging made of lumber/engineered wood.	2.1%	741,000
	Maximum Total Fiber (Wood) Packaging	**2.1%**	**741,000**
	Maximum Total Packaging	**26.0%**	**9,138,000**

Note: Values may not sum accurately within a category due to data truncation from rounding.