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INTRODUCTION

The photo of an endless line of hikers stretching into the horizon on Mt. Everest has been talked about around the world.[1] However, human impacts have reached the summit of this mountain in far more terrifying ways than having to wait in line to reach the top ever could. Recently, researchers found microplastics, tiny plastic pieces less than five millimeters thick, in the snow and stream water samples gathered from Mt. Everest.[2] The highest microplastics discovered came from a sample pulled from 8,440 meters high, only 408.86 meters from the peak of the mountain.[3]

This data on microplastic pollution illustrates only one of the many ways plastic byproducts are contributing to the plastic problem the world is facing right now. Along with infiltrating the waters of one of the most remote places in the world, plastic pollution emanates from various stages of the life cycle of plastic products and affects various ecosystems and communities. A report done by Beyond Plastics, a U.S. national project

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1 *See, e.g.*, James Longman, *The Everest Line, Looking Beyond the Photograph: Reporter's Notebook*, ABC NEWS (May 30, 2019, 1:03 PM), https://abcnews.go.com/International/everest-line-photograph-reporters-notebook/story?id=63371783.

2 Imogen E. Napper et al., *Reaching New Heights in Plastic Pollution—Preliminary Findings of Microplastics on Mount Everest*, 3 ONE EARTH 621, 622 (2021).

3 *Id.* at 626–27.

centered around ending plastic pollution, states that industrial production of plastic alone generates 232 million tons of CO_2 equivalent gas emissions annually.[4] The disparate impact of this plastic production also raises environmental justice concerns. Data from the Environmental Protection Agency ("EPA") shows that ninety percent of emissions come from sites where residents living within three miles of the production facility earn an income that is twenty-eight percent less than the average U.S. household and are sixty-seven percent more likely to be a person of color.[5]

While the harmful emissions from plastic production disparately impact minority communities, plastic leakage—macro- or microplastics that leak into the environment—has severe consequences for all forms of life.[6] Plastic pollution affects at least 700 species across different marine ecosystems, often entangling animals or disrupting their digestive systems.[7] Plastic particles are so pervasive within the natural world that they have made their way into the human bloodstream, as shown by a recent study finding that seventeen out of twenty-two volunteers had blood samples containing plastic particles.[8]

State legislatures across the country are tackling the single-use plastic portion of the plastic problem through proposals for Extended Producer Responsibility ("EPR") plastic packaging laws. In general, these laws incentivize producers to prioritize packaging designs and management based on waste hierarchy to achieve better environmental outcomes.[9] While there are currently only four states with active EPR plastic packaging laws in the United States, eleven states have proposed bills in 2023.[10]

EPR plastic packaging laws force producers to internalize the end-of-life costs of the products they create and to conduct a cost analysis for how to comply with these requirements.[11] During this critical adoption period,

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4 JIM VALLETTE, BEYOND PLASTICS, THE NEW COAL: PLASTICS AND CLIMATE CHANGE 7 (2021), https://www.beyondplastics.org/plastics-and-climate.

5 *Id.* at 6.

6 *Plastic Leakage and Greenhouse Gas Emissions are Increasing*, ORG. FOR ECON. COOP. & DEV., https://www.oecd.org/environment/plastics/increased-plastic-leakage-and-greenhouse-gas-emissions.htm (last visited Dec. 31, 2022).

7 *Why is Marine Debris a Problem?*, NOAA MARINE DEBRIS PROGRAM, https://marinedebris.noaa.gov/discover-marine-debris/why-marine-debris-problem (last visited Jan. 13, 2023).

8 Heather A. Leslie et al., *Discovery and Quantification of Plastic Particles Pollution in Human Blood*, 163 ENV'T INT'L, May 2022, at 1, 5.

9 *See, e.g.*, S.B. 54, 2021–22 Reg. Sess. (Cal. 2022).

10 *Introduction to the Guide for EPR Proposals*, SUSTAINABLE PACKAGING COAL., https://epr.sustainablepackaging.org/ (last visited Jan. 1, 2023)(The four states with active EPR plastic packaging laws include California, Oregon, Colorado, and Maine).

11 *See id.*

producers are reorganizing to comply with the new plastic packaging laws while environmental organizations are lobbying for state legislatures to be proactive and incorporate a solid framework for compostable packaging into these laws.[12] The first two EPR plastic packaging laws in the United States, enacted by Maine and Oregon, do not include a framework for compostable packaging.[13] However, following Colorado's lead, the most recent bill signed by Governor Newson of California includes a compostable framework.[14] The fact that two of the most recent laws include a compostable framework reflects the growing trend of proactive state legislation in tackling climate change. The inclusion of a compostable packaging framework in EPR plastic packaging laws, primarily created to tackle plastic production, signals the states' understanding of the desirability and achievability of pollution reduction techniques being proactive instead of reactive.

This Note has five sections, beginning with an introduction to the plastic problem internationally and an explanation of the importance of EPR plastic packaging laws for tackling this problem in the United States. Part I will also explain the importance of including compostable packaging components in these laws, who is spearheading this movement, and what is required to incorporate a successful framework for compostable packaging within the existing structure of these laws. Part II will provide an empirical analysis of Colorado and California's existing EPR plastic packaging laws and how they manifest the seven principles critical to the successful incorporation of a compostable framework. Part II will also summarize the similarities and differences of the two states' various approaches and propose the most efficient path forward. Part III will then consider and address the counterarguments about the utility of compostable packaging in reducing air and land pollution emanating from plastic packaging. Finally, Part IV will conclude by detailing the importance of proactive legislation and the immense impact that incorporating a compostable framework into EPR plastic packaging laws will have in the fight against climate change.

I. THE PLASTIC PROBLEM AND HOW EPR PLASTIC

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12 *Guiding Principles: Compostables in Extended Producer Liability (EPR)*, BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, https://storage.googleapis.com/bpiworld-org/documents/USCC_BPI_EPR_Principles.pdf (last visited Jan. 11, 2023).

