

PRCC Case Study: Summary of Research Methods & Findings

Project overview and background

Cascadia Consulting Group, Inc. (Cascadia) was tasked with developing a case study on the Plastics Recycling Corporation of California (PRCC). The objective of this case study was to describe what PRCC is, and what the organization does in a simple and accessible way for key audiences.

This case study was built on findings from a review of historical PRCC documents, relevant PET studies and research, and interviews with key stakeholders. A description of our research methods and key findings are summarized below.

Summary of research methods

Review of PRCC and PET recycling documents

We reviewed a number of documents provided or recommended by PRCC. These documents included presentations to PRCC members and board members, PET industry reports and informational material, and past PRCC brochures. The list of documents reviewed is provided in Appendix B. We also conducted additional desktop research on PET beverage recycling rates in California (from CalRecycle published data), policies related to PET bottle recycling, and California-specific PET recycling challenges and opportunities.

Findings and insights from this preliminary research informed the approach to stakeholder interviews. Research findings, along with key takeaways from the interview process, are summarized in this document.

Stakeholder interviews

Cascadia completed interviews in-person and phone-based interviews with 11 PRCC stakeholders. Interviewees included the following:

- Current and past PRCC board members
- PRCC staff
- Lobbyists
- Beverage manufacturers
- Environmental non-profit groups
- PRCC PET buyers
- Representatives of other PET industry groups

Interviewees were all provided with an Interview Guide (shown in Appendix A) in advance that provided a description of the project, the primary objectives for the study, and interview questions and topics.

Summary of research findings

PRCC is viewed by all of the stakeholders as industry experts on PET, as protectors of the market who ensure quality and usability of PET bales in the market, and as an unmatched data source on PET. Further, PRCC's non-profit status as a 501(c)(6) makes it a particularly unique organization – we did not identify any other organizations who operate under a comparable model. Interviewees noted that the PRCC's non-profit status was really important for the organization that gives the organization trust and credibility within the PET recycling industry.

ORGANIZATIONAL STRENGTHS

Both interviewees and findings from the document review indicated the following as PRCC's **key strengths/critical activities**:

- **Supporting financial stability** in the market by stabilizing processing fees, providing supply contracts, and maximizing market value for California's PET scrap.
- **Collaborating with different stakeholder groups along the PET value chain**, from product manufacturers through to certified recyclers, processors, and reclaimers. This gives PRCC knowledge of both upstream and downstream challenges, and enables the organization to work where it is needed to promote recyclability and quality of materials. For example, PRCC brings feedback from processors directly to beverage manufacturers on new packaging types such as full-wrap bottles and bio-based PET.
- **Maintaining the high quality of California PET scrap**. Maintaining the quality of PET scrap helps ensure a market for the material. PRCC provides technical assistance to MRFs, processors, and recycling centers to promote quality, and in its earlier days, also led community-based public education and outreach to effectively incorporate PET into recycling programs.

Interviewees also highlighted PRCC's **adaptability** and **organizational resilience**—PRCC has been in operation for 30 years. During this time, PRCC helped its members manage market disruptions such as China's Green Fence Policy, port strikes, weak markets for commodity materials, changing bottle bill policy and financing, and the ever-expanding PET packaging types.

Additional tailored messaging about PRCC's strengths for core audiences (government, environmentalists, and potential members) is below.

For government audiences

- The PET recycling industry needs stability. PRCC helps promote stability by improving PET scrap quality and providing bankable supply contracts that ensure a consistent raw material supply for California reclaimers.

- Better PET material quality leads to better PET scrap prices, which improves the economics of local collection.
- Promotes recycling in-state:
 - PET recycling creates jobs. CalRecycle estimates that re-processing and re-manufacturing creates 9 jobs per 1000 tons of recycled plastic.¹
 - California PET reclaiming and recycling capacity is over 550 million lbs of PET.²
- PRCC connects stakeholders across the PET industry (manufacturers, recyclers, processors)
- PRCC provides data and research on PET industry and utilizes its expertise to help address contamination challenges and complexities in the PET recycling system.
 - PET recycling complexity includes different collection methods (e.g., buyback, curbside collection), which impact material quality.

For environmental lobby and environmentalists

- PRCC handled 121 million pounds of PET scrap in 2015.
- Producing recycled PET from this material saves over 850 million kWh of energy and an additional 90,750 tons of greenhouse gas emissions from production of PET from virgin materials.³
 - The energy savings are enough to power 88,000 homes for one year, and the greenhouse gas reductions are equivalent to taking 17,000 cars off the road for one year.⁴
- Recycled PET plastic is used to make clamshell packaging, new soda and water bottles, clothing, and carpet.
- Recycling creates jobs. CalRecycle estimates that plastics re-processing and re-manufacturing creates 9 jobs per 1000 tons of recycled plastic.
- PRCC works with all stakeholders, bringing feedback from processors directly to beverage manufacturers, and to enhance recyclability of PET as new PET beverage packaging types (such as full wrap labels and barrier bottles) emerge.