13 H.P. 1146, 130th Leg., 1st Spec. Sess. (Me. 2021); S.B. 582, 81st Leg. Assemb., Reg. Sess. (Or. 2021).

14 S.B. 54, 2021–22 Reg. Sess. at 11 (Cal. 2022).

PACKAGING LAWS ARE SUCCESSFULLY DEPLOYED TO MITIGATE IT

A. Rising Production of Single-Use Plastics Driving the Mounting Plastic Problem

One of the major contributors to the plastic problem is single-use plastics: plastics designed to be used once before being immediately discarded. Single-use plastics currently comprise up to fifty percent of all plastic produced.[15] Although single-use plastics are often touted to be designed as "recyclable," the reality is that for a variety of reasons only five percent of plastic produced gets recycled and the other ninety-five percent fills up our landfills or pollutes our waterways.[16] This waste is largely the result of the production of plastic that cannot be recycled, the contamination of recycling bins, or the mismanagement of the end-of-life stage for these products.[17]

Despite this alarmingly low recycling rate, producers have refused to decrease production, as demonstrated by the increasing plastic consumption rate, which is predicted to triple globally by 2060 from the approximately 460 million tonnes consumed in 2019.[18] Without regulation that requires the consideration of environmental factors, the low cost of plastic production gives producers massive financial incentives to continue producing to meet consumption at this alarmingly high rate.[19] This incentive is further fueled by the American people's demand for single-use plastics.[20] For example, demand for single-use plastics rose during the

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15 *Plastic Pollution Facts*, PLASTIC OCEANS, https://plasticoceans.org/the-facts/ (last visited Jan. 11, 2023).

16 GREENPEACE, CIRCULAR CLAIMS FALL FLAT AGAIN (2022), https://www.greenpeace.org/usa/wp-content/uploads/2022/10/GPUS_FinalReport_2022.pdf.

17 Andrej Patoski, *Why Is Most Plastic Not Recycled?*, REPURPOSE (June 22, 2019), https://repurpose.global/blog/post/why-is-most-plastic-not-recycled.

18 *Global plastic waste set to almost triple by 2060, says OECD,* ORG. FOR ECON. COOP. & DEV. (May 6, 2022), https://www.oecd.org/environment/global-plastic-waste-set-to-almost-triple-by-2060.htm (Plastic consumption in 2019 was 459.7459 million tonnes, while plastic consumption in 2060 is projected to be 1230.627 million tonnes. This data looks at all plastic consumption, not just single-use plastic consumption).

19 *United States Single Use Packaging Market Size and Share Analysis - Growth, Trends, and Forecasts (2023-2028)*, MORDOR INTEL., https://www.mordorintelligence.com/industry-reports/united-states-single-use-packaging-market (last visited Dec. 31, 2022).

20 *Id.*

pandemic due to health concerns, and the demand for plastic bottled beverages is continually on the rise.[21]

The projected increase in demand and production for single-use plastics, coupled with a lack of incentives for producers to switch to more environmentally friendly material, will be detrimental to the environment. Since over ninety percent of those products will not be recycled, this increased production will result in a sharp increase at landfills and the plastic pollution of our natural environment will become substantially worse without intervention.

B. Understanding The Components That Make Up EPR Plastic Packaging Laws

Historically, EPR laws have required producers to be responsible for the entire life cycle of the products they produce.[22] The concept of holding manufacturers and producers responsible for the end-of-life disposal of their products was first introduced in the 1990s by Thomas Lindhqvist to the Swedish Ministry of the Environment on behalf of Lund University.[23] In a 1992 report, Lindhqvist expanded on the definition of EPR laws as an "environmental protection strategy to reach an environmental objective of a decreased total environmental impact from a product" through economic, administrative, and informative components that make the manufacturer responsible for the entire life cycle of a product.[24] His theory was that holding manufacturers responsible for their products would incentivize them to create more easily recyclable products, which in turn would decrease waste and increase the efficiency of the waste management system.[25]

Countries around the world quickly started implementing EPR laws of their own after Lindhqvist's introduction in Sweden.[26] Shortly after seeing the success of these laws in European countries, the first EPR laws were enacted in the United States by Minnesota and New Jersey in 1991 for rechargeable batteries.[27] Enacting this type of legislation was

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21 *Id.*

22 *History of EPR*, MULTI-MATERIAL STEWARDSHIP W., https://www.mmsk.ca/residents/history-epr/ (last visited Dec. 31, 2022).

23 *See id.*; Neil Seidman, *EPR: The good, the bad and the ugly*, WASTE DIVE (Mar. 22, 2018), https://www.wastedive.com/news/epr-good-bad-ugly/519582/.

24 *History of EPR, supra* note 22.

25 Seidman, *supra* note 23.

26 *History of EPR, supra* note 22.

27 Jennifer Nash & Christopher Bosso, *Extended Producer Responsibly in the United States: Full Speed Ahead?*, 17 J. INDUS. ECOLOGY 175, 178 (2013).

especially appealing to state municipalities that bore the burden of hard-to-recycle products, like batteries and paints, which required costly disposal measures.[28] Interest in these types of laws quickly spread across the country, and states in the Pacific Northwest soon formed the Northwest Product Stewardship Council to explore the feasibility of implementing this approach across more industries.[29] Organizations like the Product Stewardship Institute, a policy advocate and consulting nonprofit that promotes the emerging circular economy,[30] were also created to support the interests of local governments enacting this type of legislation.[31]

The nation's first EPR law to tackle plastic consumer packaging was signed on July 12, 2021, by Governor Janet Mills of Maine.[32] Similar to the immediate spread of the general EPR concept after Lindhqvist introduced it, other states worked quickly to sign EPR plastic packaging bills of their own into law. Governor Kate Brown made Oregon the second state to pass EPR plastic packaging legislation when she signed the bill into law on August 8, 2021.[33] Following this, the Governors of Colorado and California enacted legislation on June 3, 2022,[34] and June 30, 2022,[35] respectively. While these four are the only states that have officially enacted this type of legislation as of June 6, 2023, the rest of the nation is not far behind, as demonstrated by official proposals in eleven more states and the federal legislature.[36]

The purpose of these laws, to hold manufacturers accountable for the entire life cycle of the products they are producing, is accomplished by allocating responsibility to the manufacturer for organizing and executing the disposal of their products, which in turn, forces them to internalize the costs. There is no one-size-fits-all EPR law and exactly how responsibility is allocated to producers can be accomplished in a variety of ways. For example, a law could require the creation of a producer responsibility organization ("PRO") that can either be required to fully take over disposal operations or merely reimburse the municipality for its management.[37]

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28 *Id.* at 176.

29 *Id.*

30 PRODUCT STEWARDSHIP INSTITUTE, https://productstewardship.us/who-we-are/ (last visited Jan. 14, 2024) (a circular economy "is defined as an economic system designed to 'eliminate waste and pollution, circulate products and materials (at their highest value), and regenerate nature'").

31 *Id.*

32 H.P. 1146, 130th Leg., 1st Spec. Sess. (Me. 2021).

33 S.B. 582, 81st Leg. Assemb., Reg. Sess. (Or. 2021).

34 H.B. 1355, 73rd Gen. Assemb., Reg. Sess. (Co. 2022).

35 S.B. 54, 2021–22 Reg. Sess. (Cal. 2022).

36 *Introduction to the Guide for EPR Proposals, supra* note 10.

37 *Id.*

Exactly whom any PRO consists of can range from the specific requirements for the individuals involved or can merely just require that producers create one with no specifications for who is in it.[38]

The main mechanism in EPR plastic packaging laws that states utilize to hold producers accountable for the disposal of their products is shifting the financial responsibility to the producers themselves. Determining exactly how and to what extent producers will finance the waste disposal of their packaging varies among the currently enacted laws and proposed legislation.[39] On one end of the spectrum is the "Full Producer Responsibility" model, which, at its most stringent, requires the PRO to be both fully financially responsible and operationally in charge of the collection and processing of recyclables.[40] On the opposite end of the spectrum is the "Municipal Reimbursement" model, which gives the PRO no obligation for the collection and operation of facilities and, thus, the producers are only financially responsible by reimbursing the municipalities for its efforts.[41]

Regardless of the specific avenue for how a state chooses to pursue this allocation of responsibility, there are common elements included in all EPR plastic packaging laws. Along with a financing provision and the creation of a PRO, EPR plastic packaging laws also can include provisions for enforcement, eco-modulation, definitions of recyclability, infrastructure requirements, education and outreach, and details of the government's role.[42]

C. Utilizing EPR Plastic Packaging Framework to Include Compostable Packaging

Colorado and California have enacted the most recent EPR plastic packaging laws in the United States and are unique because they incorporate various frameworks for compostable packaging materials. Including compostable frameworks into EPR plastic packaging laws is an essential step for proactive legislatures looking to fight climate change. As producers are forced to internalize the cost of waste disposal and recycling into their production budget, those producers will search for the most cost-

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38 *Id.*

39 *Id.*

40 Megan Quinn, *2021 could be the year for packaging EPR, nearly a dozen state bills in play*, WASTE DIVE (Feb. 11, 2021), https://www.wastedive.com/news/2021-state-extended-producer-responsibility-recycling/594873/.

41 *Id.*

42 *Introduction to the Guide for EPR Proposals, supra* note 10.

effective solutions to meet new sustainability requirements while continuing to supply the market's demand for single-use items.

Consumers are becoming increasingly environmentally conscious despite market trends reflecting continued demand for single-use products. For example, a recent study found that consumers across all generations are willing to spend more for "sustainable products."[43] This same study also found a "significant disconnect" between consumers who are still demanding single-use products, like beverage and take-out containers, but are willing to pay more for eco-conscious options and retail executives who are not rising to meet this market demand. [44]

Compostable packaging, often made of bioplastics, can serve these consumers as an eco-friendlier version of single-use plastic packaging that is more environmentally conscious than plastic packaging for a variety of reasons. While both compostable and plastic packaging are capable of achieving a circular life cycle, plastic can be severely limited in the number of times it can be recycled depending on the specific material used to create the product.[45] The duration of plastic decomposition is astonishing, sometimes taking one thousand years or more to decompose.[46] In contrast, compostable packaging is often able to decompose completely back to biomass.[47] To be certified officially as a compostable plastic, biomass products must decompose at the same rate as organic matter, which is typically between three to six months.[48]

It is prudent for producers to shift production to compostable packaging as they try and balance consumers who are more environmentally conscious and laws focused on eliminating or severely reducing single-use plastics. With EPR plastic packaging laws in place, producers are being forced to internalize the costs of the entire life cycle of products. These costs are ultimately passed to consumers through an increase in the price of products. Although compostable packaging is often more expensive to produce than plastic packaging,[49] producers in states with active EPR

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43 Greg Petro, *Consumers Demand Sustainable Products And Shopping Formats*, FORBES (Mar. 11, 2022, 1:01 PM), https://www.forbes.com/sites/gregpetro/2022/03/11/consumers-demand-sustainable-products-and-shopping-formats/?sh=4d5554f16a06.

44 *Id.*

45 Devitt Matthew, *Plastic vs Compostable Packaging: Which Is Better for the Environment?*, ALPHACOMMERCE (June 11, 2023), https://alphacommerce.xyz/sustainability/packaging/plastic-vs-compostable-packaging-which-is-better-for-the-environment/.

46 *Id.*

47 *Id.*

48 *Id.*

49 *Plastic vs Compostable vs Biodegradable: Balancing Sustainability and Practicality in E-commerce Packaging*, IMPACK.CO (Feb. 28, 2023), https://impack.co/blogs/news/plastic-vs-compostable-vs-biodegradable.

legislation are incentivized to switch in response to consumer requests for more eco-friendly products to fulfill their needs. In fact, the global market for compostable foodservice packaging is projected to grow exponentially at a compounded annual growth rate of 9.2 percent from 2022-2028, with North America expected to hold the largest market share.[50]

As consumers push for more sustainable alternatives and producers work to respond, government actors and independent organizations are recognizing the importance of regulating compostable packaging and are advocating for the proactive inclusion of language to address this problem in regulations. At the federal level, bills have been brought in both the House and Senate related to elements critical to building a federal network throughout the United States that will tackle the plastic problem.[51] House Representative Joe Neguse of Colorado, along with others, brought the Recycling and Composting Accountability Act in 2022.[52] Among other requirements to increase the understanding of the current composting infrastructure in the United States, the bill "tasks the EPA with studying and planning a national composting strategy as part of recycling infrastructure."[53] The bipartisan companion bill calls for research on market circularity and has been sent to the House after unanimously passing in the Senate on July 28, 2022.[54] Although the two bills vary, the message is clear that implementing composting programs is rising on the federal agenda.