For potential PRCC members

- PRCC helps maintain stability of the PET recycling system.
- PRCC's work improves scrap quality – and with it, price – and reduces risk from market interruption by forecasting significant trends and anticipating, and mitigating early-on, the effects of recycled PET marketplace issues.

¹ CalRecycle, 2013. AB 341 Goal: 75% Recycling by 2020. Creating new jobs through increased recycling, processing, and remanufacturing.

² PRCC, June 2015.

³ Based on an assumption of 100% yield to clean PET and a per-ton recycled PET energy and emissions savings relative to virgin PET from the Association of Postconsumer Plastic Recyclers, 2010.

⁴ Energy savings are calculated from energy equivalencies to homes powered and cars on the road from the U.S. EPA [greenhouse gas equivalencies calculator](#).

- PRCC's work also drives cost savings by promoting operational efficiency and public advocacy; it has helped reduce CA CRV PET recycling system costs by hundreds of millions dollars.
- PRCC provides advanced knowledge and predictions to its members – such as estimating annual processing fees before they are published.
- Advocates for PET recycling industry to CalRecycle and legislators; provides key data and research that support its membership.

For reclaimers and recyclers

- PRCC offers reliability and stability in payment.
- Provides training, education, and technical assistance to improve bale quality for reclaimers.
- Offers established relationships, credit, and price points with buyers.
- PRCC also works to identify new and/or emerging markets, establish contracts and relationships with reclaimers and other buyers, negotiating for the best possible prices, and working to maintain the PET quality to command those prices.

PET INDUSTRY CHALLENGES

Interviewees highlighted a number of challenges facing the PET industry today. These include:

- Weak markets for recycled material
- Changing PET material types and forms
- Bale quality and contamination

These challenges are described in more detail below. PRCC strives to anticipate challenges to reduce volatility and better prepare its members to adapt to any variances. Many of these challenges are not unique to the PET industry; volatility in market conditions, material form, and quality of collected material are cyclical challenges that affect every commodity.

Weak markets for recycled PET

The low cost of oil (\$45/barrel as of late 2016) and an overcapacity of virgin resin in today's market makes it cheaper to purchase virgin PET than to recycle PET.

There are limited opportunities to reduce the cost of recycling PET because there are many fixed cost points in the supply chain, including public participation, collection at the curb, and separation for sale before the material can be processed for re-manufacturing.

Bale quality and yield

Bale yields (the amount of usable PET that remains at the end of the reclaiming process) have been impacted by three main factors: (1) lightweighting of bottles, which makes the non-PET portion such as caps and residuals higher relative to the number of bottles collected; in addition, the material from very thin containers tends to be removed along with other non-PET material (e.g., labels) at a higher rate than for thicker bottles; (2) introduction of new bottle types such as full-wrap labels and non-compatible barrier bottles that are challenging to sort and separate in collection and processing; and (3)

contaminant material such as paper and other plastic types (PLA, PVC, polystyrene) in the bales. Related factors that contribute to quality issues include the use of non-recyclable and/or lower quality packaging by manufacturers and labeling issues that make it challenging to identify recyclable materials. PRCC works across the industry with bottle manufacturers, MRFs, and reclaimers to address impacts on bale yields through education, training, and technical assistance.

Interviewees noted that the best quality material is coming out of California, much of which is attributed to PRCC's work and advocacy. However, California reclaimers still receive a wide range of contaminant materials with the PET they source; the industry will need to continue to maintain and enforce adherence to bale specifications to ensure that the high standard for reclaimed California PET is held.

Changing material types and forms

Related to product quality, the types and forms of PET packaging on the market continues to expand. These packaging types include thermoforms and full-wrap and multi-layered materials, which are not compatible with some existing reclamation systems. There remains an on-going tension between the desire for MRFs and recyclers to accept a wider range of materials from the consumer and manufacturer and the increasing costs associated with processing new plastic forms. Some interviewees commended Coca-Cola for working closely with the PET recycling industry to ensure that its plant bottle (100% bio-based PET) would be compatible with current PET recycling systems. However, not all new materials on the market can be readily accepted by existing processing options.

Interviewees called out thermoforms in particular as a type of packaging that can be challenging to recycle yet is not covered by processing fees. They noted this as a gap in the current system.