The strongest voices advocating for the responsible regulation of compostable packaging are the U.S. Composting Council ("USCC") and the Biodegradable Projects Institute ("BPI"). USCC is focused on advancing "compost manufacturing, compost utilization, and organics recycling."[55] Some of its previous accomplishes include successfully advocating for compost legislation and creating an encompassing source of knowledge for stakeholders like compost manufacturers, consultants,

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50 *Global Compostable Foodservice Packaging Market to Grow at a CAGR of 9.2% during Forecasted Period*, GLOBAL NEWS WIRE (June 22, 2022, 11:00 AM) https://www.globenewswire.com/en/news-release/2022/06/22/2467325/0/en/Global-Compostable-Foodservice-Packaging-Market-to-Grow-at-a-CAGR-of-9-2-during-Forecast-Period-BlueWeave-Consulting.html.

51 *The Senate Has Passed the Recycling and Composting Accountability Act*, U.S. COMPOSTING COUNCIL (Aug. 15, 2022) https://www.compostingcouncil.org/news/614091/The-Senate-Has-Passed-the-Recycling-and-Composting-Accountability-Act.htm.

52 *Id.*

53 *Id.*

54 *Id.*; Recycling and Composting Accountability Act of 2022, S.B. 3743, 117th Cong. § 7 (2022).

55 *Federal Recycling and Composting Accountability Act*, U.S. COMPOSTING COUNCIL, http://www.compostingcouncil.org/page/FederalRecycling (last visited Jan. 14, 2024); *see generally* U.S. COMPOSTING COUNCIL, https://www.compostingcouncil.org/ (last visited Jan. 5, 2023).

educators, and researchers.[56] BPI is a "science-driven organization that supports a shift to the circular economy by promoting the production, use, and appropriate end of lives for materials and products that are designed to fully biodegrade in specific biologically active environments."[57] BPI is North America's leading certifier for compostable packaging and focuses on important elements of compostable packaging, like correctly and consistently labeling compostable products and producing official industry responses to studies impacting compostable packaging materials.[58]

Complementing USCC's overarching interest in compostable materials, BPI's support of production helps promote a shift to a circular economy and settles the two organizations at the intersection primed to promote the inclusion of compostable packaging in EPR plastic packaging laws.[59] Drawing on their combined expertise and the successful promotion of compostable packaging considerations, the two have joined together to create a "task force."[60] Along with other efforts in the compostable packaging realm, this task force recognizes the increasing importance of regulating compostable packaging and recently published a joint statement on behalf of the two organizations on the Guiding Principles for "Compostables in Extended Producer Responsibility" laws.[61] This document details the seven different criteria that the organizations believe EPR models need to include for the successful incorporation of a compostable packaging framework in these laws.[62] Part II of this Note will break down the seven criteria and use California and Colorado's recent EPR plastic packaging laws to exemplify how the two states manifested the criteria in their respective legislation.

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56 *The Senate Has Passed the Recycling and Composting Accountability Act*, *supra* note 51.

57 BPI, https://bpiworld.org/ (last visited Jan. 5, 2023).

58 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12; *See, e.g.*, BIODEGRADABLE PRODS. INST., REVIEW OF LIFE CYCLE ANALYSIS REPORT ON COMPOSTABLE FOOD SERVICEWARE PUBLISHED BY OREGON DEQ (2021), https://storage.googleapis.com/bpiworld-org/documents/BPI_Oregon-DEQ-Response-May2021.pdf.

59 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12.

60 *USCC and BPI Issue Joint Guidance on Compostable Products and Extended Producer Responsibility (EPR)*, U.S. COMPOSTING COUNCIL (June 14, 2022) https://www.compostingcouncil.org/news/608437/USCC-and-BPI-Issue-Joint-Guidance-on-Compostable-Products-and-Extended-Producer-Responsibility-EPR.htm.

61 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12.

62 *Id.*

II. THE SUCCESSFUL INCLUSION OF COMPOSTABLE PACKAGING IN EPR PLASTIC PACKAGING LAWS USING THE SEVEN PRINCIPLES FOR COMPOSTABLE PACKAGING

As producers are forced to comply with EPR plastic packaging laws and face pressures to find more sustainable solutions to the plastic problem, the next step for many producers will be to transition to manufacturing compostable single-use packaging to meet consumers' demand for more sustainable solutions. As this transition begins, state lawmakers need to draft legislation that incorporates the framework set out by the USCC and BPI joint task force. This Part will be focused on an objective review of how recently passed EPR plastic packaging laws in Colorado and California incorporate the seven guiding principles outlined in the joint statement from USCC and BPI. Finally, this Part will end with an overview of the strength of the two states' compostable packaging framework and recommend which state's law is a better model for other states to adopt as they create EPR plastic packaging laws of their own.

A. How Colorado and California Are Measuring Up to The Standards for Compostable Packaging Frameworks in EPR Plastic Packaging Laws Set By The USCC and BPI

1. Compost Education and Allocated Revenue to Organic Recycling

The first principle suggested for state legislatures to include in their EPR plastic packaging laws is concerned with the revenue allocated to organic recycling systems and the education provided surrounding compostables.[63] The guiding document explicitly states that a "proportional share/amount of revenue, based on existing compostable products and non-recyclable items that could be reasonably redesigned to be compostable, must be allocated to organic recycling programs for the successful collection and processing of compostables, as well as education focused on maximizing diversion and minimizing contamination."[64]

This criterion is concerned with not only the distribution of the budget to organic recycling infrastructure, but also the education on composting standards to the public. Having a specific budget for compostable

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63 *Id.*

64 *Id.*

packaging programs is essential because compostable packaging often requires special industrial sites to decompose materials, which can be costly. Education for the public is critical to not only keeping plastic facilities operating properly, but also for keeping contaminated plastics out of compostable sites.

Neither California nor Colorado allocates a "proportional share/amount of revenue" to the curbside collection based on existing compostable products and non-recyclables that could be redesigned.[65] However, they do both address concerns about compostable collection. California Senate Bill 54 ("SB 54") explicitly states that the plan the PRO submits for approval should include curbside collection for both "recycling and compost" covered materials.[66] Colorado's House Bill 1355 ("HB 1355") does not explicitly include a requirement for a compost collection program and only requires that the PRO include a description of the collection of recyclable materials in their plan.[67] In the same section, however, HB 1355 does mention that the PRO is required to work with service providers to provide funding to increase the effectiveness of the compost facilities to process materials and decrease the number of contaminated products going to them.[68]

California is equally as explicit with its education outreach for compostable materials by requiring that the PRO improve efforts to use "education and promotion to encourage proper participation in recycling and composting collection and reuse and refill systems."[69] SB 54 also highlights that these efforts may include education to decrease the rate of inbound contamination and proper behaviors for consumer composting.[70]

Colorado's law does not mention education for compostable behaviors, but it does require the PRO to design programs to increase recycling and the proper end-of-life management of covered materials.[71] "Covered materials" are defined as including packaging materials that can be made of any material that is intended for single or short-term use and are on the product at the point of sale.[72] Thus, while HB 1355 does not explicitly mention compostable education, it should be included in the bill because

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65 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12; S.B. 54, 2021–22 Reg. Sess. at 22 (Cal. 2022); H.B. 1355, 73rd Gen. Assemb., Reg. Sess. at 23 (Co. 2022).

66 S.B. 54 at 22.

67 H.B. 1355 at 23.

68 *Id.* at 29.

69 S.B. 54 at 19.

70 *Id.* at 19–20.

71 H.B. 1355, 73rd Gen. Assemb., Reg. Sess. 2022, at 20 (Colo. 2022).

72 *Id.* at 5, 8.

the education around covered materials is already required and compostable packaging fits the definition for covered materials.

2. EPR Fees Specifically Covering Compostable Products

The second principle that the guiding document mentions is that "EPR fees must cover all materials" and that "all compostables are defined as a class (not by material), certified defined by a common performance criteria including but not limited to ASTM D6400 and ASTM D6868."[73] ASTM D6400 and ASTM D6868 are both standard specifications for labeling products.[74] ASTM D6400 is used for labeling plastics, and ASTM D6868 is used for labeling products that incorporate plastics and polymers with paper.[75] Focusing on the fee structure is important because it is the primary mechanism to shift the financial burden to the producers. Exactly how compostable packaging is defined in the language of the EPR plastic packaging laws is critical to avoiding greenwashing and ensuring that the material can and will be appropriately managed at facilities that are equipped to handle it.[76]

Both Colorado and California EPR fees will be used to implement the respective PRO plans and the fee schedules set by the PRO organizations.[77] This means that the fees will go towards compostable materials in both states despite their respective bills approaching the challenge differently. In Colorado's HB 1355, "compostable" products fall under the covered materials definitions that are set to receive these fees,[78] and in California's SB 54, the PRO is required to include a plan to provide "curbside recycling and compost collection."[79]

Only Colorado specifically defines "compostable" as a class as suggested by the guiding document. In HB 1355, "compostables" is defined to include covered material that is capable of undergoing aerobic biological decomposition as demonstrated by the ATSM standards.[80] Although the California bill explicitly references the education and collection requirements for compostables, it does not explicitly define "compostable"

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73 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12.

74 *What is ASTM D6400, ASTM D6868 and ASTM D5338?*, HALO, https://knowledge.halo.science/what-is-bpi-standard-for-compostability (last visited Feb. 3, 2023).

75 *Id.*

76 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12.

77 H.B. 1355, 73rd Gen. Assemb., Reg. Sess. at 48 (Co. 2022); S.B. 54 2021–22 Reg. Sess. at 27 (Cal. 2022).

78 H.B. 1355, at 4–7.

79 S.B. 54, at 22.

80 H.B. 1355, at 4.

in SB 54.[81] However, California does cross reference to Chapter 5.7 of the California Code, which requires products labeled with the term "compostable" to meet the standards specified in the American Society for Testing and Materials.[82]

3. Mismanagement of Waste Collection

The third principle provides that states should adopt EPR plastic packaging laws that address the mismanagement of waste collection.[83] To successfully include certified compostable items in EPR plastic packaging laws, the compostable materials must be separately collected in an organic stream that is not co-collected with recyclables or other mixed waste that end up in landfills.[84] Having a separate collection process for compostable packaging is essential to the proper decomposition of organic material as compostable plastic items often require industrial level machines to break down properly.[85] Without successfully diverting organics from landfills, compostable products have no access to the oxygen they need to properly decompose.[86] Further, when compostables are co-collected with recyclables, they contaminate the entire batch of recyclables, forcing recycling plants to throw the entire batch into the landfill.[87]

Both bills from Colorado and California address contamination concerns of composting facilities, but California provides numerous requirements to decrease contamination. As noted previously, HB 1355 from Colorado requires the PRO to make a plan *only* for the "recycling of services for residential covered entities."[88] The bill does not have any requirement to collect compostable waste in a separate organic stream, but does address contamination concerns with its requirement for the PRO to outline how they will work with service providers to reduce contamination of materials delivered to composting facilities through funding or assistance.[89] This provision is designed to help increase the effectiveness of managing the

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81 *See* S.B. 54.

82 S.B. 54, at 11 (referencing Cal. Pub. Resources Code § 42357 (a)(1)).

83 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12

84 *Id.*

85 Gosia Wozniacka, *The Dark Side of 'Compostable' Take-Out Containers*, EATER (Jan. 15, 2020, 9:12 AM), https://www.eater.com/2020/1/15/21065446/compostable-take-out-containers.