Key organizational milestones

- **1987** (June): PRCC formed as a willing buyer of recycled PET in California
- **1987** (October): California's "Bottle Bill" (AB2020) is implemented (enacted in 1986)
- **1990**: Deposit prices increase (\$.01 to \$.025 for all bottles)
- **1990s: Investment Phase**
 - o **1994**: PRCC signs its first domestic supply contract
 - o **1995**: PRCC hires its first quality inspector
 - o **2000**: Deposit legislation expands CRV program to include new beverage types
- **Early 2000s: Expansion Phase**
 - o **2003**: Processing fee offsets are determined on a sliding scale based on recycling rates
 - o **2003**: Deposit prices increase (\$.04 and \$.08)
 - o **2007**: Deposit prices increase (\$.05 and \$.10)
- **2011**: The scrap value of PET scrap exceeds the cost of recycling
- **2012**: PRCC sales shift from predominantly export to predominantly domestic
- **2013**: China's Green Fence changes export markets
- **2017**: First contract to process grade B material domestically

Selected quotes from interviewees

PRCC is a model of producer responsibility—set the recycling goal, and make the producers and consumers responsible for getting to that goal. – Waste reduction advocate

PRCC is able to impose discipline on the recycling world – in terms of motivating to design systems that reduce operational cost, and holding material in the end will boost the scrap price. – Waste reduction advocate

Without PRCC, we'd have a recycling industry much different than it is today in California. We make business easier for the smaller, old-line recyclers by ensuring they get the best market value for their product. If these folks thrive, recycling rate is healthier. – PRCC member

PRCC has established relationships, good credit, and gets a great price – couldn't get same if going out on our own. – PET recycler

PRCC has to be the gold standard of all of the numbers, costs, and technologies out there. We have to be there first and explain to State, members, associates why this is a good or bad idea and have true expertise that is appreciated and credible. – PET industry advocate and board member

PRCC has done a tremendous job in ensuring that there is an ongoing market for PET that is collected in California. PRCC spent tremendous time and effort and had much success in improving the quality of the PET packaging and in identifying high-value and last-resort markets for PET. – PET industry expert

Preliminary recommendations for consideration

- Increase current and prospective member knowledge and appreciation of the uniqueness and importance of PRCC's non-profit status. Enhance understanding of how dues translate into tangible benefits for members and the PET industry at large.
- Work to resolve PET labeling issues and resulting consumer confusion.
- Reinvigorate PRCC's public education and engagement efforts to boost effective participation in PET recycling programs.
- Continue to develop and build capacity to support local markets, both for reclamation and manufacturing.
- Continue to leverage PRCC's unique position, connections, and influence to boost recyclability of PET products and packaging.

Appendix A: Interview Guide

Thank you for agreeing to participate in an interview to inform a historical case study of the Plastics Recycling Corporation of California (PRCC).

PRCC has retained Cascadia Consulting Group (Cascadia) to conduct these interviews and perform other third-party research on the history, current state, and future of the PRCC and PET recycling in California. Cascadia will be producing a case study document later this fall, based on our research findings and insights. The preliminary case study is scheduled to be shared with the PRCC board in November, and then disseminated to a wider audience, including elected officials, industry, and environmental groups.

All information shared during these interviews will be kept confidential, unless explicit permission is given otherwise. Cascadia is bound by a non-disclosure agreement for this project.

This document is intended to guide interview conversations, with these four areas of inquiry: PET recycling history, PRCC history, current situation, and the road ahead.

PET recycling history

- Please describe trends in PET generation, recycling, and disposal since you started in this industry.
- How has the proliferation of various types of PET containers – particularly bottles and thermoforms – impacted PET recycling, both in terms of processing capability and overall recycling rates?
- Please describe growth trends in PET processing and reclamation markets and how these trends have impacted your organization/industry.
- Please describe changes in export markets and how these changes have impacted your organization/industry.
- How is the PRCC supporting organizational resilience and stability in light of market changes?

PRCC history

- Describe the organization – mission, membership
- Please describe your history of involvement with PRCC.
- What are some key milestones in the PRCC's history? Key successes and challenges?
- How do members of the communities you represent perceive the PRCC?
- Please describe the PRCC's relationship with the DOC and CalRecycle.
- Please describe the changes in processing fees and the PRCC dues structure over time.
 - In your opinion, are they fair? Is the value provided commensurate with the dues?
- In your opinion, what would the state of California PET recycling be *without* the PRCC?

Current situation

- In your opinion, what are today's unique challenges and opportunities faced by those throughout the PET recycling/recovery value chain?
- What markets are most challenging?
- What is your current experience with contaminated recycling bales?

- What steps does your organization take to minimize and treat recycling contamination?
- What is your organization doing to increase the sustainability of PET use, both in manufacturing and in recycling?

The road ahead

- In your opinion, what should be PRCC's top priorities for advancing PET recycling in California?
- How does the PRCC model need to evolve to stay relevant and sustainable?
- Are there opportunities to apply PRCC's unique model to advance other types of recycling?
- Are there other key stakeholders, partners, and allies needed to advance PET recycling?
- If there's one message you'd like to see shared about the PRCC in this case study, what would it be?
- Is there anyone else should we speak to with as part of this case study development process?
- Are there any other resources you believe would be helpful for us to review?

Appendix B: Bibliography

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