86 *Compostable vs Biodegradable*, OCEANWATCH AUSTRALIA, https://www.oceanwatch.org.au/uncategorized/compostable-vs-biodegradable/ (last visited Jan. 14, 2024).

87 Laura Collacott, *Where compostable packaging fits in a circular economy*, ELLEN MACARTHUR FOUND. (May 26, 2022), https://ellenmacarthurfoundation.org/articles/we-need-compostable-packaging-but-its-still-single-use.

88 H.B. 1355, 73rd Gen. Assemb., Reg. Sess. at 22–23 (Co. 2022).

89 *Id.* at 19.

contamination, processing, and recovering of compostable materials.[90] Along with requiring the PRO to describe plans to tackle contamination efforts, HB 1355 also requires that the education outreach plan be created to help the state achieve its goals of decreased contamination at recovery and compost facilities.[91]

California's SB 54 provides a much more robust framework with multiple key provisions requiring the separate collection of compostable products. The clearest provision in SB 54 that outlines a separate collection requirement states that the plan the PRO is making must be for both "curbside recycling *and* composting collection."[92] Further, multiple sections concerned with the financials of the PRO explicitly differentiate recycling from the composting collection. The budget that will be created to implement the PRO plan may include money allocated to help successful composting infrastructure improvements to reduce the rate of inbound contamination at composting facilities.[93] There is also a requirement that avoiding "contamination by noncertified compostable products at composting facilities" be one of the factors considered when creating the fee schedule.[94]

4. Representation Required on PRO Committees

The fourth principle states that there "must be representation from the certified compostable products and compost manufacturing industries, at state advisory councils/boards, as well as at a broader producer responsibility organization or in a separate PRO for compostables."[95] Including a space at the table for compostable producers in these organizations ensures that experts will be advocating for the proper management of the end-of-life stage of compostable products. Further, it creates a financial incentive for compostable producers to ensure proper management since they will either be charged as part of the PRO or be liable for the management.

Both states are explicit in the inclusion of compostable industry representatives holding a voting position on the advisory boards created under the bills. HB 1355 requires that there must be one voting member "representing a compost facility" on the advisory board in Colorado.[96] California's bill requires a total of two representatives from the composting

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90 *Id.* at 29.

91 *Id.* at 35–36.

92 S.B. 54, 2021–22 Reg. Sess., at 22 (Cal. 2022) (emphasis added).

93 *Id.* at 21.

94 *Id.* at 28.

95 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12.

96 H.B. 1355, 73rd Gen. Assemb., Reg. Sess. at 15 (Co. 2022).

industry to sit on the advisory board.[97] One representative must come from the "composting industry," and another representative must be a producer of "third-party certified compostable covered material."[98]

5. Exemption from PCR Requirements

The fifth principle states that "compostables must be exempt from post-consumer recycled content ("PCR") requirements."[99] The definition of PCR content can vary based on statute and state, but the concept generally means the use of materials from curbside collection, like plastic bottles or aluminum cans, to create a "recycled material."[100] For EPR plastic packaging, it is critical to create a fee structure that only slightly rewards producers switching to PCR materials because, while PCR materials often save energy and repurpose plastics, they still have an end-of-life date that means they could consequently end up with the materials in landfills or littering the ocean floors.[101] The USCC and BPI guide says to exclude compostable packaging from this requirement since those materials can decompose in the compost instead of being recycled into a product that is put back into the consumer waste stream.[102]

California does not exempt compostables from its PCR requirements like the guidance document suggests. In fact, the PRO is in charge of deciding how PCR content will be incorporated into covered materials when they submit the plan to the advisory board.[103] There are safeguards in place since the plan the PRO submits must be reviewed by the advisory board, one of whose members is affiliated with "third party certified compostable packaging," and then approved by the director.[104] The only exclusion of organic material from PCR content is mentioned in the section of SB 54 discussing concurrent regulations, which states that "neither the department nor a PRO shall impose a postconsumer recycled content requirement for covered material for *fresh produce*."[105]

Similarly, Colorado's HB 1355 leaves the process for setting PCR rates to the PRO. Like California, the PRO in Colorado must submit their

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97 S.B. 54, at 51–52.

98 *Id.*

99 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12.

100 *What You Need to Know About Post-Consumer Recycled (PCR) Packaging,* EPAC, https://epacflexibles.com/what-you-need-to-know-about-post-consumer-recycled-pcr-packaging/ (last visited Oct. 12, 2023).

101 *Id.*

102 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12.

103 S.B. 54, 2021–22 Reg. Sess., at 18 (Cal. 2022).

104 *Id.* at 51–52, 54.

105 *Id.* at 37–38 (emphasis added).

plan to be reviewed by the advisory board before ultimately needing approval from the executive director.[106] However, while there is a requirement to have representation from the PCR industry on the advisory board, there is no explicit requirement to have a representative from the compostable packaging industry, which utilizes PCR content, as there was in California's bill.[107] While Colorado's bill requires the plan to include PCR targets set for "paper products, glass, metal, and plastic," there is no explicit mention of setting, or not setting, requirements for compostable products.[108]

6. Compatibility with Existing or Future Organic Collection Policies

The sixth principle ties back to the third with an emphasis on organics collection. Since compostable packaging products are not collected by themselves, like recyclables, and are instead co-collected with other organic material, "compatibility with existing sister policy/goals on food waste collection and composting should be considered, or new organics recycling policy development is strongly recommended."[109] Just like having a separate collection process for compostables away from recyclables is important, so too is having a compatible sister policy for food waste collection. A compatible sister policy is critical for the successful implementation of compostable packaging in an EPR framework since it helps to eliminate contamination during the collection process. Focusing on food waste collection is important, especially for food packaging containers that would be able to be processed in the compost but would contaminate recycling streams if placed in them.

Neither Colorado nor California has specific provisions that require the PRO to ensure compatibility with food waste collection or create a new organics collection policy. However, both states do broadly mention the PRO funding the improvement of compostable facility infrastructure after assessments are completed to understand the effectiveness of existing facilities.[110] California is slightly more explicit with its requirement for the PRO to consider compostable collection and processing in the plan they must create. However, despite having "food service ware" in the title of the bill, the California bill fails to emphasize the importance of food waste collection compatibility with compostable packaging.[111]

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106 H.B. 1355, 73rd Gen. Assemb., Reg. Sess. 2022, at 31–32 (Colo. 2022).

107 *Id.* at 14–16.

108 *Id.* at 28.

109 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12.

110 H.B. 1355, at 29; S.B. 54, 2021–22 Reg. Sess, at 18 (Cal. 2022).

111 S.B. 54, at 1.

7. Eco-Modulation Factors to Encourage Environmental Packaging Designs

The seventh and final principle that USCC and BPI list as essential for legislatures to adopt in EPR plastic packaging laws is concerned with eco-modulation.[112] This is a tool used to incentivize producers in packaging product design and material choice that favors reduced environmental impact of packaging[113] through the creation of a fee schedule that rewards producers with more sustainable designs by designating a lower cost fee to designs that meet specific criteria.[114] USCC and BPI's joint statement asserts that if these are included in EPR plastic packaging laws, the fees should include relevant descriptions of certified compostable products since they are collected, processed, and recovered separately.[115] Further, the principle notes that "fraudulent claims of compostability and other greenwashing around 'biodegradable' consumer products should be considered potential disruptors to composting."[116]

Neither state explicitly addresses the concerns of greenwashing and separate collection in the respective producer fees. Both states delegate the creation of a fee schedule to the PRO when they submit the plans for approval and include the principle of eco-modulation. Although they leave the creation of the schedule up to the PRO, both states mandate that the schedule should be based on specific amounts, as designated by the legislature. In California, the fee structure that is created by the PRO is to be delineated by covered material and based on numerous factors that encourage environmental design for both recycling and composting.[117] Specifically, this includes the fee schedule being partially based on the "costs incurred by local jurisdictions or recycling service providers to reduce or mitigate the rate of inbound contamination by noncertified compostable products at composting facilities."[118]

Colorado lays out specific criteria that the schedule is to be based on eco-modulation factors that incentivize the reduction of materials and innovative designs for reuse and refill.[119] Further, the bill explicitly sets criteria that the schedule shall discourage designs that increase the cost of composting materials.[120] Finally, unlike California, Colorado includes a

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112 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12.

113 *Introduction to the Guide for EPR Proposals, supra* note 10.

114 *Id.*

115 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12.

116 *Id.*

117 S.B. 54, 2021–22 Reg. Sess., at 28 (Cal. 2022).

118 *Id.*

119 H.B. 1355, 73rd Gen. Assemb., Reg. Sess. 2022, at 25–26 (Colo. 2022).

120 *Id.* at 26.

second "bonus schedule" created by the executive director that is "designed to reduce the producer responsibility dues of producers that meet certain benchmarks," which is created to further the same incentives listed for the PRO-created schedule.[121]

B. States Should Adopt California's Approach with the Inclusion of a Compostable Packaging Framework in EPR Plastic Packaging Laws

Overall, California's SB 54 more accurately and effectively incorporates the seven principles of a productive compostable packaging framework for state-level EPR plastic packaging laws. California requires the PRO to: educate about both recyclables and compostables;[122] allocate certain EPR fees for compostables;[123] plan out the proper and separate collection of compost; [124] and use eco-modulation to incentivize compostable product designs.[125] Although Colorado incorporates many of these principles in HB 1355, they are consistently less explicit in including compostable packaging in the law and do not prioritize the inclusion of the principles as clearly as California.

III. UTILIZING COMPOSTABLE PACKAGING WHILE FIGHTING THE PLASTIC PROBLEM

As legislators are tasked with deciding if and how they are going to implement an EPR plastic packaging framework in their respective states, they will grapple with weighing the benefits and drawbacks of an industry shift to compostable packaging and its effect on the environment. Although compostable packaging has numerous benefits, including its ability to contribute to the biological cycles in a circular economy and helping divert food waste from landfills, it is still another component of consumer goods and food services that contributes to climate change through the manufacturing and processing of the product.[126] There are numerous arguments to support the claim that a transition to compostable packaging is

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121 *Id.* at 40.

122 S.B. 54, at 19–20.

123 *Id.* at 18–20.

124 *Id.* at 18.

125 *Id.* at 28.

126 *What is the Value of Compostable Packaging?*, SUSTAINABLE PACKAGING COAL., https://sustainablepackaging.org/wp-content/uploads/2022/06/Value-of-Compostable-Packaging.png (last visited Jan. 13, 2023).

not the most environmentally friendly option, but there are equally as many legal mechanisms to address the issues that ultimately make the transition worthwhile.

One of the main arguments against promoting compostable packaging is that promoting a switch in packaging materials still supports the use of packaging that, regardless of the material, is harmful to the environment. Producing any packaging takes energy and creates harmful emissions so the real focus should be on reduce and reuse campaigns and promoting a decrease in the consumption of goods.[127] For example, one study shows that multiple types of plastic packaging cannot be composted without industry level equipment used in an energy intensive process that requires weeks of heat and oxygen inputs, which many use as an argument to say it is not sustainable.[128] However, many of these studies are based on a life cycle analysis tool that often uses "flawed methodologies and outdated or misleading inputs."[129] Although it is undeniable that a reduction in the consumption of goods and the elimination of packaging, regardless of material, should be the ultimate goal in the fight against the plastic problem, it is necessary to achieve this goal through a tiered approach. This starts with making the more sustainable switch from plastic to compostable packaging while combining efforts to promote reduce and reuse campaigns.

An example of this approach can be found in California's EPR plastic packaging law previously discussed. Not only is SB 54 focused on tackling plastic packaging in the State of California, but it promotes this multi-tiered approach by incorporating a framework for compostable packaging throughout the bill while concurrently focusing on reuse or refill options.[130] Specifically, the PRO is required to include "arrangements to establish and fund reuse or refill infrastructure…[,] other needed infrastructure to eliminate plastic covered material, [and] shift covered material from plastic to a nonplastic" to achieve the source reduction plan created.[131] Additionally, the EPR plastic packaging law in Colorado requires the PRO to conduct an assessment of the current efficiency of reuse facilities and requires designs for reuse materials to be included in the reduction plan they create.[132]

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127 Collacott, *supra* note 87.

128 *Id.*

129 *Review of the Life Cycle Analysis Report on Compostable Foodservice Ware Published By Oregon DEQ*, BIODEGRADABLE PRODS. INST., https://bpiworld.org/deq (last visited Oct. 12, 2023).

130 S.B. 54, 2021–22 Reg. Sess., at 19 (Cal. 2022).

131 *Id.*

132 H.B. 1355, 73rd Gen. Assemb., Reg. Sess. 2022, at 19–26 (Colo. 2022).

Another common argument that critics of a shift from plastic to compostable packaging note is that the infrastructure to process these types of compostable plastics is expensive.[133] Manufacturing compostable packaging can often be more expensive than manufacturing plastics due to the lack of raw materials available to create them and the production process using more expensive small batches.[134] However, while compostable packaging may initially be more expensive, as more plastic taxes are implemented and EPR plastic packaging laws are adopted across the country, the cost of plastic will rise. Because EPR laws allocate the cost of plastic production to the producers, the cost of plastic will rise as a result of the fees producers are required to pay to implement the PRO plan. Thus, legislative efforts to increase the cost of plastic packaging will decrease the comparative cost of compostable packaging and make compostable materials more appealing to producers.

Finally, many note that the existing infrastructure in the United States does not commonly accept these types of items, with only 100 disposal plants capable of processing certified compostable packaging in 2019.[135] This lack of infrastructure leads to higher rates of emissions since the travel distance is increased to get the materials to the proper waste collection facility.[136] The USCC and BPI joint guidance document demonstrates how legislation can tackle the current lack of infrastructure for compostable facilities.[137] Principles one, three, and six tackle this lack of infrastructure separately. Principle one is focused on ensuring the appropriate amount of revenue is allocated to compostable facilities and prioritizing the education of consumers on how to properly compost.[138] Principle three is concerned with the mismanagement of waste collection and tackles the problem by requiring the PRO to plan the separate collection and processing of compostable packaging.[139] Infrastructure improvements are directly addressed in principle six when the guidance document suggests that the assessment of the current waste management structure includes a detailed account of the compostable infrastructure that the PRO will use when upgrading it.[140]

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133 Siva Gounder, *Why Are Compostable Plastic Bags More Expensive To Manufacture Than Traditional Plastic Bags?*, ETSUS (June 22, 2021), https://etsus.co/why-compostable-plastic-bags-more-expensive/.

134 *Id.*

135 Collacott, *supra* note 87.

136 *Id.*

137 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12.

138 *Id.*

139 *Id.*

140 *Id.*

Although it is outside the scope of this Note to discuss each criticism for switching to compostable packaging individually, it has been demonstrated that there are valuable legislative tools to be used in addressing these issues more generally. Part IV will focus on the importance of proactively addressing these issues in legislation as opposed to being reactive.

IV. THE BENEFITS OF PROACTIVE LEGISLATION FOR GREEN INNOVATION

State lawmakers taking a proactive approach to the incorporation of a compostable packaging framework in EPR plastic packaging laws is essential in the fight against the plastic problem. A solid compostable framework that incorporates the seven principles from USCC and BPI is critical for these continued efforts to mitigate climate change. The efficient use of legislation, management, and production of compostable plastics as the market shifts towards these compostable products at the outset tackles the problem proactively instead of staying reactive to environmental concerns.[141]

A recent study that was published in the International Journal of Environmental Resources and Public Health concluded that business organizations with proactive environmental strategies are more valuable to green innovation.[142] Green innovation is defined as a new or improved "product, technology, process, [or] practice for removing or minimizing environmental glitches."[143] The study then discussed the importance of environmental regulations on a business organization contributing to green innovation.[144] Well-designed environmental regulations have multiple positive effects on a business organization's behavior including: enhancing a business organization's reputation through compliance, decreasing the negative impact of production by addressing the early stages of product development, and boosting the innovative practices of organizations to comply with regulations.[145]

As legislatures work to incorporate this powerful compostable packaging framework into EPR plastic packaging laws, they are proactively regulating the compostable industry thereby contributing to the green

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141 ORG. FOR ECON. COOP. & DEV., *supra* note 18.

142 Naveedullah Mulaessa & Lefen Lin, *How Do Proactive Environmental Strategies Affect Green Innovation? The Moderating Role of Environmental Regulations and Firm Performance,* 18 INT'L J. ENV'T. RSCH. & PUB. HEALTH, Aug. 28, 2021, at 1.

143 *Id.* at 3.

144 *Id.* at 4–5.

145 *Id.* at 2, 4.

innovation of packaging. Principle seven from the guidelines created by USCC and BPI, which describes how eco-modulation should be utilized to incentivize product design and material choices that favor reduced environmental impact, is an example of proactive legislation.[146] Legislatures actively applying this principle can be seen in Colorado and California through the inclusion of its variations in the respective EPR plastic packaging laws. As noted in the study published in the International Journal of Environmental Resources and Public Health, this type of proactive legislation can have numerous benefits which can be utilized in the world's fight against climate change through the reduction of plastic production and consumption.

CONCLUSION

In conclusion, plastic pollution is a problem that is continually pressing not only our marine environments but all greater ecosystems and human health in various ways. To combat this problem, legislation is currently being brought at the municipal, state, and federal level with laws tackling different aspects of the plastic problem. This Note argues that as EPR plastic packaging laws are more frequently being introduced at the state level, drafting legislatures should look to California's manifestation of the seven principles presented by USCC and BPI in its EPR plastic packaging law for a strong example of how to incorporate the principles into their respective frameworks. States must work to incorporate these principles for compostable packaging in plastic packaging legislation because having proactive legislation at the forefront of innovation and industry standards is a critical tool in the fight against climate change.

146 BIODEGRADABLE PRODS. INST. & U.S. COMPOSTING COUNCIL, *supra* note 12.